OCTA

BOARD AGENDA

Orange County Transportation Authority Board Meeting
Orange County Transportation Authority Headquarters
Board Room - Conference Room 07-08
550 South Main Street
Orange, California
Monday, December 11, 2017 at 9:00 a.m.

Any person with a disability who requires a modification or accommodation in order to participate in this meeting should contact the OCTA Clerk of the Board, telephone (714) 560-5676, no less than two (2) business days prior to this meeting to enable OCTA to make reasonable arrangements to assure accessibility to this meeting.

Agenda Descriptions

The agenda descriptions are intended to give members of the public a general summary of items of business to be transacted or discussed. The posting of the recommended actions does not indicate what action will be taken. The Board of Directors may take any action which it deems to be appropriate on the agenda item and is not limited in any way by the notice of the recommended action.

Public Comments on Agenda Items

Members of the public may address the Board of Directors regarding any item. Please complete a speaker's card and submit it to the Clerk of the Board or notify the Clerk of the Board the item number on which you wish to speak. Speakers will be recognized by the Chairman at the time the agenda item is to be considered. A speaker's comments shall be limited to three (3) minutes.

Public Availability of Agenda Materials

All documents relative to the items referenced in this agenda are available for public inspection at www.octa.net or through the Clerk of the Board's office at the OCTA Headquarters, 600 South Main Street, Orange, California.

Call to Order

Invocation
Director Do

Pledge of Allegiance
Director Richard Murphy

OCTA

BOARD AGENDA

Special Calendar

Orange County Transportation Authority Special Calendar Matters

1. Presentation of Resolution of Appreciation for Employee of the Month for November 2017

Present Orange County Transportation Authority Resolution No. 2017-088 to Mary Shavalier, Administration, as Employee of the Month for November 2017.

2. Presentation of Resolutions of Appreciations for Employee of the Month for December 2017

Present Orange County Transportation Authority Resolutions of Appreciation Nos. 2017-089, 2017-090, and 2017-091 to Michelle Peoples, Coach Operator; Quy Nguyen, Maintenance; and Angela Sun, Administration, as Employees of the Month for December 2017.

Consent Calendar (Items 3 through 12)

All matters on the Consent Calendar are to be approved in one motion unless a Board Member or a member of the public requests separate action on a specific item.

Orange County Transportation Authority Consent Calendar Matters

3. Approval of Minutes

Approval of the Orange County Transportation Authority and affiliated agencies' regular meeting minutes of November 27, 2017.

4. Proposed 2018 Board of Directors Meetings Calendar
Laurena Weinert

Overview

Presented are the proposed 2018 Board of Directors and Committee meetings calendars, depicting the dates of the Board of Directors and Committee meetings and holidays for the year.

Recommendation

Approve the Orange County Transportation Authority and affiliated agencies 2018 Board of Directors meetings calendar.

5. Conflict of Interest Code and 2017 Annual Statement of Economic Interests Filing
Laurena Weinert

Overview

Pursuant to the Orange County Transportation Authority's Conflict of Interest Code, Members of the Board of Directors and designated positions are required to file a Statement of Economic Interests - Form 700.

Recommendation

Direct the Clerk of the Board to distribute and monitor the 2017 Annual Statement of Economic Interests - Form 700 to Members of the Board of Directors and designated positions, to be filed by April 1, 2018.

6. 2018 Technical Steering Committee Membership
May Hout/Kia Mortazavi

Overview

The Orange County Transportation Authority Technical Advisory Committee provides feedback and input on many local streets and roads related items and relies on the Technical Steering Committee to provide guidance on major technical issues. Technical Steering Committee members serve two-year terms, with the exception of one-year terms for the chair and vice-chair. This year, five positions are open for consideration. The 2018 Technical Steering Committee membership list is presented for review and approval.

Recommendation

Approve the proposed 2018 Technical Steering Committee membership.

Orange County Local Transportation Authority Consent Calendar Matters

7. Approval to Release Invitation for Bids for Construction of the Right-of-Way Slope Stabilization Project
Gerald Ray Smith, Jr. /James G. Beil

Overview

Final plans, specifications, and estimates for work to stabilize and to repair erosion damage to various slopes within the Orange County Transportation Authority-owned railroad right-of-way have been completed. Board of Directors' approval to issue an invitation for bids for construction of the slope stabilization project is requested.

Recommendation

Approve the release of Invitation for Bids 7-2047 for construction of the railroad right-of-way slope stabilization project.

8. Comprehensive Transportation Funding Programs Semi-Annual Review - September 2017
Christina Moore/Kia Mortazavi

Overview

The Orange County Transportation Authority recently completed the semi-annual review of projects funded through the Comprehensive Transportation Funding Programs. This process reviews the status of Measure M2 grant-funded projects and provides an opportunity for local agencies to update project information and request project modifications. Recommended project adjustments are presented for review and approval.

Recommendation

Approve adjustments to the Comprehensive Transportation Funding Programs projects and Local Fair Share funds.

9. Measure M2 Quarterly Progress Report for the Period of July 2017 Through September 2017
Tamara Warren/Kia Mortazavi

Overview

Staff has prepared a Measure M2 quarterly progress report for the period of July 2017 through September 2017, for review by the Orange County Transportation Authority Board of Directors. This report highlights progress on Measure M2 projects and programs and will be available to the public via the Orange County Transportation Authority website.

Recommendation

Receive and file as an information item.

10. Fiscal Year 2017-18 Measure M2 Annual Eligibility Review
May Hout/Kia Mortazavi

Overview

Measure M2 requires all local jurisdictions in Orange County to satisfy eligibility requirements in order to receive Measure M2 net revenues. Fiscal year 2017-18 eligibility documentation has been reviewed and is presented for Board of Directors' review and approval.

Recommendation

Approve all local jurisdictions as conditionally eligible for Measure M2 net revenues for fiscal year 2017-18, and direct staff to return with eligibility findings for local jurisdictions, pending the adoption and submittal of fiscal year 2016-17 expenditure reports by local jurisdictions.

11. Measure M2 Environmental Cleanup Program Updates and Next Steps
Alison Army/Kia Mortazavi

Overview

The Orange County Transportation Authority's Environmental Cleanup Program provides Measure M2 funding for water quality improvement projects to address transportation-generated pollution. In May 2010, the Orange County Transportation Authority Board of Directors approved a two-tiered approach to fund the Measure M2 Environmental Cleanup Program over a seven-year period. The Board of Directors recently approved the funding recommendations for the seventh call for projects in August 2017. A status update of the funded projects and next steps in the Environmental Cleanup Program are discussed herein.

Recommendation

Direct staff to return in early 2018 with updated Environmental Cleanup Program funding guidelines for a 2018 call for projects.

12. Measure M2 Environmental Mitigation Program Update
Lesley Hill/Kia Mortazavi

Overview

Measure M2 includes a program to deliver comprehensive mitigation for the environmental impacts of freeway projects in exchange for streamlined project approvals from the state and federal resources agencies. To date, the Environmental Mitigation Program has acquired conservation properties and provided funding for habitat restoration projects as part of the Natural Community Conservation Plan/Habitat Conservation Plan. On a parallel path, the Orange County Transportation Authority has developed a similar approach to work with the State Water Resources Control Board and the United States Army Corps of Engineers to obtain state and federal clean water permits to facilitate the implementation of the Measure M2 freeway projects as a co-benefit. A status report of these efforts and program update is presented.

Recommendation

Receive and file as an information item.

Regular Calendar

Orange County Local Transportation Authority Regular Calendar Matters

13. Interstate 405 Improvement Project Update

Jeff Mills/James G. Beil

Overview

The Orange County Transportation Authority is currently underway with the implementation of the Interstate 405 Improvement Project. This report provides a project update.

Recommendation

Receive and file as an information item.

14. Approval to Release Invitation for Bids for Construction of the OC Streetcar Project

Mary Shavalier/James G. Beil

Overview

On August 10, 2017, the Orange County Transportation Authority Board of Directors approved the release of a request for pre-qualification of contractors for construction of the OC Streetcar project. With the pre-qualification process underway and plans, specifications, and estimates completed for the OC Streetcar project, staff is seeking Board of Directors' approval to issue an invitation for bids for construction of the OC Streetcar project.

Recommendation

Approve the release of Invitation for Bids 7-1904 for construction of the OC Streetcar project.

Orange County Transportation Authority Regular Calendar Matters

15. Proposed State Route 241/91 Express Lanes Tolled Connector Update
Kia Mortazavi

Overview

The Transportation Corridor Agencies, in coordination with the Orange County Transportation Authority and the California Department of Transportation, is finalizing the environmental phase of a proposed project to construct a tolled connector between the State Route 241 toll road and the 91 Express Lanes. Technical studies indicate the proposed project could increase traffic congestion for drivers on State Route 91 in the general-purpose lanes and 91 Express Lanes during the evening commute period, and increase travel time for State Route 241 commuters. Given these regional mobility issues, recommendations are presented that would focus project development efforts on improving the State Route 91 general-purpose capacity and defer any further work on the proposed connector.

Recommendations

A. Direct staff to request Transportation Corridor Agencies to defer all work on the State Route 241/91 Express Lanes connector given the regional mobility impacts.

B. Direct staff to work with the Riverside County Transportation Commission to evaluate opportunities to advance State Route 91 corridor congestion relief projects.

Discussion Items

16. OC Bridges Railroad Grade Separation Completion
Ross Lew/James G. Beil

Staff will provide an update on the program's completion.

17. Public Comments

At this time, members of the public may address the Board of Directors regarding any items within the subject matter jurisdiction of the Board of Directors, but no action may be taken on off-agenda items unless authorized by law. Comments shall be limited to three (3) minutes per speaker, unless different time limits are set by the Chairman subject to the approval of the Board of Directors.

18. Chief Executive Officer's Report

19. Directors' Reports

20. Closed Session

A Closed Session will be held as follows:

A. Pursuant to Government Code Section 54956.9(d)(1) – Conference with Legal Counsel – Existing Litigation. Estate of Richard Collins, et al., v. Orange County Transportation Authority, et al. OCSC Case No. 30-2016-00844677.

B. Pursuant to Government Code Section 54956.9(d)(1) - Conference with Legal Counsel - Existing Litigation, Zia Gao, et al. v. Orange County Transportation Authority, et al., OCSC Case No. 30-2015-00814633.

C. Pursuant to Government Code Section 54957.6 to discuss negotiations with Teamsters Local 952 regarding the coach operators. The lead negotiator for the Orange County Transportation Authority is Maggie McJilton, Executive Director of Human Resources and Organizational Development, and for Teamsters Local 952 is Patrick Kelly or his designee.

21. Adjournment

The next regularly scheduled meeting of this Board will be held at **9:00 a.m. on Monday, January 8, 2018**, at the Orange County Transportation Authority Headquarters, 550 South Main Street, Board Room - Conference Room 07-08, Orange, California.

Minutes of the
Orange County Transportation Authority
Orange County Transit District
Orange County Local Transportation Authority
Orange County Service Authority for Freeway Emergencies
Board of Directors Meeting

Call to Order

The November 27, 2017 regular meeting of the Orange County Transportation Authority (OCTA) and affiliated agencies was called to order by Chairman Hennessey at 9:03 a.m. at the OCTA Headquarters, 550 South Main Street, Board Room – Conference Room 07-08, Orange, California.

Roll Call

Following the Invocation and Pledge of Allegiance, the Clerk of the Board noted a quorum was present, with the following Directors in attendance:

Directors Present:	Michael Hennessey, Chairman Lisa A. Bartlett, Vice Chair Laurie Davies Barbara Delgleize Andrew Do Lori Donchak Steve Jones Mark A. Murphy Richard Murphy Al Murray Shawn Nelson Miguel Pulido Tim Shaw Todd Spitzer Michelle Steel Tom Tait Gregory T. Winterbottom Ryan Chamberlain, Governor's Ex-Officio Member
Directors Absent:	None
Also Present:	Darrell Johnson, Chief Executive Officer Ken Phipps, Deputy Chief Executive Officer Laurena Weinert, Clerk of the Board Olga Prado, Assistant Clerk of the Board David DeBerry, Acting General Counsel Members of the Press and the General Public

Special Calendar

Orange County Transportation Authority Special Calendar Matters

1. Presentation of Resolutions of Appreciation for Employees of the Month for November 2017

Darrell Johnson, Chief Executive Officer (CEO), presented the OCTA Resolutions of Appreciation Nos. 2017-086 and 2017-087, to Evelyn Gray, Coach Operator, and Andy Xiong, Maintenance, as Employees of the Month for November 2017.

Mary Shavalier, Administration, Employee of the Month for November 2017, will be recognized at the December 11th Board of Directors (Board) meeting.

2. Public Hearing for the 2017 Orange County Congestion Management Program

(A verbatim transcript of this public hearing is on file in the Clerk of the Board's office.)

Joe Alcock, Manager of Transportation Planning, reported the following:

- Per state law, every two years, OCTA is required to update the Congestion Management Program (CMP.)
- The CMP requirements, findings, and updates.
- Updates are noted in Attachment C of the Staff Report.
- OCTA received a comment letter, requesting several wording revisions, from the Southern California Association of Governments (SCAG), which have been incorporated into the CMP.
- SCAG also requested that OCTA report on transportation demand management ordinances and projects that increase single-occupancy vehicle capacity, which are not required under the CMP. OCTA will meet with SCAG to discuss its requests.

Chairman Hennessey opened the public hearing and requested the Clerk of the Board read into the record, the noticing done to inform the public and local agencies of today's public hearing.

Chairman Hennessey opened the floor for public comments and with no requests from the public to speak, a motion was made by Director Davies, seconded by Vice Chair Bartlett, and declared passed by those present, to close the public hearing.

Directors Pulido and Nelson were not present to vote on the closing of the public hearing.

2. (Continued)

With the closing of the public hearing, a motion was made by Director Donchak, seconded by Director Davies, and declared passed by those present, to:

A. Consider public hearing comments received on the 2017 Orange County Congestion Management Program.

B. Adopt the 2017 Orange County Congestion Management Program.

C. Direct staff to forward the 2017 Orange County Congestion Management Program to the Southern California Association of Governments for a finding of regional consistency.

Directors Nelson and Pulido were not present to vote on this item.

Consent Calendar (Items 3 through 10)

Orange County Transportation Authority Consent Calendar Matters

3. Approval of Minutes

A motion was made by Director Murray, seconded by Director Donchak, and declared passed by those present, to approve the Orange County Transportation Authority and affiliated agencies' regular meeting minutes of November 13, 2017.

Directors Nelson and Pulido were not present to vote on this item.

4. Conflict of Interest Code and 2017 Annual Statement of Economic Interests Filing

Director Spitzer pulled this item and referenced Attachment B of the Staff Report and asked about the Disclosure Categories for the following Designated Positions:

- Assistant Base Manager:
  - Act in place of an absent Base Manager and review the position being a Disclosure Category 01.

- Consultants:
  - Add a real estate acquisition and disposition consultant to the designated positions list.

- Information Security Analyst and Senior Information Security Analyst:
  - Review the positions being a Disclosure Category 01 as the positions handle sensitive information.

4. (Continued)

- Section Manager III
  - Section Manager III positions are a Disclosure Category 01 except Risk Management, which is responsible for establishing OCTA's risks. Review the Section Manager III – Risk Management Disclosure Category.

- Real Property Agent Managers:
  - Associate Real Property Agent and Senior Real Property Agent are responsible for disclosure of property and review the position's Disclosure Category.

Chairman Hennessey asked that staff follow-up with Director Spitzer.

A motion was made by Director Spitzer, seconded by Director M. Murphy, and declared passed by those present, to continue this item to the December 11, 2017 Board meeting.

Directors Nelson and Pulido were not present to vote on this item.

5. Orange County Transportation Authority 2017-18 State and Federal Legislative Platforms

A motion was made by Director Murray, seconded by Director Donchak, and declared passed by those present, to:

A. Adopt the revised 2017-18 State and Federal Legislative Platforms.

B. Direct staff to distribute the adopted platforms to elected officials, advisory committees, local governments, affected agencies, the business community, and other interested parties.

Directors Nelson and Pulido were not present to vote on this item.

6. Status Report of State Legislation Enacted in 2017

A motion was made by Director Murray, seconded by Director Donchak, and declared passed by those present, to receive and file as an information item.

Directors Nelson and Pulido were not present to vote on this item.

7. Performance Evaluation of Sacramento Legislative Advocate, Platinum Advisors, LLC

A motion was made by Director Murray, seconded by Director Donchak, and declared passed by those present, to receive and file the staff evaluation as an information item and provide any additional comments.

Directors Nelson and Pulido were not present to vote on this item.

Orange County Transit District Consent Calendar Matters

8. Agreement for Pavement Striping and Markings at the Garden Grove Bus Base

A motion was made by Director Murray, seconded by Director Donchak, and declared passed by those present, to authorize the Chief Executive Officer to negotiate and execute Agreement No. C-7-1925 between the Orange County Transportation Authority and PCI, the lowest responsive, responsible bidder, in the amount of $74,500, for pavement striping and markings at the Garden Grove Bus Base.

Directors Nelson and Pulido were not present to vote on this item.

Orange County Local Transportation Authority Consent Calendar Matters

9. Rail Programs and Facilities Engineering Quarterly Report

A motion was made by Director Murray, seconded by Director Donchak, and declared passed by those present, to receive and file as an information item.

Directors Nelson and Pulido were not present to vote on this item.

10. Amendment to Reimbursement Agreement for Relocation of West Orange County Water Board Water Line for the Interstate 405 Improvement Project

Chairman Hennessey pulled this item and inquired about the timeline, investment fund, and interest rate on this item's loan agreement that OCTA is providing the West Orange County Water Board.

Andy Oftelie, Executive Director of Finance and Administration, responded that it is a variable loan, and the West Orange County Water Board has up to ten years to reimburse OCTA.

Chairman Hennessey asked how OCTA reports loan agreements with local jurisdictions. Mr. Oftelie responded that the loan agreements are reported in OCTA's Comprehensive Annual Financial Report.

10. (Continued)

Chairman Hennessey requested a report on OCTA's loan agreements with local jurisdictions. Chairman Hennessey complimented staff and OCTA for its excellent money management and for undertaking this type of loan agreement in order to keep this item's project moving forward.

Director Spitzer stated that this item was an outstanding accomplishment.

A motion was made by Chairman Hennessey, seconded by Director Delgleize, and declared passed by those present, to authorize the Chief Executive Officer to negotiate and execute Amendment No. 1 to Reimbursement Agreement No. UK151087 with the West Orange County Water Board, to increase the loan amount by $1.3 million from $4.7 million, to a total loan amount not to exceed $6 million, for the relocation of the 33-inch pipeline that must be moved to accommodate the Interstate 405 Improvement Project.

Directors Nelson and Pulido were not present to vote on this item.

Regular Calendar

There were no Regular Calendar matters.

Discussion Items

11. 2017 Chief Executive Officer's Initiatives and Action Plan - Third Quarter Progress Report

Darrell Johnson, CEO, provided an update on the activities and accomplishments related to the 2017 Chief Executive Officer's Initiatives and Action Plan for the third quarter.

12. Update on Interstate 405 Improvement Project from Interstate 5 to State Route 55

Darrell Johnson, CEO, provided opening comments, and Jeannie Lee, Senior Project Manager, provided a PowerPoint presentation for this item as follows:

- Project Limits and Area of Improvements;
- Comparison of Alternatives;
- Traffic Benefits;
- Public Noticing and Outreach; and
- Environmental Phase Schedule.

Vice Chair Bartlett stated that Alternatives 2 and 3 show the high-occupancy vehicle lane as continuous access, and asked how it would impact any future planning with regards to an express lane conversion.

Mr. Johnson, CEO, responded that a parallel path on the State Route 73 has toll capacity and it is not envisioned that this segment of the Interstate 405 (I-405) is a candidate for future tolling.

13. Public Comments

There were no public comments received.

14. Chief Executive Officer's Report

Darrell Johnson, CEO, reported:

- On Tuesday, December 5th, from 5:00 p.m. to 8:00 p.m., at the University Community Park in the City of Irvine, OCTA is hosting an open house for the I-405 Improvement Project from the Interstate 5 to State Route 55. Public comments received at the open house will be incorporated in the environmental document.

- Immediately following today's Board meeting, he, along with Chairman Hennessey, Legislative and Communications Chairman Nelson, and Lance Larson, Executive Director of External Affairs, will travel to Washington, D.C., for meetings with the Orange County Congressional delegation regarding the OC Streetcar and I-405 Improvement Project.

15. Directors' Reports

There were no Directors' reports.

16. Closed Session

There were no Closed Session items scheduled.

17. Adjournment

The meeting adjourned at 9:35 a.m.

The next regularly scheduled meeting of this Board will be held at **9:00 a.m. on Monday, December 11, 2017**, at the Orange County Transportation Authority Headquarters, 550 South Main Street, Board Room – Conference Room 07-08, Orange, California.

ATTEST:

_____
Laurena Weinert
Clerk of the Board

_____
Michael Hennessey
OCTA Chairman

COMMITTEE TRANSMITTAL

December 11, 2017

To: Members of the Board of Directors

From: Laurena Weinert, Clerk of the Board

Subject: Proposed 2018 Board of Directors Meetings Calendar

Executive Committee Meeting of December 4, 2017

Present: Chairman Hennessey, Vice Chair Bartlett, and Directors Do, Donchak, Murray, Nelson, and Shaw
Absent: None

Committee Vote

This item was passed by the Members present.

Committee Recommendation

Approve the Orange County Transportation Authority and affiliated agencies 2018 Board of Directors meetings calendar.

December 4, 2017

To: Executive Committee

From: Darrell Johnson, Chief Executive Officer

Subject: Proposed 2018 Board of Directors Meetings Calendar

Overview

Presented are the proposed 2018 Board of Directors and Committee meetings calendars, depicting the dates of the Board of Directors and Committee meetings and holidays for the year.

Recommendation

Approve the Orange County Transportation Authority and affiliated agencies 2018 Board of Directors meetings calendar.

Discussion

The 2018 meeting calendars for the Orange County Transportation Authority's Board of Directors (Board) and affiliated agencies has been prepared by the Clerk of the Board and is presented for approval and adoption.

In order to mitigate scheduling conflicts for Board Members, the proposed calendar takes into consideration the scheduled meetings of the:

- Orange County Board of Supervisors
- Southern California Regional Rail Authority
- Southern California Association of Governments - Regional Council
- Local Agency Formation Commission
- Los Angeles - San Diego - San Luis Obispo Rail Corridor Agency
- Air Quality Management District – Mobile Source Air Pollution Reduction Review Committee
- Transportation Corridor Agencies
- Regularly attended Board conferences and events

The proposed 2018 calendar reflects regular Board meetings (Attachment A) which historically have been held on the second and fourth Mondays; only one Board meeting is scheduled for December due to the holidays. Due to a conflict with the Memorial Day Holiday on Monday, May 28, 2018, the Board meeting has been rescheduled to Friday, May 25, 2018.

The Chairman retains the right to call a Special Meeting at any time should unforeseen circumstances arise which need to be addressed.

For planning purposes, a draft Committee calendar has been provided. Once the Committee Chairs have been assigned and Committee Members appointed by the Board on January 22, 2018, changes to the proposed 2018 Committee meeting schedules may occur.

Committee Members will approve their respective Committee meeting schedules in February 2018 (Attachment B), and changes to Committee meetings have been proposed to better align with the Board meetings (Attachment C).

Summary

Approval is requested for the proposed Board meetings calendar, which sets dates for the regular Board of Directors meetings in 2018.

Attachments

A. Orange County Transportation Authority 2018 Board Meetings and Holidays - Draft 12.04.17
B. Orange County Transportation Authority 2018 Board and Committee Calendar – Draft 12.04.17
C. Orange County Transportation Authority 2018 Proposed Changes – Comparison with the 2017 Calendar

Prepared by:

Laurena Weinert
Clerk of the Board
(714) 560-5676

DRAFT 12.04.17

ATTACHMENT A

ORANGE COUNTY TRANSPORTATION AUTHORITY

2018 BOARD MEETINGS AND HOLIDAYS

JANUARY

SUN	MON	TUE	WED	THU	FRI	SAT
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FEBRUARY

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MARCH

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APRIL

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MAY

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JULY

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AUGUST

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OCTOBER

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NOVEMBER

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DECEMBER

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10.24.17

OCTA, OCTD, OCLTA, and OCSAFE regular Board meeting
9:00 a.m., OCTA Headquarters, 550 South Main Street, Board Room – Conf. Room 07-08, Orange, CA

OCTA Holidays

DRAFT 12.04.17

ATTACHMENT B

ORANGE COUNTY TRANSPORTATION AUTHORITY
2018 BOARD AND COMMITTEE CALENDAR

JANUARY

SUN	MON	TUE	WED	THU	FRI	SAT
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FEBRUARY

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MARCH

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APRIL

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MAY

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JUNE

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JULY

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AUGUST

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SEPTEMBER

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23	24	25	26	27	28	29
30						

OCTOBER

SUN	MON	TUE	WED	THU	FRI	SAT
	1	2	3	4	5	6
7	8	9	10	11	12	13
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28	29	30	31			

NOVEMBER

SUN	MON	TUE	WED	THU	FRI	SAT
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4	5	6	7	8	9	10
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DECEMBER

SUN	MON	TUE	WED	THU	FRI	SAT
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30	31					

11.14.17

OCTA, OCTD, OCLTA, and OCSAFE regular Board meeting
9:00 a.m., OCTA Headquarters
550 South Main Street, Board Room - Conf. Room 07, Orange CA

OCTA Holidays

EXEC
9 a.m.

RP & H
10:30 a.m.

SR-91
9 a.m.

Transit
9 a.m.

F & A
10:30 a.m.

L & C
9 a.m.

ATTACHMENT C

Orange County Transportation Authority
2018 Proposed Changes – Comparison with the 2017 Calendar

Committee meeting proposals are pending approval by each respective Committee.

Month	2018 Proposed Changes - Comparison with the 2017 Calendar
January	• Due to the New Year's Day Holiday being observed on Monday, January 1st, reschedule the Executive Committee **and** Regional Planning and Highways Committee meetings to Thursday, January 4th. • Add the second Finance and Administration Committee meeting of Wednesday, January 24th.
February	Add the second Transit Committee meeting of Thursday, February 22nd.
March	No change
April	Delete the second Transit Committee meeting of Thursday, April 26th.
May	• Delete the first Finance and Administration Committee meeting of Wednesday, May 9th. • Due to the Memorial Day Holiday being observed on Monday, May 28th, reschedule the Board meeting to Friday, May 25th.
June	No change
July	Due to the Fourth of July Holiday being observed on Wednesday, July 4th, schedule the Executive Committee **and** Regional Planning and Highways Committee meetings to Monday, July 2nd.
August	No change
September	• Due to the Labor Day Holiday being observed on Monday, September 3rd, reschedule the Executive Committee **and** Regional Planning and Highways Committee meetings to Thursday, September 6th.
October	No change
November	No change
December	No change

OCTA

December 11, 2017

To: Members of the Board of Directors

From: Darrell Johnson, Chief Executive Officer

Subject: Conflict of Interest Code and 2017 Annual Statement of Economic Interests Filing

Overview

Pursuant to the Orange County Transportation Authority's Conflict of Interest Code, Members of the Board of Directors and designated positions are required to file a Statement of Economic Interests - Form 700.

Recommendation

Direct the Clerk of the Board to distribute and monitor the 2017 Annual Statement of Economic Interests - Form 700 to Members of the Board of Directors and designated positions, to be filed by April 1, 2018.

Background

The Political Reform Act, Government Code Sections 81000, et seq., requires state and local government agencies to review its designated positions and disclosure categories to determine accuracy to date.

Discussion

At the November 27, 2017 Board of Directors meeting, Director Spitzer requested review of the designated positions and disclosure category for the following:

- Add a real estate acquisition and disposition consultant to the designated positions list
- Assistant Base Manager
- Information Security Analyst
- Information Security Analyst, Senior
- Real Property Agent, Associate
- Real Property Agent, Senior
- Section Manager III (Risk Management)

The Orange County Transportation Authority's (OCTA) Members of the Board of Directors, Chief Executive Officer, Deputy Chief Executive Officer, Executive Director of Finance and Administration, and General Manager, Treasury/Toll Roads are required to file an annual Statement of Economic Interests - Form 700 (Form 700) with the County of Orange Clerk of the Board of Supervisors (Attachment A).

At the request of Director Spitzer, OCTA's designated positions and disclosure category required to file a Form 700 with OCTA's Clerk of the Board was reviewed and updated by the Human Resources and Organizational Development Division and OCTA's General Counsel (Attachment B).

The Human Resources and Organizational Development Division and OCTA's General Counsel reviewed and made changes, as needed, to the designated positions list and standard disclosure categories (Attachment C).

OCTA's Clerk of the Board shall retain the electronic or original Form 700s submitted by all designated positions. The California Fair Political Practices Commission's filing deadline for the 2017 annual Form 700 statement is April 1, 2018.

Summary

The Board of Directors annually reviews and approves the list of designated positions and disclosure categories subject to OCTA's Conflict of Interest Code.

Attachments

A. Conflict of Interest Code for the Orange County Transportation Authority (December 11, 2017)
B. Orange County Transportation Authority Designated Positions and Disclosure Category (December 11, 2017)
C. Orange County Transportation Authority Disclosure Categories (December 11, 2017)

Prepared by:

Laurena Weinert
Clerk of the Board
(714) 560-5676

ATTACHMENT A

CONFLICT OF INTEREST CODE
FOR THE ORANGE COUNTY TRANSPORTATION AUTHORITY

(December 11, 2017)

The Political Reform Act, Government Code Sections 81000, et seq., requires state and local government agencies to adopt and promulgate Conflict of Interest Codes. The Fair Political Practices Commission has adopted a regulation (2 California Code of Regulations Section 18730) which contains the terms of a standard Conflict of Interest Code, which may be incorporated by reference in an agency's code. After public notice and hearing it may be amended by the Fair Political Practices Commission to conform to amendments in the Political Reform Act. Therefore, the terms of 2 California Code of Regulations Section 18730 and any amendments to it duly adopted by the Fair Political Practices Commission are hereby incorporated by reference.

This regulation and the designated officials, designated positions, and disclosure categories, shall constitute the Conflict of Interest Code of the Orange County Transportation Authority.

Upon receipt of the Statement of Economic Interests – Form 700 (Form 700) of the **Members of the Board of Directors, the Chief Executive Officer, the Deputy Chief Executive Officer, the Executive Director of Finance and Administration, and the General Manager, Treasury/Toll Roads,** the Orange County Transportation Authority Clerk of the Board shall retain a copy and forward the original Form 700s to the County of Orange Clerk of the Board of Supervisors.

The Form 700 statements for all other designated positions will be retained by Orange County Transportation Authority's Clerk of the Board.

ATTACHMENT B

ORANGE COUNTY TRANSPORTATION AUTHORITY
DESIGNATED POSITIONS AND DISCLOSURE CATEGORY
(December 11, 2017)

Designated Positions	Disclosure Category
*ANALYSIS PROJECT MANAGER	OC-02
*ASSET MANAGEMENT ADMINISTRATOR	OC-02
ASSISTANT BASE MANAGER	OC-01 ~~OC-02~~
BASE MANAGER	OC-01
*BENEFITS ANALYST	OC-02
*BENEFITS ANALYST PRINCIPAL	OC-02
BENEFITS ANALYST SENIOR	OC-02
BUYER	OC-02
*BUYER ASSOCIATE	OC-02
BUYER SENIOR	OC-02
CHIEF EXECUTIVE OFFICER	OC-01
*CIVIL ENGINEER	OC-01
*CIVIL ENGINEER PRINCIPAL	OC-02
CIVIL ENGINEER SENIOR	OC-02
*CLAIMS MANAGER	OC-01
*CLAIMS REPRESENTATIVE	OC-02
CLAIMS REPRESENTATIVE SENIOR	OC-02
COMMUNITY RELATIONS OFFICER	OC-02
COMPENSATION ANALYST	OC-02
*COMPENSATION ANALYST PRINCIPAL	OC-02
*COMPENSATION ANALYST SENIOR	OC-02
CONSTRUCTION SAFETY SECTION MANAGER	OC-01
*CONSTRUCTION SAFETY OFFICER	OC-02
CONSULTANT - GENERAL COUNSEL	OC-30
*CONSULTANT - REAL PROPERTY	OC-01
CONSULTANT - TRANSIT POLICE SERVICES	OC-30
CONTRACTS ADMINISTRATOR	OC-01
CONTRACTS ADMINISTRATOR ASSOCIATE	OC-02
*CONTRACTS ADMINISTRATOR PRINCIPAL	OC-01
CONTRACTS ADMINISTRATOR SENIOR	OC-01
DATA WAREHOUSE ARCHITECT PRINCIPAL	OC-02
DEPARTMENT MANAGER	OC-01
DEPUTY CEO	OC-01
DEPUTY TREASURER	OC-01
DIRECTOR	OC-01
DIRECTOR (BOARD)	OC-01
*EMPLOYEE PROGRAMS ADMINISTRATOR	OC-02

*List includes all designated positions/not just currently filed positions

ORANGE COUNTY TRANSPORTATION AUTHORITY
DESIGNATED POSITIONS AND DISCLOSURE CATEGORY
(December 11, 2017)

EMPLOYEE PROGRAMS SPECIALIST	OC-02
EXECUTIVE DIRECTOR	OC-01
*FACILITIES ENGINEERING MANAGER	OC-01
FACILITIES MAINTENANCE SUPERVISOR	OC-01
FIELD ADMINISTRATOR	OC-02
*FIELD ADMINISTRATOR SENIOR	OC-02
FINANCIAL ANALYST PRINCIPAL	OC-01
FINANCIAL ANALYST SENIOR	OC-01
GENERAL MANAGER	OC-01
*GIS ANALYST	OC-02
*GIS ANALYST PRINCIPAL	OC-02
GIS ANALYST SENIOR	OC-02
GOVERNMENT RELATIONS REPRESENTATIVE PRINCIPAL	OC-01
GOVERNMENT RELATIONS REPRESENTATIVE SENIOR	OC-01
*HUMAN RESOURCES BUSINESS PARTNER	OC-02
HUMAN RESOURCES BUSINESS PARTNER SENIOR	OC-02
*HUMAN RESOURCES REPRESENTATIVE	OC-02
HUMAN RESOURCES REPRESENTATIVE ASSOCIATE	OC-02
*HUMAN RESOURCES REPRESENTATIVE SENIOR	OC-02
*HEALTH, SAFETY, & ENVIRONMENTAL COMPLIANCE SPECIALIST	OC-02
*HEALTH, SAFETY, & ENVIRONMENTAL COMPLIANCE SPECIALIST PRINCIPAL	OC-02
HEALTH, SAFETY, & ENVIRONMENTAL COMPLIANCE SPECIALIST SENIOR	OC-02
INTERNAL AUDIT SENIOR MANAGER	OC-01
*INTERNAL AUDITOR	OC-01
INTERNAL AUDITOR PRINCIPAL	OC-01
INTERNAL AUDITOR SENIOR	OC-01
*INFORMATION SYSTEMS BUSINESS STRATEGIST	OC-02
*INFORMATION SYSTEMS PROJECT MANAGER I	OC-02
*INFORMATION SYSTEMS PROJECT MANAGER II	OC-02
INFORMATION SYSTEMS PROJECT MANAGER III	OC-01
INFORMATION SYSTEMS SECURITY ANALYST	OC-01~~OC-02~~
*INFORMATION SYSTEMS SECURITY ANALYST ASSOC	OC-01
INFORMATION SYSTEMS SECURITY ANALYST SENIOR	OC-01~~OC-02~~
*LEARNING & DEVELOPMENT ADMINISTRATOR	OC-02
LEARNING & DEVELOPMENT ADMINISTRATOR PRINCIPAL	OC-02
LEARNING & DEVELOPMENT ADMINISTRATOR SENIOR	OC-02
*LOSSAN DEPUTY DIRECTOR RAIL OPERATIONS	OC-01
LOSSAN DEPUTY MANAGING DIRECTOR	OC-01
*LOSSAN MECHANICAL COMPLIANCE OFFICER	OC-02

*List includes all designated positions/not just currently filed positions

ORANGE COUNTY TRANSPORTATION AUTHORITY
DESIGNATED POSITIONS AND DISCLOSURE CATEGORY
(December 11, 2017)

LOSSAN MARKETING & COMMUNICATIONS OFFICER	OC-02
LOSSAN OPERATIONS COMPLIANCE & SAFETY MGR	OC-02
LOSSAN SECTION MANAGER SENIOR	OC-01
LOSSAN TRANSPORTATION ANALYST PRINCIPAL	OC-02
MAINTENANCE FIELD ADMINISTRATOR	OC-02
*MAINTENANCE FIELD ADMINISTRATOR PRINCIPAL	OC-02
MAINTENANCE FIELD ADMINISTRATOR SENIOR	OC-02
MAINTENANCE SUPERVISOR	OC-02
*MEDIA RELATIONS OFFICER	OC-02
MEDIA RELATIONS SPECIALIST SENIOR	OC-02
ORANGE COUNTY TAXI ADMINISTRATION PROGRAM ADMINISTRATOR	OC-01
PROGRAM MANAGEMENT ANALYST	OC-02
PROGRAM MANAGEMENT ANALYST ASSOCIATE	OC-02
PROGRAM MANAGER	OC-01
*PROJECT CONTROLS ANALYST	OC-02
PROJECT CONTROLS ANALYST PRINCIPAL	OC-02
*PROJECT CONTROLS ANALYST SENIOR	OC-02
PROJECT MANAGER I	OC-01
*PROJECT MANAGER II	OC-01
~~PROJECT MANAGER III (All except Tollroad)~~	~~OC-02~~
PROJECT MANAGER III (All)	OC-01
PROJECT MANAGER SENIOR	OC-01
RAIL MAINTENANCE OF WAY ADMINISTRATOR SENIOR	OC-02
*RAIL SYSTEMS SAFETY SPECIALIST PRINCIPAL	OC-02
*REAL PROPERTY AGENT	OC-01
REAL PROPERTY AGENT ASSOCIATE	OC-01~~OC-02~~
*REAL PROPERTY AGENT PRINCIPAL	OC-01
REAL PROPERTY AGENT SENIOR	OC-01~~OC-02~~
RECORDS ADMINISTRATOR	OC-02
STOPS AND ZONES ANALYST	OC-02
STOPS AND ZONES ANALYST ASSOCIATE	OC-02
*STOPS AND ZONES ANALYST SENIOR	OC-02
*STOPS AND ZONES PLANNER	OC-02
*STOPS AND ZONES PLANNER ASSOCIATE	OC-02
*STOPS AND ZONES PLANNER SENIOR	OC-02
*SCHEDULE ANALYST	OC-02
SCHEDULE ANALYST ASSOCIATE	OC-02
SCHEDULE ANALYST SENIOR	OC-02
SECTION MANAGER I (All)	OC-01
~~SECTION MANAGER I (All except Clerk of the Board and State & Federal Program)~~	~~OC-02~~
SECTION MANAGER II (All)	OC-01

*List includes all designated positions/not just currently filed positions

ORANGE COUNTY TRANSPORTATION AUTHORITY
DESIGNATED POSITIONS AND DISCLOSURE CATEGORY
(December 11, 2017)

~~SECTION MANAGER II (OCTA Marketing & Customer Engagement, Financial Planning & Analysis, and Facilities Maintenance Administration)~~	~~OC-02~~
SECTION MANAGER III	OC-01
~~SECTION MANAGER III (Risk Management, Transit Service Planning, and Human Resources)~~	~~OC-02~~
SECTION MANAGER SENIOR	OC-01
SECTION SUPERVISOR I	OC-01
SECTION SUPERVISOR II	OC-01
SECTION SUPERVISOR III	OC-01
SECTION SUPERVISOR IV	OC-01
SERVICE PLANNING ANALYST PRINCIPAL	OC-01
STRATEGIC COMMUNICATIONS MANAGER	OC-01
STRATEGIC COMMUNICATIONS OFFICER	OC-02
STRATEGIC PLAN OFFICER	OC-02
SYSTEMS SOFTWARE ANALYST	OC-02
*SYSTEMS SOFTWARE ANALYST ASSOCIATE	OC-02
SYSTEMS SOFTWARE ANALYST SENIOR	OC-02
*TALENT SPECIALIST	OC-02
TALENT SPECIALIST ASSOCIATE	OC-02
TALENT SPECIALIST SENIOR	OC-02
*TELECOMMUNICATIONS ADMINISTRATOR	OC-02
TRANSPORTATION ANALYST	OC-02
TRANSPORTATION ANALYST PRINCIPAL	OC-02
TRANSPORTATION ANALYST SENIOR	OC-01
TRANSPORTATION FUNDING ANALYST	OC-01
TRANSPORTATION FUNDING ANALYST PRINCIPAL	OC-01
TRANSPORTATION FUNDING ANALYST SENIOR	OC-01
TRANSPORTATION MODELING ANALYST PRINCIPAL	OC-02
*TRANSPORTATION MODELING ANALYST SENIOR	OC-02
*TRANSIT PROJECT MANAGER I	OC-02
TRANSIT PROJECT MANAGER II	OC-02
TRANSIT PROJECT MANAGER III	OC-02
*WEB DEVELOPER	OC-02
WEB DEVELOPER SENIOR	OC-02
WELLNESS COORDINATOR	OC-02
*WORKERS COMPENSATION PROGRAM SPECIALIST	OC-02

*List includes all designated positions/not just currently filed positions

ATTACHMENT C

ORANGE COUNTY TRANSPORTATION AUTHORITY

DISCLOSURE CATEGORIES

(December 11, 2017)

Disclosure Category	Disclosure Category Description
OC-01	All interests in real property in Orange County, as well as investments, business positions, and sources of income (including gifts, loans, and travel payments).
OC-02	All investments, business positions, and sources of income (including gifts, loans, and travel payments).
OC-30	Consultants shall be included in the list of designated positions and shall disclose pursuant to the broadest category in the code subject to the following limitation: The Orange County Transportation Authority (OCTA) Chief Executive Officer may determine that a particular consultant, although a "designated position," is hired to perform a range of duties that is limited in scope and thus is not required to fully comply with the disclosure requirements in this section. Such written determination shall include a description of the consultant's duties and, based upon that description, a statement of the extent of disclosure required. The OCTA Chief Executive Officer's determination is a public record and shall be retained for public inspection by the Filing Officer (OCTA's Clerk of the Board).

COMMITTEE TRANSMITTAL

December 11, 2017

To: Members of the Board of Directors

From: Laurena Weinert, Clerk of the Board

Subject: 2018 Technical Steering Committee Membership

Regional Planning and Highways Committee Meeting of December 4, 2017

Present: Directors Do, Delgleize, Donchak, M. Murphy, and Nelson
Absent: Directors Spitzer and Steel

Committee Vote

This item was passed by the Members present.

Committee Recommendation

Approve the proposed 2018 Technical Steering Committee membership.

December 4, 2017

To: Regional Planning and Highways Committee

From: Darrell Johnson, Chief Executive Officer

Subject: 2018 Technical Steering Committee Membership

Overview

The Orange County Transportation Authority Technical Advisory Committee provides feedback and input on many local streets and roads related items and relies on the Technical Steering Committee to provide guidance on major technical issues. Technical Steering Committee members serve two-year terms, with the exception of one-year terms for the chair and vice-chair. This year, five positions are open for consideration. The 2018 Technical Steering Committee membership list is presented for review and approval.

Recommendation

Approve the proposed 2018 Technical Steering Committee membership.

Background

The Orange County Transportation Authority (OCTA) Technical Advisory Committee (TAC) was established under enabling legislation for the former Orange County Transportation Commission. The TAC provides input regarding the allocation of Measure M2 (M2) competitive grant funds. The TAC also provides technical advice on issues related to streets and roads funding programs to staff. The TAC is comprised of representatives from all Orange County cities, the County of Orange, the California Department of Transportation (Caltrans), and the Transportation Corridor Agencies. The TAC uses a Technical Steering Committee (TSC) to review and discuss major technical issues prior to submittal to the full TAC.

The TSC consists of nine voting members nominated by the TAC and approved by the OCTA Board of Directors (Board). There is one position for each of Orange County's five supervisorial districts, two at-large positions, and the TAC chair and vice-chair, as well as one ex-officio member appointed by the Caltrans District Director. The TSC membership process is coordinated through the City Engineers Association of Orange County (CEAOC), along with the TAC chair,

and is then reviewed by the TAC. In selecting TSC members, priority is given to maintaining a balance between small and large jurisdictions (small jurisdictions currently defined as those with populations equal to/or less than 64,836), as well as consideration for a balance among supervisorial districts. Balance between north and south Orange County jurisdictions is also considered, to the extent practicable.

During the past year, the TSC provided guidance and policy direction on a number of issues related to the annual call for projects (call) for the M2 Regional Capacity Program and the Regional Traffic Signal Synchronization Program. Input from the TSC is essential for the M2 call and project selection.

Discussion

This year, five of the nine regular TSC positions are open for consideration: Chair, Vice-chair, First District, Fifth District, and one At-Large position. The vice-chair has moved to chair and has selected the current TSC representative from the Fourth District to move to the vice-chair role. This leaves a position open for the Fourth District. The first, fourth, and fifth districts, and the at-large position will be designated for two-year terms; the chair and vice-chair serve one-year terms.

In August 2017, OCTA solicited letters of interest from local jurisdictions to fill the vacancies for 2018. The chair of the TAC and the president of the CEAOC received letters nominating eligible TAC members. In accordance with the OCTA Board-approved guidelines for administering the TSC, the president of the CEAOC and the chair of the TAC reviewed these letters of interest. A list of proposed nominations is provided for review and approval.

Consistent with the guidelines and the past practice of the vice-chair assuming the chair position, a recommended 2018 TSC membership list (Attachment A) is presented for review and approval. The recommended list strikes a balance between both the small/large, as well as north/south cities.

Summary

The Technical Steering Committee provides guidance and direction on major technical issues before presentation to the full Technical Advisory Committee. The Technical Steering Committee members serve two-year terms with the exception of the chair and vice-chair (one-year terms). There are five positions up for reappointment in the current year. Presented for approval is a recommended list for the 2018 Technical Steering Committee.

Attachment

A. Proposed 2018 Technical Steering Committee Membership List

Prepared by:

May Hout

May Hout
Interim Section Manager, Local Programs
(714) 560-5905

Approved by:

Kia Mortazavi
Executive Director, Planning
(714) 560-5741

ATTACHMENT A

Proposed 2018 Technical Steering Committee Membership List†

NAME	AGENCY	2015* POPULATION	MEDIAN POPULATION SIZE**	DISTRICT	NORTH/ SOUTH	SEAT EXPIRES
Manuel Gomez	**Irvine**	**250,384**	**Large**	**Chair**	**South**	**December 31, 2018**
Don Hoppe	**Fullerton**	**141,042**	**Large**	**Vice-Chair**	**North**	**December 31, 2018**
Marwan Youssef	**Westminster**	**92,106**	**Large**	**1**	**North**	**December 31, 2019**
Mark Lewis	Fountain Valley	57,201	Small	2	North	December 31, 2018
Doug Stack	Tustin	79,601	Large	3	North	December 31, 2018
Rudy Emami	**Anaheim**	**351,433**	**Large**	**4**	**North**	**December 31, 2019**
Tom Wheeler	**Lake Forest**	**80,070**	**Large**	**5**	**South**	**December 31, 2019**
Steve May	San Juan Capistrano	36,223	Small	At-Large	South	December 31, 2018
Nardy Khan	**County of Orange**	**3,147,655**	**County**	**At-Large**	**North/ South**	**December 31, 2019**

† Shading indicates positions recommended for consideration for the 2018 Technical Steering Committee roster. The incoming chair is responsible for the selection of the vice-chair.

* State of California, Department of Finance, *E-1 Population Estimates for cities, counties, and the state with annual percent change — January 1, 2014 and 2015.* Sacramento, California, May 2015.

** Small jurisdictions currently defined as those with populations equal to/or less than 64,836.

OCTA

December 11, 2017

To: Members of the Board of Directors

From: Darrell Johnson, Chief Executive Officer

Subject: Approval to Release Invitation for Bids for Construction of the Right-of-Way Slope Stabilization Project

Overview

Final plans, specifications, and estimates for work to stabilize and to repair erosion damage to various slopes within the Orange County Transportation Authority-owned railroad right-of-way have been completed. Board of Directors' approval to issue an invitation for bids for construction of the slope stabilization project is requested.

Recommendation

Approve the release of Invitation for Bids 7-2047 for construction of the railroad right-of-way slope stabilization project.

Discussion

The Orange County Transportation Authority (OCTA) received a Federal Transit Administration (FTA) grant for preventative maintenance and to repair existing erosion to avoid slope failures on the railroad right-of-way. OCTA, in conjunction with the Southern California Regional Rail Authority (SCRRA), performed field investigations that identified eight sites currently affected by erosion and/or runoff, which require repair and stabilization to mitigate potential impact to rail operations. The sites are located in the cities of Irvine, Laguna Hills, Lake Forest, Mission Viejo, and San Juan Capistrano, and contain nearly-vertical embankments that range in length from approximately 600 to 3,150 linear feet.

In May 2013, a contract task order was issued to perform a geotechnical evaluation to include potential mitigation recommendations for each of the selected sites. Those recommendations are site-specific and include mitigation alternatives such as grading, installation of additional rip-rap, construction of retaining walls, and shotcrete lining. Furthermore, the evaluation concluded that

delayed maintenance could potentially impact railroad operations by undermining the track bed and/or depositing soil and debris on the railroad tracks.

Final design was completed in September 2017. Based on project design and track work involved at four of the sites, it was determined that SCRRA would lead construction on those sites; this is consistent with prior practices. OCTA will be the project lead for the remaining locations outside of the operating envelope.

Staff is seeking Board of Directors' (Board) approval to release Invitation for Bids (IFB) 7-2047 for construction services for four of the eight sites. SCRRA will be the lead agency for the construction of the remaining four sites due to the complexity and coordination of work with the railroad operations. SCRRA will develop a schedule for construction pending design review.

Procurement Approach

OCTA's procurement policies and procedures require that the OCTA Board approve all IFB's over $1,000,000. Staff is requesting approval from the Board to release IFB 7-2047 for construction of the slope stabilization project (Attachment A). The IFB will be released upon Board approval. The award will be made to the lowest responsive, responsible bidder in accordance with the state law.

Fiscal Impact

The engineer's estimate of bid items for the project is $1,873,437. The project is included in OCTA's Fiscal Year 2017-18 Budget, Capital Programs Division, Account 0018-9084-C5052-0NC, and is funded with an FTA grant.

Summary

Board of Directors' approval is requested to release Invitation for Bids 7-2047 for construction of the railroad right-of-way slope stabilization project.

Attachment

A. Invitation for Bids (IFB) 7-2047, Construction of the Right-of-Way Slope Stabilization Project

Prepared by:

Gerald Ray Smith Jr.
Sr. Rail Maintenance Right-of-Way Administrator
(714) 560-5966

Virginia Abadessa
Director, Contracts Administration and Materials Management
(714) 560-5623

Approved by:

James G. Beil, P.E.
Executive Director, Capital Programs
(714) 560-5646

DECEMBER 11, 2017 BOARD AGENDA

ITEM 14 - APPROVAL TO RELEASE INVITATION FOR BIDS FOR CONSTRUCTION OF THE OC STREETCAR PROJECT

ATTACHMENT A – INVITATION FOR BIDS 7-1904

IS AVAILABLE FOR VIEWING UNDER “MEETING DETAILS” AT:

https://octa.legistar.com/LegislationDetail.aspx?ID=3287232&GUID=9B5D7388-BA23-4705-8781-AB99D75CE0B1&Options=&Search=

INVITATION FOR BIDS (IFB) 7-2047
BOOK 1 OF 2

CONSTRUCTION OF THE RIGHT OF WAY SLOPE STABILIZATION PROJECT

ORANGE COUNTY TRANSPORTATION AUTHORITY
550 South Main Street
P.O. Box 14184
Orange, CA 92863-1584
(714) 560-6282

Key IFB Dates

Issue Date:	**December 11, 2017**
Pre-Bid Conference/Site Visit:	**December 19, 2017**
Questions/Approved Equal Submittal:	**December 27, 2017**
Bid Submittal Date:	**January 16, 2018**

FEDERAL TRANSIT ADMINISTRATION FUNDED PROJECT

TABLE OF CONTENTS

December 11, 2017

SUBJECT: NOTICE INVITING SEALED BIDS
IFB 7-2047, "CONSTRUCTION OF THE RIGHT OF WAY SLOPE STABILIZATION PROJECT"

TO: ALL BIDDERS

FROM: ORANGE COUNTY TRANSPORTATION AUTHORITY

The Orange County Transportation Authority (Authority) invites sealed bids for **CONSTRUCTION OF THE RIGHT OF WAY SLOPE STABILIZATION PROJECT**.

The description of this project is construction of the right of way slope stabilization project.

The estimated cost for this project is $1,873,437.00. Bidders will be required to hold a valid State of California **"A"** license.

The Authority has set a **11%** Disadvantaged Business Enterprise (DBE) participation goal for this project.

Bids must be submitted at or before 11:00 a.m., January 16, 2018.

Bids delivered in person or by a means other than the U.S. Postal Service shall be submitted to the following:

Orange County Transportation Authority
Contracts Administration and Materials Management
600 South Main Street, (Lobby Receptionist)
Orange, California 92868
Attention: Michael Le, Contract Administrator

Or bids delivered using the U.S. Postal Service shall be addressed as follows:

Orange County Transportation Authority
Contracts Administration and Materials Management
550 South Main Street
P.O. Box 14184
Orange, California 92863-1584
Attention: Michael Le, Contract Administrator

Bids and amendments to bids received after the date and time specified above will be returned to the bidders unopened.

Bidders interested in obtaining a copy of this Invitation for Bids (IFB) may do so by downloading the IFB from CAMM NET the Authority's on-line website at https://cammnet.octa.net.

All bidders and sub contractors interested in doing business with the Authority are required to register their business on-line at CAMM NET. The website can be found at https://cammnet.octa.net. From the site menu, click on CAMM NET to register.

To receive all further information regarding this IFB, bidders and sub-contractors must be registered on CAMM NET with at least one of the following commodity codes for this solicitation selected as part of the vendor's on-line registration profile:

Category:	Commodity:
Construction	Construction (General)
	Earthwork / Paving
	Excavation
	General Contractor
	Landscape Contractor
Rail Services	Rail - Landscaping Services
	Rail - Right of Way Maintenance

A pre-bid conference will be held on December 19, 2017, at 9:00 a.m. Immediately following the pre-bid conference, a job walk will be conducted. All prospective bidders are strongly encouraged to attend.

The contract to be awarded is subject to a financial assistance contract between the Orange County Transportation Authority, and the U.S. Department of Transportation. All Bidders will be required to certify that they are not on the Comptroller General's List of Ineligible Contractors.

All bidders are encouraged to subcontract with small businesses to the maximum extent possible.

Bidders will be required to submit the name, business address, and California contractor license number of each subcontractor who will perform work or labor or render service to the bidder in or about the work in an amount in excess of one-half of one percent (1/2 of 1 %) of the bidder's total bid. If a subcontractor's California contractor license number is submitted incorrectly, it will not be grounds for filing a bid protest or grounds for considering the bid nonresponsive if the corrected subcontractor's California contractor license number is submitted to the Authority within 24 hours after the bid opening.

The successful Bidder will be required to comply with all applicable equal opportunity laws and regulations.

Award of this contract is subject to receipt of federal, state and/or local funds adequate to carry out the provisions of the agreement including the project specification.

All bidders must register with the Department of Industrial Relations pursuant to Labor Code Section 1725.5. A bidder is exempt from this requirement pursuant to Labor Code Section 1771.1(a) if the bidder submits a bid authorized by Section 7029.1 of the Business and Professions Code or by Section 10164 or 20103.5 of the Public Contract Code, provided the bidder is registered to perform public work pursuant to Section 1725.5 at the time the contract is awarded.

A bid submitted by a contractor or subcontractor will not be accepted or entered into without proof of the contractor or subcontractor's current registration to perform public work pursuant to Labor Code Section 1725.5.

SECTION I: INSTRUCTIONS TO BIDDERS

SECTION I. INSTRUCTIONS TO BIDDERS

A. PRE-BID CONFERENCE/SITE VISIT

A pre-bid conference will be held on December 19, 2017 at 9:00 a.m. at the Authority's Administrative Office, 550 South Main Street, Orange, California in Conference Room 08. Immediately following the pre-bid conference, a job walk will be conducted within the Authority's owned operating railroad right of way, and includes Sites 2 & 3 within the City of Irvine, Site 5 in the City of Mission Viejo, and Site 7 in the City of Laguna Hills. All prospective bidders are strongly encouraged to attend the pre-bid conference and the site visit.

By investigation of the work site, bidder shall be satisfied as to the nature and location of the work and shall be fully informed as to all conditions and matters, which can in any way affect the work or the cost thereof. Prospective bidders should familiarize themselves with Authority safety rules that require that pedestrians must wear approved safety vests. **Please bring a safety vest, hard hat, appropriate footwear, and safety glasses for the job walk**.

B. EXAMINATION OF DOCUMENTS

By submitting a bid, the bidder represents that it has thoroughly examined and become familiar with the work required under this IFB and that it is capable of performing quality work to achieve the authority's objective.

A Bid Booklet has been furnished as Book 2 of this IFB.

C. ADDENDA

The Authority reserves the right to revise the IFB documents. Such, if any, will be made by written addendum to this IFB. Any written addenda issued pertaining to this IFB shall be incorporated into the terms and conditions of any resulting Agreement. The Authority will not be bound to any modifications to or deviations from the requirements set forth in this IFB as the result of oral instructions. Bidders shall acknowledge receipt of Addenda in their bids. Failure to acknowledge receipt of Addenda may cause the bid to be deemed non-responsive to this IFB and be rejected.

D. AUTHORITY CONTACT

All communication and/or contacts with Authority staff regarding this IFB are to be directed to the following Contract Administrator:

Michael Le, Contract Administrator
Contracts Administration and Materials Management Department
600 South Main Street
P.O. Box 14184
Orange, CA 92863-1584
Phone: 714.560. 5314, Fax: 714.560.5792
Email: mle1@octa.net

Commencing on the date of the issuance of this IFB and continuing until award of the contract or cancellation of this IFB, no bidder, subcontractor, lobbyist or agent hired by the proposer shall have any contact or communications regarding this IFB with any Authority's staff; member of the evaluation committee for this IFB; or any contractor or consultant involved with the procurement, other than the Contract Administrator named above or unless expressly permitted by this IFB. Contact includes face-to-face, telephone, electronic mail (e-mail) or formal written communication. Any bidder, subcontractor, lobbyist or agent hired by the bidder that engages in such prohibited communications may result in disqualification of the proposer at the sole discretion of the Authority.

E. CLARIFICATIONS OF SPECIFICATIONS AND APPROVED EQUALS

1. Specifications Review

Should a bidder find discrepancies in, or omissions from, the drawings or specifications, or be in doubt as to their meaning, the bidder shall notify the Authority in writing in accordance with item 3 ("Submitting Requests"), below. Should it be found that the point in question is not clearly and fully set forth; a written addendum clarifying the matter will be sent to all firms registered on CAMM NET under the commodity codes specified in the IFB.

2. Preference for Materials

In accordance with the California Public Contract Code Section 3400, reference to any equipment, material, article or patented process, by trade name, make, or catalog number, shall not be construed as limiting competition. In those cases where the specifications call for a designated material, product, or service by specific brand or trade name and there is only one brand or trade name listed, the item involves a unique or novel product application required to be used in the public interest or is the only brand or trade name known to the Authority.

Where the specifications or drawings identify any material, product or service by one or more brand names, whether or not “or equal” is added, and the bidder wishes to propose the use of another item as being equal, approval shall be requested as set forth in below.

3. Submitting Requests

a. All requests for approved equals, clarification of specifications, or questions must be put in writing and must be received by the Authority no later than 5:00 p.m., on December 27, 2017.

b. Requests for approved equals, clarifications, questions must be clearly labeled, "Written Questions". The Authority is not responsible for failure to respond to a request that has not been labeled as such.

c. Any of the following methods of delivering written questions are acceptable as long as the questions are received no later than the date and time specified above:

1. U.S. Mail: Orange County Transportation Authority, P.O. Box 14184, Orange, California 92863-1584.

2. Courier/Overnight: Orange County Transportation Authority, 600 South Main Street, 4th floor, Orange, California 92868

3. Facsimile: (714) 560-5792.

4. E-Mail: mle1@octa.net

d. Any request for an approved equal or clarification of the specifications must be fully supported with technical data, test results, or other pertinent information as evidence that the substitute offered is equal to or better than the specification requirements. The burden of proof as to the equality, substitutability, and the compatibility of proposed alternates or equals shall be upon the bidder, who shall furnish all necessary information at no cost to the Authority. The Authority shall be the sole judge as to the equality, substitutability and compatibility of the proposed alternatives or equals.

4. Authority Responses

Responses from the Authority will be posted on CAMM NET, no later than five (5) calendar days before the scheduled date of bid opening. Bidders may download responses from CAMM NET at *https://cammnet.octa.net*, or request responses may be sent via U.S. Mail by e-mailing or faxing the request to Michael Le, Contract Administrator.

To receive e-mail notification of Authority responses when they are posted on CAMM NET, bidders and their subcontractors must be registered on CAMM NET with at least one of the following commodity codes for this solicitation selected as part of the vendor's on-line registration profile:

Category:	Commodity:
Construction	Construction (General)
	Earthwork / Paving
	Excavation
	General Contractor
	Landscape Contractor
Rail Services	Rail - Landscaping Services
	Rail - Right of Way Maintenance

Inquiries received after 5:00 p.m. on December 27, 2017, will not be responded to.

F. SUBMISSION OF BIDS

1. Date and Time

Bids must be submitted at or before 11:00 a.m., January 16, 2018.

Bids received after the time due will be rejected without consideration or evaluation.

Bids will be publicly opened in the Authority's Administration Office, 600 South Main Street, Orange, California 92863 at the submission time indicated above.

2. Address

Bids delivered in person or by a means other than the U.S. Postal Service shall be submitted to the following:

Orange County Transportation Authority
Contracts Administration and Materials Management (CAMM)
600 South Main Street, (Lobby Receptionist)
Orange, California 92868
Attention: Michael Le, Contract Administrator

Or bids delivered using the U.S. Postal Services shall be addressed as follows:

Orange County Transportation Authority
Contracts Administration and Materials Management (CAMM)
P.O. Box 14184
Orange, California 92863-1584
Attention: Michael Le, Contract Administrator

3. Bid Booklet and Identification of Bids

Bids must be submitted on the forms provided in the Bid Booklet (Book 2 of 2) that accompanies this IFB. Bids shall include properly completed bidding forms. The bid forms must be enclosed in a sealed package clearly marked as follows:

IFB 7-2047, "CONSTRUCTION OF THE RIGHT OF WAY SLOPE STABILIZATION PROJECT"

Bidder shall be entirely responsible for any consequences, including disqualification of the bid, resulting from any inadvertent opening of unsealed or improperly identified packages. It is the bidder's sole responsibility to see that its bid is received as required.

G. PRE-CONTRACTUAL EXPENSES

The Authority shall not, in any event, be liable for any pre-contractual expenses incurred by bidder in the preparation of its bid. Bidder shall not include any such expenses as part of its bid.

Pre-contractual expenses are defined as expenses incurred by bidder in:

1. Preparing a bid in response to this IFB;
2. Submitting that bid to the Authority;
3. Negotiating with the Authority any matter related to this bid; and
4. Any other expenses incurred by bidder prior to date of award, if any, of the Agreement.

H. JOINT BIDS

Where two or more firms desire to submit a single bid in response to this IFB, they should do so on a prime-subcontractor basis rather than as a joint venture. The Authority intends to contract with a single firm and not with multiple firms doing business as a joint venture.

I. TAXES

Bids are subject to State and Local sales taxes. However, the Authority is exempt from the payment of Federal Excise and Transportation Taxes. Contractor is responsible for payment of all taxes for any goods, services, processes, and operations incidental to or involved in the contract.

J. BID SECURITY FORMS

Bids shall be accompanied by a certified or cashier's check, or an acceptable bid bond for an amount not less than ten percent (10%) of the bid, made payable to the order of the Orange County Transportation Authority. A corporate surety (not an individual surety), registered in the state of California and registered to do business in the county of Orange must issue bid bonds. Said check or bond shall be given as a guarantee that the bidder will enter into a contract if awarded the work and in case of refusal or failure to enter into said contract, the check or bond, as the case may be, shall be forfeited to the Authority.

K. WITHDRAWAL OF BIDS

Bidders may withdraw its bid at any time prior to the time set for opening of bids by means of written request signed by the bidder or its proper authorized representative. Such written request shall be delivered to the Contracts Administrator at the address noted in the cover notice of this IFB.

L. PREVAILING WAGES

This project is funded under a financial assistance contract by the U.S. Department of Transportation and is subject to all conditions of the Davis-Bacon Act (40 U.S.C. 3141–48), as supplemented by the Department of Labor regulations 29 CFR part 5, and the Labor Code of the State of California commencing in Section 1770 et. seq. It is required that all mechanics and laborers employed or working at the site be paid not less than the current basic hourly rates of pay and fringe benefits. Wage schedules are available at the Authority's Offices or on the internet at:

http://www.dir.ca.gov/OPRL/statistics_research.html and
http://www.access.gpo.gov/davisbacon/.

Bidders shall utilize the relevant prevailing wage determinations in effect on the first advertisement date of the Notice Inviting Sealed Bids. In the event there are any differences between the minimum wage rates as determined by the United States Secretary of Labor and those determined by the State of California, the highest rate must be paid.

This contract is subject to requirements promulgated by the California Department of Industrial Relations. The reporting requirements may be found at https://www.dir.ca.gov/Public-Works/Contractors.html The Contractor is responsible for complying with all requirements of the California Department of Industrial Relations, including filing electronic payroll reports.

A contractor or subcontractor will not be qualified to bid on, be listed in a bid proposal, or engage in the performance of any contract for public work on a public works project unless registered with the Department of Industrial Relations pursuant to Labor Code Section 1725.5. A contractor or subcontractor will be exempt from this requirement pursuant to Labor Code Section 1771.1(a) if it submits a bid authorized by Section 7029.1 of the Business and Professions Code or by Section 10164 or 20103.5 of the Public Contract Code, provided the contractor is registered to perform public work pursuant to Section 1725.5 at the time the contract is awarded.

A contractor or subcontractor will not be awarded a contract for public work on a public works project unless registered with the Department of Industrial Relations pursuant to Labor Code Section 1725.5.

A bid submitted by a contractor or subcontractor will not be accepted or entered into without proof of the contractor or subcontractor's current registration to perform public work pursuant to Labor Code Section 1725.5.

M. SUBCONTRACTORS AND ASSIGNMENTS

The successful bidder shall perform work equivalent to **at least ten percent (10%) of the total amount of the construction work** at the site; and, perform the work on the site with its own staff.

Pursuant to the provisions of the California Public Contract Code Section 4104, every bidder shall in the bid set forth:

1. The name, business address, and California contractor license number of each subcontractor who will perform work or labor or render service to the bidder in or about the work in an amount in excess of one-half of one percent (1/2 of 1 %) of the bidder's total bid; and

2. The portion of the work that will be done by each subcontractor. The bidder shall list only one subcontractor for each portion of work as defined by the bidder in its bid.

3. The dollar amount of the work, which will be done by each such subcontractor.

Bidder shall complete Exhibit D "List of Subcontractors" with the above requested information.

If a subcontractor's California contractor license number is submitted incorrectly in the bid, it will not be grounds for filing a bid protest or grounds for considering the bid nonresponsive if the corrected subcontractor's California contractor license number is submitted to the Authority within 24 hours after the bid opening.

If the bidder fails to specify a subcontractor for any portion of the work to be performed under the contract in excess of one-half of one percent (1/2 of 1 %) of the bidder's total bid, or if the bidder specifies more than one (1) subcontractor for the same portion of the work to be performed under the contract in excess of one-half of one percent (1/2 of 1 %) of the bidder's total bid, the bidder agrees to perform that portion. **The successful bidder shall not, without the express written consent of the Authority, either:**

1. Substitute any person, firm, or corporation as subcontractor in place of the subcontractor designed in the original bid; or

2. Permit any subcontract to be assigned or transferred; or

3. Allow it to be performed by anyone other than the original subcontractor listed in the bid.

Each Bidder shall set forth in its bid the name and location of the place of business address of each subcontractor certified as a Disadvantaged Business Enterprise who will perform work or labor or render service to the prime contractor in connection with the performance of the contract.

Bidder shall not assign any interest it may have in any Agreement with the Authority, nor shall bidder assign any portion of the work under any such Agreement with a value in excess of one-half of one percent (1/2 of 1%) of Agreement price to be sub-contracted to any one other than these subcontractors listed in Exhibit D in the "List of Subcontractors," except by prior written consent of Authority. Authority's consent to any assignment shall not be deemed to relieve bidder of its obligations to fully comply with its obligations under its Agreement with the Authority. Bidder with its own forces shall perform minimum of ten percent (10%) (calculated as a percentage of the total cost of the project) under this Agreement. Bidder shall also include in its subcontract agreements the provisions of its Agreement with Authority including the stipulation that each subcontractor shall maintain adequate insurance coverage compatible to the insurance coverage required of the bidder.

N. BIDDER'S LICENSING REQUIREMENTS

In conformance with the current statutory requirements of Section 7028.15 of the Business and Professions Code of the State of California, regarding submission of a bid without a license, the bidder shall provide as part of the bid a valid State of California license number, class or type and date of expiration.

Furthermore, the bidder shall ensure that all subcontractors fully comply with the appropriate licensing requirements. The bidder shall also certify that all information provided and representations made in the bid are true and correct, and made under penalty of perjury. Bidders shall provide this information on Exhibit D, "List of Subcontractors" presented in the IFB. Failure to provide the information on the certification form or elsewhere as part of the bid shall render the bidder nonresponsive to this solicitation and will result in the rejection of the bid.

O. PERMITS AND INSPECTION COSTS

Successful bidder shall procure all permits and licenses; pay all charges, assessments and fees, as may be required by the ordinances and regulations of the public agencies having jurisdiction over the areas in which the work is located, and shall comply with all the terms and conditions thereof and with all lawful orders and regulations of each such public agency relating to construction operations under the jurisdiction of such agency.

P. LIQUIDATED DAMAGES

In the event bidder, after entering into an Agreement with the Authority, fails to complete the work within the time specified in the Agreement, the bidder will be required to pay the Authority the amount of **$1,700.00 per calendar day** of delay as agreed to liquidated damages.

Q. PROTEST PROCEDURES

The Authority has on file a set of written protest procedures applicable to this solicitation that may be obtained by contacting the Contract Administrator responsible for this procurement. Any protest filed by a bidder in connection with this IFB must be submitted in accordance with the Authority's written procedures.

R. CONTRACT AWARD

Any contract awarded as a result of this IFB, will be awarded to the lowest responsive and responsible bidder and shall be on a lump sum basis, in accordance with the requirements of this IFB. The contract to be awarded is the Agreement presented in Section VI of this IFB.

S. EXECUTION OF CONTRACT

The successful bidder shall submit to the Authority the required contract bonds, "Guaranty" and acceptable insurance certificates within ten (10) calendar days after notification of contract award from the Authority. Failure to sign the contract and submit applicable bonds, "Guaranty", and acceptable insurance certificates within the specified time shall be cause to cancel the award and the forfeiture of the Bid Bond. Transfers of contract, or of interest in contracts, are prohibited.

T. AUTHORITY'S RIGHTS

1. The Authority reserves the right to accept or reject any and all bids, or any item or part thereof, or to waive any informalities or irregularities in bids.

2. The Authority reserves the right to withdraw or cancel this IFB at any time without prior notice. The Authority makes no representations that any contract will be awarded to any bidder responding to this IFB.

3. The Authority reserves the right to issue a new IFB for the project.

4. The Authority reserves the right to postpone the bid opening for its own convenience.

5. Each bid will be received with the understanding that acceptance by the Authority of the bid to provide the goods and services described herein shall constitute a contract between the bidder and Authority which shall bind the bidder on its part to furnish and deliver at the prices given and in accordance with conditions of said accepted bid and specifications.

6. The Authority reserves the right to investigate the qualifications of any bidder, and/or require additional evidence of qualifications to perform the work.

7. Submitted IFBs are not to be copyrighted.

U. PUBLIC RECORDS AND INFORMATION

Bids received by Authority are considered public information and will be made available to the public if requested to do so.

V. CONFLICT OF INTEREST

All bidders responding to this IFB must avoid organizational conflicts of interest, which would restrict full and open competition in this procurement. An organizational conflict of interest means that due to other activities, relationships or contracts, a bidder is unable, or potentially unable to render impartial assistance or advice to the Authority; a bidder's objectivity in performing the work identified in the Project Specifications is or might be otherwise impaired; or a bidder has an unfair competitive advantage. Conflict of Interest issues must be fully disclosed in the bidder's bid.

W. CODE OF CONDUCT

Bidders agree to comply with the Authority's Code of Conduct as it relates to Third-Party contracts, which is hereby referenced and by this reference is incorporated herein. Bidders agree to include these requirements in all of its subcontracts.

SECTION II: INSTRUCTIONS TO BIDDING FORMS

SECTION II. INSTRUCTIONS TO BIDDING FORMS

The Bidder shall complete all the forms identified below, and contained in the Bid Booklet Book 2 of this IFB. The bid may not contain exceptions to or deviations from the requirements of this IFB.

A. BID FORM

The bidder must complete and execute the Bid Form, which must be submitted in its entirety. Failure to submit the executed Bid Form in its entirety will result in the bid being non-responsive. In addition to providing the lump sum bid, the bidder affirms the Bid Form statements.

B. BID SECURITY FORM - BID BOND

The bidder shall include the Bid Security Form and include the appropriate bid bond or cashier check with the bid.

C. INFORMATION REQUIRED OF BIDDER

Bidder must provide all the information requested in this form.

D. NOTICE OF REQUIREMENT FOR AFFIRMATIVE ACTION TO ENSURE EQUAL EMPLOYMENT OPPORTUNITY (EXECUTIVE ORDER 11246) (NO FORM REQUIRED)

The bidder shall include the Notice of Requirement for Affirmative Action to Ensure Equal Employment Opportunity provides notice to Bidder regarding the "Equal Opportunity Clause" and the "Standard Federal Equal Employment Opportunity Construction Contract Specifications".

E. BIDDER'S CERTIFICATE OF COMPLIANCE - WORKERS' COMPENSATION INSURANCE

In conformance with current statutory requirements of Section 1860, et. seq., of the Labor Code of the State of California, bidder shall execute the bidder's Certificate of Compliance Regarding Workers' Compensation Insurance.

F. BIDDER'S CERTIFICATE OF COMPLIANCE - BUSINESS AND PROFESSIONS CODE SECTION 7028

Bidder shall execute the Bidder's Certificate of Compliance Regarding State of California Business and Professions Code Section 7028.15.

G. LIST OF SUBCONTRACTORS FORM

Bidder shall complete Exhibit D, which lists all subcontractors performing work in excess of one-half of one percent (½ of 1%) of the bid amount per the instructions set forth in Section I "Instructions to Bidders".

H. CERTIFICATION REGARDING DEBARMENT, SUSPENSION AND OTHER RESPONSIBILITY MATTERS - PRIMARY PARTICIPANT AND LOWER-TIER PARTICIPANTS (NO FORM REQUIRED)

Unless otherwise permitted by law, any person or firm that is debarred, suspended, or voluntarily excluded may not take part in any federally funded transaction, as either a participant or a principal, during the period of debarment, suspension, or voluntary exclusion. Accordingly, the Authority may not enter into any transaction with such debarred, suspended, or voluntarily excluded persons or firms during such period. Debarment is defined in 2 CFR Section 180.925, suspension is defined in 2 CFR Section 180.1015, and voluntary exclusion or voluntary excluded is defined in 2 CFR Section 180.1020. (These provisions apply to each contract and any tier, equal or greater than $25,000).

I. STATUS OF PAST AND PRESENT CONTRACTS FORM

Bidder is required to complete and sign the form entitled “Status of Past and Present Contracts” provided in this IFB and submit as part of the bid. Bidder shall identify the status of past and present contracts where the firm has either provided services as a prime vendor or a subcontractor during the past five (5) years in which the contract has been the subject of or may be involved in litigation with the contracting authority. This includes, but is not limited to, claims, settlement agreements, arbitrations, administrative proceedings, and investigations arising out of the contract. Bidder shall have an ongoing obligation to update the Authority with any changes to the identified contracts and any new litigation, claims, settlement agreements, arbitrations, administrative proceedings, or investigations that arise subsequent to the submission of the bid.

A separate form must be completed for each identified contract. Each form must be signed by the Bidder confirming that the information provided is true and accurate. Bidder is required to submit one copy of the completed form(s) as part of its bid.

J. CERTIFICATION OF NON-COLLUSION

This form requires the Bidder to certify that the bid is not collusive or a sham. This form is to be signed, dated and is part of the bid package in Book 2 of 2.

K. DISADVANTAGED BUSINESS ENTERPRISE

Bidders shall complete the following forms set forth in "DISADVANTAGED BUSINESS ENTERPRISE (DBE) PROVISIONS FOR DOT-ASSISTED CONTRACTS":

- DBE Participation Commitment(s) Form
- Bidders List
- DBE Information – Good Faith Efforts

L. IRAN CONTRACTING ACT CERTIFICATION

This form requires the Bidder to certify that the Bidder is not engaged in specified investment activities in the energy sector of Iran. (Required if the bid is equal or greater than $1,000,000).

M. "BUY AMERICA" REQUIREMENTS

If the bid is valued for greater than one hundred and fifty thousand dollars ($150,000), Bidder is required to complete the form titled "Bidder's Certificate Regarding 'Buy America' Requirements for Steel, Iron, or Manufactured Products." This form requires Bidder to certify that it will meet the requirements of 49 U.S.C. 5323(j) and the applicable regulations in 49 C.F.R. Part 661.

N. DISCLOSURE OF LOBBYING ACTIVITIES

This form requires the bidder to certify compliance with the lobbying requirements of 31 U.S.C. Section 1352 and the applicable regulations under 49 CFR Part 19 and 20. (Required if the bid is equal or greater than $100,000).

OCTA

BID FORM

The undersigned hereby proposes to perform all work for which a contract may be awarded and to furnish any and all plant, labor, services, material, tools, equipment, supplies, transportation, utilities, and all other items and facilities necessary therefore as required in the **IFB 7-2047**, **"CONSTRUCTION OF THE RIGHT OF WAY SLOPE STABILIZATION PROJECT"**, and to do everything required therein; and further proposes that, if this bid is accepted, will contract in the form and manner stipulated to perform all the work in strict conformity therewith within the time limits set forth therein, and will accept as full payment therefore, the following price:

ITEM	DESCRIPTION / BID ALLOWANCES	LUMP SUM PRICE
1	**Bid Base**: Construction of the Right of Way Slope Stabilization Project	$
2	**Bid Allowance**: SCRRA Form No. 5 (Review, Admin, Training Fees)	$ 2,500.00
3	**Bid Allowance**: SCRRA Operations and Customer Service Support	$ 500.00
4	**Bid Allowance**: SCRRA Flagging Services (124 Days)	$ 232,600.00
5	**Total Lump Sum Bid Amount (Includes Base Bid and Allowance Amounts)**	$

NOTE: The Bidder shall complete the Bid Form in its entirety. The "allowance" amounts allocated shall be inclusive of the total lump sum bid amount.

Refer to the Project Specifications, Exhibit B, for a complete description of the work. The Description in this form only serves the purpose of a title.

Allowance. Refer to the Project Specifications, Exhibit B, for more information about Items identified as an Allowance.

In the case of an error in the entry of the "Total Lump Sum Bid Amount", the Authority will correct these discrepancies accordingly, and the corrected "Total Lump Sum Bid Amount" determined by the Authority shall be final.

A responsible bidder who submitted the lowest "Total Lump Sum Bid Amount" as determined by this section shall be awarded the contract, if it is awarded.

BID FORM, PAGE 2

1. Bidder has thoroughly examined and become familiar with the work required and documents included under this IFB. The bidder understands that the award of the contract, if it is awarded, will be based on the lowest total bid submitted by a responsive and responsible bidder, and further, that the amounts and the total on the Bid Form will be subject to verification by the Authority.

2. By investigation at the site of the work and otherwise, it is satisfied as to the nature and location of the work and is fully informed as to all conditions and matters, which can in any way affect the work or the cost thereof.

3. Bidder fully understands the scope of the work/specifications and has checked carefully all words and figures inserted in said Invitation For Bids (IFB) and further understands that the Authority will in no way be responsible for any errors or omissions in the preparation of this bid. Bidder further asserts that it is capable of performing quality work to meet Authority's requirements.

4. Bidder will execute the Agreement and furnish the required Performance and Payment Bonds, Guaranty and proof of insurance coverage within ten (10) calendar days after notice of acceptance of bid by the Authority; and further, that this bid may not be withdrawn for a period of 120 calendar days after the date set for the opening thereof, unless otherwise required by law. If any bidder shall withdraw its bid within said period, the bidder shall be liable under the provisions of the Bid Security, or the bidder and the surety shall be liable under the Bid Bond, as the case may be.

5. Bidder hereby certifies that this bid is genuine and not a sham or collusive or made in the interest or on behalf of any person not herein named, and the undersigned has not directly or indirectly induced or solicited any other bidder to put in a sham bid, or any other person, firm, or corporation to refrain from bidding; the undersigned has not in any manner sought by collusion to secure for himself an advantage over any other bidder.

6. In conformance with current statutory requirements of Section 1860, et. seq., of the Labor Code of the State of California, the Bidder shall execute the document included in this IFB entitled "Bidder's Certificate of Compliance Regarding Workers' Compensation Insurance."

7. Bidder hereby further certifies that each, and every representation made in this bid are true and correct and made under penalty of perjury.

BID FORM, PAGE 3

8. Bidder shall permit the authorized representative of the Authority to inspect and audit all data and records of bidder relating to this bid, and if awarded a contract resulting from this bid, shall permit such inspection and audit of all data and records of bidder related to bidder's performance of such contract.

9. Bidder does not employ anyone who is now, or for one (1) year immediately prior to the date of this offer was, a director, officer, member, or employee of the Orange County Transportation Authority. The undersigned has not agreed to pay a fee contingent upon the award of a contract resulting from this bid to anyone who is now, or for one (1) year immediately prior to the date of this bid was, a director, officer, member, or employee of the Orange County Transportation Authority. No member of or delegate to the Congress of the United States shall be admitted to any share of the contract or to any benefit arising therefrom.

10. If awarded a contract resulting from this bid, bidder shall not discriminate against any employee or applicant for employment because of race, religion, color, sex, age or national origin. The bidder shall take affirmative action to ensure that applicants are employed, and that employees are treated during their employment, without regard to their race, religion, color, sex, age or national origin. Such actions shall include, but not be limited to the following: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship.

11. If awarded a contract resulting from this bid, Bidder will cooperate with the Authority in meeting commitments and goals with regard to the maximum utilization of DBE firms and will use its best efforts to ensure that DBE firms shall have the maximum practicable opportunity to compete for subcontract work under such contract.

12. Bid will be in effect for 120 calendar days after the bid closing date.

BID FORM, PAGE 4

Now: In compliance with the **Invitation For Bids 7-2047**, **"CONSTRUCTION OF THE RIGHT OF WAY SLOPE STABILIZATION PROJECT"**, the undersigned, with full cognizance thereof, hereby proposes to perform the entire work in strict compliance with all of the said requirements and provisions for the prices set forth herein upon which award of contract is made. The undersigned affirms that the information provided herein is true and accurate and that any misrepresentations are made under penalty of perjury.

Dated _____ , 201_ Bidder _____

The above bid includes Signature _____

Addenda Nos. _____ Name _____

Title _____

Bidder's Authorized Representative _____

Title _____

Telephone # _____

Fax # _____

Email Address _____

Bidders post office address _____

_____

_____

Corporation organized under the laws of the State of _____

Contractor's License No. _____

Expiration Date of License _____

Surety or sureties _____

_____

(CORPORATE SEAL)

BID SECURITY FORM
BID BOND

KNOW ALL MEN BY THESE PRESENTS:

That, _____ as principal and Bidder and _____ as Surety, are held and firmly bound unto the Orange County Transportation Authority, of State of California, hereinafter referred to as "Authority," in the sum of _____ Dollars ($_____), to be paid to the Authority, its successors, and assigns; for which payment, well and truly to be made, bind themselves, their heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents, this amount being ten percent (10%) of the total amount of the Bid.

THE CONDITION OF THIS OBLIGATION IS SUCH, that if the certain bid of the above named bounden principal _____ _____ for_____ at the Orange County Transportation Authority's _____ as specifically set forth in documents entitled **IFB 7-2047**, **"CONSTRUCTION OF THE RIGHT OF WAY SLOPE STABILIZATION PROJECT"**, shall not be withdrawn within a period of 120 calendar days after the date set for the opening of bids, (unless otherwise required by law, and notwithstanding the award of the contract to another Bidder), and that if said bid is accepted by the Authority through action of its legally constituted contracting authorities and if the above bounden_____ its heirs, executors, administrators, successors and assigns, shall execute a contract for such construction and deliver the required Performance and Payment Bonds, "Guaranty," and proof of insurance coverage within ten (10) calendar days after notification of contract award from the Authority, then this obligation shall become null and void; otherwise it shall be and remain in full force and effect.

IN WITNESS WHEREOF, we hereunto set our hands and seals this _____ day of _____, 201_.

_____
_____

NOTE: The standard printed bond form of any bonding company acceptable to the Authority may be used in lieu of the foregoing approved sample bond form provided the security stipulations protecting the Authority are not in any way reduced by use of the security company's printed standard form.

BID SECURITY FORM
CHECK TO ACCOMPANY BID

(NOTE: The following form shall be used in case check accompanies bid)

Accompanying this bid is a Certified or Cashiers check (circle the appropriate one) payable to the order of Orange County Transportation Authority, hereinafter referred to As "Authority" for_____ dollars ($_____), this amount being ten percent (10%) of the total amount of the Bid submitted in response to **IFB 7-2047, "CONSTRUCTION OF THE RIGHT OF WAY SLOPE STABILIZATION PROJECT"**. The proceeds of this check shall become the property of Authority provided this bid shall be accepted by Authority through action of its legally constituted contracting authorities and the undersigned shall fail to execute a contract and furnish the required Guaranty Form, Performance and Payment Bonds and proof of insurance coverage within ten (10) calendar days after date of notification of contract award from the Authority. The proceeds of this check shall also become the property of the Authority if the undersigned bidder withdraws the bid within the period of 120 days after the date set for the opening thereof, unless otherwise required by law, and notwithstanding the award of the contract to another bidder. Otherwise, the check shall be returned to the undersigned.

Bidder: _____

Signature: _____

Date: _____

NOTE: If the bidder desires to use a bond instead of check, the Bid Bond form shall be executed and the sum of this bond shall be ten percent [10%] of the total amount of the bid.

INFORMATION REQUIRED OF BIDDER

The bidder is required to supply the following information. Additional sheets may be attached if necessary.

1. Name of Bidder: _____
2. Business Address: _____
3. Telephone ( )_____ Fax ( )_____E-Mail_____
4. Type of Firm - Individual, Partnership or Corporation: _____
5. Corporation organized under the laws of state of: _____
6. Contractor's License No.: _____ Class: _____ Years of Experience:__
7. Expiration Date of License: _____
8. Is your firm a certified small business in California? Yes____ No____
9. List the names and addresses of all owners of the firm or names and titles of all officers of the corporation:

_____

_____

INFORMATION REQUIRED OF BIDDER, PAGE 2

10. Please list the following: a) All prior and current license numbers that the current owner(s) or officers possess or have possessed in the last five years and the current status of those license; b) any prior company names that the owner(s) had in operation during the previous five years.

Current Officers or Owners Name	Prior Company Names (During the last 5 years)	Prior and Current License Numbers	Status of License

Note: If additional space is required to detail the information requested, please attach another page. All information requested must be included. Failure to identify all of the information may result in your bid being found non-responsive and your bid being rejected.

11. List all construction projects (public and private) for which Bidder has provided general contractor services for the past three years:

Contract Type (Public or Private)	Project Description	Dates of Service	Total Cost	Name and Address of Owner	Contact Name and Phone Number

Note: If additional space is required to detail the information requested, please attach another page. All information requested must be included. Failure to identify all of the

information, may result in your bid being found non-responsive and your bid being rejected.

12. List the name, address and phone number of Superintendent for this project:

_____

13. List all construction projects (public and private) for which Superintendent has provided services as a Superintendent for the past three years.

Contract Type (Public or Private)	Project Description	Dates of Service	Total Cost	Name and Address of Owner	Contact Name and Phone Number

Bidder hereby certifies that it:

_____ is a certified Disadvantaged Business Enterprise as defined herein.

_____ is not a Disadvantaged Business Enterprise as defined herein.

NOTE: If requested by the Authority, bidder shall furnish a certified financial statement, financial data, or other information and references sufficiently comprehensive to permit an appraisal of its current financial condition.

I hereby certify the above is true and correct to the best of my belief.

_____
Signature

_____
Name

_____
Title

_____
Company Name

_____
Telephone Number

_____
Fax Number

_____
Email Address

NOTICE OF REQUIREMENT FOR AFFIRMATIVE ACTION TO ENSURE EQUAL EMPLOYMENT OPPORTUNITY (EXECUTIVE ORDER 11246)

1. The Bidders' attention is called to the "Equal Opportunity Clause" and the "Standard Federal Equal Employment Opportunity Construction Contract Specifications" set forth herein.

2. The goals and timetables for minority and female participation, expressed in percentage terms for the Contractor's aggregate work force in each trade on all construction work in the covered area, are as follows:

   Timetable Goals for Minority Participation for Each Trade (11.9)

   Goals for Female Participation in Each Trade (6.9)

   These goals are applicable to all the Contractor's construction work (whether or not it is federal or federally assisted) performed in the covered area.

   The Contractor's compliance with the Executive Order and the regulations in 41 C.F.R. Part 60-4 shall be based on its implementation of the Equal Opportunity Clause, specific affirmative action obligations required by the specifications set forth in 41 C.F.R. 60-4.3 (a), and its efforts to meet the goals established for the geographical area where the contract resulting from this solicitation is to be performed. The hours of minority and female employment and training must be uniform throughout the length of the contract, and in each trade, and the Contractor shall make a good faith effort to employ minorities and women evenly on each of its projects. The transfer of minority or female employees or trainees from contractor to contractor or from project to project for the sole purpose of meeting the contractor's goals shall be a violation of the contract, the Executive Order and the regulations in 41 C.F.R. Part 60-4. Compliance with the goals will be measured against the total work hours performed.

3. The Contractor shall provide written notification to the Director of the Office of Federal Contract Compliance Programs within ten (10) working days of award of any construction subcontract in excess of $10,000 at any tier for construction work under the contract resulting from this solicitation. The notification shall list the name, address and telephone number of the subcontractor; employer identification number; estimated dollar amount of the subcontract; estimated starting and completion dates of the subcontract; and the geographical area in which the contract is to be performed.

4. As used in this Notice, and in the contract resulting from this solicitation, the "covered area" includes the County of Orange, California.

BIDDER'S CERTIFICATE OF COMPLIANCE REGARDING WORKERS' COMPENSATION INSURANCE

In conformance with current statutory requirements of Section 1860, et. seq., of the Labor Code of the State of California, the undersigned confirms the following certification:

> "I am aware of the provisions of Section 3700 of the Labor Code which require every employer to be insured against liability for Workers' Compensation or to undertake self-insurance in accordance with the provisions of that code and I will comply with such provisions before commencing the performance of the work of this Contract."

Name of Bidder/Contractor:_____

Signature: _____

Title: _____

Date: _____

BIDDER'S CERTIFICATE OF COMPLIANCE REGARDING STATE OF CALIFORNIA BUSINESS AND PROFESSIONS CODE SECTION 7028.15

Contractor License Number: _____

Expiration Date of Contractor's License: _____

Each, every and all of the representations made by Bidder in the attached bid are true and correct.

Name of Bidder/Contractor: _____

Signed: _____

Title: _____

Subscribed to and sworn before me, a Notary Public in and for the State of California, on _____, 201___.

_____
Notary Public

My commission expires on:

_____, 201_
(NOTARY SEAL)

LIST OF SUBCONTRACTORS (EXHIBIT D)

List only the subcontractors, which will perform work or labor or render services to the bidder in excess of one-half of one percent (1/2 of 1%) of the bidder's total bid amount. Do not list alternative subcontractors for the same work. (Use additional sheets if necessary.)

Name & Address Under Which Subcontractor is Licensed	License Number	DIR Registration No.	Specific Description of Work to be Rendered	Small Business Y/N	Type*	Dollar Amount
						$
						$
						$
						$
						$
						$
TOTAL VALUE OF SUBCONTRACTED WORK						$

Bidder's Name _____

STATUS OF PAST AND PRESENT CONTRACTS FORM

On the form provided below, Bidder shall list the status of past and present contracts where the firm has either provided services as a prime vendor or a subcontractor during the past five (5) years in which the contract has been the subject of or may be involved in litigation with the contracting authority. This includes, but is not limited to, claims, settlement agreements, arbitrations, administrative proceedings, and investigations arising out of the contract.

A separate form must be completed for each contract. Bidder shall provide an accurate contact name and telephone number for each contract and indicate the term of the contract and the original contract value. Bidder shall also provide a brief summary and the current status of the litigation, claims, settlement agreements, arbitrations, administrative proceedings, or investigations. If the contract was terminated, list the reason for termination.

Bidder shall have an ongoing obligation to update the Authority with any changes to the identified contracts and any new litigation, claims, settlement agreements, arbitrations, administrative proceedings, or investigations that arise subsequent to the submission of the bid. Each form must be signed by an officer of the Bidder confirming that the information provided is true and accurate.

Project city/agency/other:
Contact Name: **Phone:**
Project Award Date: **Original Contract Value:**
Term of Contract:
(1) Litigation, claims, settlements, arbitrations, or investigations associated with contract:
(2) Summary and Status of contract:
(3) Summary and Status of action identified in (1):
(4) Reason for termination, if applicable:

By signing this Form entitled "Status of Past and Present Contracts," I am affirming that all of the information provided is true and accurate.

_____ _____

Name Signature

_____ _____

Title Date

Last Rev. 03/15/2017

Non-Collusion Affidavit

To the Orange County Transportation Authority

In accordance with Title 23 United States Code Section 112 and Public Contract Code 7106 the bidder declares that the bid is not made in the interest of, or on the behalf of, any undisclosed person, partnership, company, association, organization or corporation; that the bid is genuine and not collusive or sham; that the bidder has not directly or indirectly induced or solicited any other bidder to put in a false or sham bid, or that anyone shall refrain from bidding; that the bidder has not in any manner, directly or indirectly, sought by agreement, communication, or conference with anyone to fix the bid price of the bidder or any other bidder, or to fix any overhead, profit, or cost element of the bid price, or of that of any bidder, or to secure any advantage against the public body awarding the contract of anyone interested in the proposed contract; that all statements contained in the bid are true; and, further, that the bidder has not, directly, or indirectly, submitted his or her bid price or any breakdown thereof, or the contents thereof, or divulged information or data relative thereto, or paid, and will not pay, any fee to any corporation, partnership, company association, organization, bid depository, or to any member or agent thereof to effectuate a collusive or sham bid.

Name of Bidder:_____

Signature:_____

Date:_____

DBE Participation Commitment(s) Form

NOTE: Please refer to instructions on the reverse side of this form.

Bidder to Complete this Section

1. IFB No.:_____

2. Project Name/Description: _____

3. Prime Bidder Name: _____

4. Contract DBE Goal %: _____

DBE Commitment Information

5. Bidded DBE Firm (Name and Address)	**6.** DBE Certification Number	**7.** Description of Scope of Services/Work to be Provided	**8.** Dollar Value ($) and/or Percentage (%) Of Contract	**9.** Percentage (%) of Work to be Performed by DBE Firm(s)

Note: The bidder shall also submit, for each DBE to perform under this contract a written confirmation from the DBE acknowledging that it is participating in the contract for a specified value, including the corresponding scope of work (a subcontract bid can serve in lieu of the written confirmation).

10. Total Value Claimed ($)

$ _____

11. Total DBE (%) Claimed towards Goal:

_____ %

Bidder Assurance: The information on this form is complete and accurate and the bidder certifies that all DBE certifications and written confirmation documentation have been submitted to support the bidded DBE Commitment.

_____	_____	_____
12. Preparer's Name (Print)	**13.** Preparer's Signature	**14.** Preparer's Title
_____	_____	_____
15. Date	**16.** (Area Code) Tel. No.	**17.** Email Address

INSTRUCTIONS - DBE Participation Commitment(s) Form

Bidder Section

The Bidder shall:

1. **IFB No.** - Enter the IFB Number.
2. **Project Name/Description** - Enter the name and/or description of the project.
3. **Prime Bidder Name** - Enter the contractor's firm name.
4. **Contract DBE Goal %** - Enter the contract DBE goal percentage.
5. **Proposed DBE Firm** – Enter name and address of the bidded DBE Firm.
6. **DBE Certification Number -** Enter the DBEs Certification Identification Number. All DBEs must be certified on the date proposals are opened. (DBE subcontracted contractors should notify the prime contractor in writing with the date of the decertification if their status should change during the course of the contract).
7. **Description of Score of Services/Work to be Provided –** Enter the scope of services/work that the bidded DBE Firm will be performing for this project and is eligible to perform the scope of services/work.
8. **Dollar Value ($) and/or Percentage of Contract-** Enter the bidded dollar value and/or percentage of commitment each listed DBE firm.
9. **Percentage (%) of Work to be Performed by DBE Firm(s)** - Percent of participation listed under column 8 of work to be performed or services to be provided by DBE firms. This percentage should include work to be self-performed by the listed DBE as well as work that will be performed by lower-tier sub contractors to the listed DBE. DBE credit will only be credited for work performed by DBE firms, non-DBE sub contractors should not be reflected in the percentage (%).
10. **Total Value Claimed ($)-**Enter the total dollar value of DBE credit claimed.
11. **Total DBE % Claimed towards Goal –** Enter the total participation claimed. If the Total % Claimed is less than item "4. Contract DBE Goal", a Good Faith Effort (GFE) is required.
12. **Preparer's Name (Print)** – Clearly enter the name of the authorized person signing the form for the contractor.
13. **Preparer's Signature** –The person completing this section of the form for the contractor's firm must sign their name.
14. **Preparer's Title** - Enter the position/title of the authorized person signing the form for the contractor.
15. **Date** - Enter the date the form is signed by the contractor.
16. **(Area Code) Telephone Number** - Enter the area code and telephone number of the authorized person signing the form for the contractor.
17. **Email Address-** Enter the email address of the authorized person signing the form for the contractor.

PLEASE NOTE: A firm is only eligible to count towards DBE participation in the NAICS codes contained within its California Unified Certification Program (CUCP) DBE Profile. Bidders are to verify that listed subcontractor contain DBE certification in the NAICS codes that they are being listed to perform.

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BIDDERS LIST

Bidder: _____ **IFB No.:** _____

The Department of Transportation requires the AUTHORITY to create and maintain a "Bidders List" containing information about all firms (DBE and Non-DBE) that bid, propose or quote on the Authority's DOT-assisted contracts, in accordance with 49 CFR Part 26.11. The "Bidders List" is intended to be a count of all firms that are participating, or attempting to participate, on DOT-assisted contracts, whether successful or unsuccessful in their attempt to obtain a contract.

The Bidder is to complete all requested information for every firm who submitted a bid, proposal or quote, including the primary Bidder, and submit this information at the time of bid submission, or as otherwise specified in the solicitation. The AUTHORITY will utilize this information to assist in the AUTHORITY's overall DBE goal-setting process.

<table>
<tr><th colspan="2">a. Prime Bidder Information:</th></tr>
<tr><td>Name of Prime's Firm:</td><td>b. Phone: ( )</td></tr>
<tr><td rowspan="2">c. Firm Address:</td><td>d. Fax: ( )</td></tr>
<tr><td>E-mail:</td></tr>
<tr><td>Number of years in business:</td><td rowspan="2">Type of work/services/materials provided:</td></tr>
<tr><td>Contact Person:</td><td>Title:</td></tr>
<tr><td>Is the firm currently certified as a DBE under 49 CFR Part 26?
Yes ☐ No ☐</td><td>Check the box below for your firm's annual gross receipts last year:</td></tr>
<tr><td rowspan="5">DBE Certification Eligibility (place an "X"):

__African American __Asian Pacific American

__Native American __Woman

__Hispanic American __Subcontinent Asian American

__Other</td><td>☐ Less than $1 million</td></tr>
<tr><td>☐ Less than $5 million</td></tr>
<tr><td>☐ Less than $10 million</td></tr>
<tr><td>☐ Less than $15 million</td></tr>
<tr><td>☐ More than $15 million</td></tr>
</table>

e. Provide the following information for every firm (DBE and non-DBE) that submitted bid or quote on this DOT-assisted project, whether successful or unsuccessful in their attempt to obtain a contract:	
Firm Name:	f. Phone: ( )
g. Firm Address:	h. Fax: ( )
	E-mail:
	Type of work/services/materials provided:
Number of years in business:	
Contact Person:	Title:
Is the firm currently certified as a DBE under 49 CFR Part 26? Yes ☐ No ☐	Check the box below for your firm's annual gross receipts last year:
DBE Certification Eligibility (place an "X"): __African American __Asian Pacific American __Native American __Woman __Hispanic American __Subcontinent Asian American __Other	☐ Less than $1 million ☐ Less than $5 million ☐ Less than $10 million ☐ Less than $15 million ☐ More than $15 million
Firm Name:	i. Phone: ( )
j. Firm Address:	k. Fax: ( )
	E-mail:
	Type of work/services/materials provided:
Number of years in business:	
Contact Person:	Title:
Is the firm currently certified as a DBE under 49 CFR Part 26? Yes ☐ No ☐	Check the box below for your firm's annual gross receipts last year:
DBE Certification Eligibility (place an "X"): __African American __Asian Pacific American __Native American __Woman __Hispanic American __Subcontinent Asian American __Other	☐ Less than $1 million ☐ Less than $5 million ☐ Less than $10 million ☐ Less than $15 million ☐ More than $15 million

If necessary, this "Bidders List" form can be duplicated to include all firms (DBE and non-DBE) that have submitted a bid, bid or quote on this DOT-assisted project, whether successful or unsuccessful in their attempt to obtain a contract.
Failure of the Bidder to submit the required "Bidders List" form may deem the Bidder non-responsive.

DBE INFORMATION - GOOD FAITH EFFORTS

IFB No: _____ Bid Opening Date _____

The Orange County Transportation Authority (Authority) established a Disadvantaged Business Enterprise (DBE) goal of _____% for this contract. The information provided herein shows that a Good Faith Effort (GFE) was made by _____(Bidder).

Bidder shall submit the following information to document adequate Good Faith Efforts. Bidder should submit the following information even if the "DBE Participation Commitment(s) Form" indicates that the Bidder has met the DBE goal. This will protect the Bidder's eligibility for award of the contract if Authority determines that the Bidder failed to meet the goal for various reasons, e.g., a DBE firm was not certified at bid opening, or the Bidder made a mathematical error.

Submittal of only the form may not provide sufficient documentation to demonstrate that adequate good faith efforts were made.

The following GFE items (A through H) shall be minimally performed prior to bid submission. Bidder to complete the following items in sufficient detail to effectively demonstrate that GFE (s) undertaken to meet the established DBE goal:

A. Items of work the Bidder made available to DBE Firms; a description of work and approximate dollar amount, as a percentage of total work made available to DBEs by the Bidder, a breakdown of contract work provided (including those items normally performed by the Bidder with its own forces) into economically feasible units to facilitate DBE participation sufficient to meet the DBE contract goal. It is the Bidder's responsibility to demonstrate that sufficient work was made available to facilitate DBE participation as follows (please provide documents that sufficiently evidence the effort):

Items of Work	Proposer Normally Performs (Y/N)($)	Breakdown of Items	Amount ($)	Percentage Of Contract

B. Solicitation Effort Documentation; the names and dates of written notices sent to certified DBEs soliciting bids for this project and the dates and methods used to following up initial solicitations to determine with certainty whether the DBEs were interested (please attach all copies of solicitation, telephone records, fax confirmations, etc.), amount of DBEs to repond, the DBE firms were provided information about the contract (location of project, contract number, bid date, items of work made available and contact information) in the Invitation to bid from the Bidder, the Bidder solicited through all reasonable means (e.g. attendance at pre-bid meetings, advertising and/or written notices) the interest of all certified DBEs who have the capability to perform the work of the contract, Bidder to provide proof of aforementioned items, and DBE's in the market area for the work identified in 'Item A' as follows:

Names of DBEs Solicited Methods and Dates	Date of Initial Solicitation	Follow Up

C. Rejected DBE Bid Documentation; the names, addresses, phone numbers, and amount of rejected DBE firms, the reasons for the Bidder's rejection of the DBE firms, the firms selected and accepted for that work (please attach all copies of quotes from the firms involved) and the price difference for each DBE if the selected firms is not a DBE, include an explanation of quote(s) rejected.

Names, addresses and phone numbers of rejected DBEs and the reasons for the Bidder's rejection of the DBEs as follows:

Names, addresses and phone numbers of firms selected for the work

D. Publication Efforts Made to Advertise the Projects to Solicit DBE Participation; names and dates of each publication in which a request for DBE participation for this project was placed by the Bidder (please attach copies of advertisements or proof of publications). (Please note: If IFB due date is extended, Bidder is to re-advertise new bid due date.)

Publications	Dates of Advertisement

E. Agencies, Organizations, or Groups contacted to provide assistance in Contracting, Recruiting, and Using DBEs; the names of agencies, organizations or groups contacted to provide assistance in contacting, recruiting and using DBE firms (please attach copies of requests to agencies and any responses received), as follows:

F. Efforts to Provide Information About the Plans, Specifications, and Contract Requirements; efforts made to assist interested DBEs in obtaining necessary materials, or related assistance or services, Bidder to provide evidence of effort.

G. Assistance with Lines of Credit, Insurance, and/or other Services; efforts made to assist interested DBEs in obtainting bonding, lines of credit or insurance, and any technical assistance or information related to the plans, specifications and requirements for the work which was provided to DBEs, Bidder to provide a list of any assistance provided to prospective and bided DBEs:

H. Additional Data to Support a Demonstration of Good Faith Efforts; (for additional data please use additional sheets as necessary):

NOTE: USE ADDITIONAL SHEETS OF PAPER IF NECESSARY.

IRAN CONTRACTING ACT CERTIFICATION
(California Public Contract Code §§ 2200, *et seq.*)

The Iran Contracting Act of 2010 (PCC §§ 2200-2208), prohibits bidders who are engaged in investment activities in the energy sector of Iran from bidding on, submitting proposals for, or entering into or renewing contracts with public entities for goods or services of one million dollars ($1,000,000) or more. At the time of submitting a bid, each bidder must certify that the bidder is not identified on the Department of General Services list of ineligible persons pursuant to PCC § 2203(b). Each bidder is also required to certify that the bidder is not engaged in investment activities in violation of the Iran Contracting Act of 2010.

A bidder who is engaged in investment activities in the energy sector of Iran is defined as:

1. A person providing goods or services of twenty million dollars ($20,000,000) or more in the energy sector of Iran, including a person that provides oil or liquefied natural gas tankers, or products used to construct or maintain pipelines used to transport oil or liquefied natural gas, for the energy sector of Iran; or
2. A person that is a financial institution that extends twenty million dollars ($20,000,000) or more in credit to another person, for 45 days or more, if that person will use the credit to provide goods or services in the energy sector in Iran and is identified on a list created pursuant to PCC § 2203(b).

A bidder is not required to certify that it is engaged in investment activities in the energy sector of Iran if the bidder receives an exemption from the Authority pursuant to PCC § 2203(c) or (d). If the bidder receives written permission from the Authority to be exempt from the certification requirement, the bidder will be required to provide documentation demonstrating written permission of the exemption.

To comply with the Iran Contracting Act of 2010, the bidder shall complete **one** of the options below. Please note: under PCC § 2205, false certification of this form may result in civil penalties of $250,000 or twice the amount of the contract for which false certification was made, termination of the contract, and/or ineligibility to bid on contracts for a period of three years.

Option #1: Certification

I, the official named below, certify I am duly authorized to execute this certification on behalf of the vendor/financial institution identified below, and the vendor/financial institution identified below, and any subcontractor who will perform work or labor or render services, is not on the current Department of General Services list identifying persons engaged in investment activities in the energy sector of Iran, and is not a financial institution extending twenty million dollars ($20,000,000) or more in credit to another person/vendor, for 45 days or more, if that other person/vendor will use the credit to provide goods or services in the energy sector in Iran and is identified on the current Department of General Services list identifying persons engaged in investment activities in the energy sector of Iran.

Vendor/Financial Institution:_____

Signature: _____

Name and Title: _____

Date: _____

Option #2: Exemption

Pursuant to PCC § 2203(c) and (d), a public entity may permit a bidder or financial institution engaged in investment activities in Iran, on a case-by-case basis, to be eligible for, or to bid on, submit proposals for, or enter into or renew a contract with a public entity for goods or services of one million dollars ($1,000,000) or more. If the bidder, financial institution, or any subcontractor who will perform work or labor or render services to the bidder has obtained an exemption from the Authority for the certification requirement, please complete and sign below and attach the documentation demonstrating the exemption approval.

Vendor/Financial Institution:_____

Signature: _____

Name and Title: _____

Date: _____

BIDDER'S CERTIFICATE
REGARDING
"BUY AMERICA" REQUIREMENTS
FOR
STEEL, IRON, OR MANUFACTURED PRODUCTS

In order to demonstrate compliance with the Buy America Requirements (see Book 1, Section II, of this IFB for further explanation), if the bid is for a contract greater than one hundred and fifty thousand dollars ($150,000), Bidder shall complete only one of the two statements below:

The _____
Firm name/principal

hereby certifies that it **will comply** with the requirements of 49 U.S.C. Section 5323(j), and the applicable regulations in 49 CFR Part 661.

_____
Signature

_____
Name

_____
Title

_____
Date

Or:

The _____
Firm name/principal

hereby certifies that it **cannot comply** with the requirements of 49 U.S.C. Section 5323(j), but may qualify for an exception to the requirement pursuant to 49 U.S.C. Section 5323(j)(2), as amended, and the applicable regulations in 49 CFR Part 661.7.

_____
Signature

_____
Name

_____
Title

_____
Date

Rev Date: 3/16/17

CERTIFICATION
LIMITATION ON PAYMENTS TO INFLUENCE CERTAIN FEDERAL TRANSACTIONS

A. DEFINITIONS

1. Authority, as used in this clause, means the Orange County Transportation Authority.

2. Covered Federal action, as used in this clause, means any of the following Federal actions:

   a. The awarding of any Federal contract.

   b. The making of any Federal grant.

   c. The making of any Federal loan.

   d. The entering into of any cooperative agreement.

   e. The extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

   f. Indian tribe and tribal organization, as used in this clause, have the meaning provided in Section 450b of the Indian self-determination and Education Assistance Act (25 U.S.C. 450) and include Alaskan Natives.

3. Influencing or attempting to influence, as used in this clause, means making, with the intent to influence, any communication to or appearance before an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with any covered Federal action.

4. Local government, as used in this clause, means a unit of government in a State and, if chartered, established, or other were recognized by a State for the performance of a governmental duty, including a local public authority, a special district, an intrastate district, a council of governments, a sponsor group representative organization, and any other instrumentality of a local government.

5. Officer or employee of an agency, as used in this clause, includes the following individuals who are employed by an agency:

   a. An individual who is appointed to a position in the Government under title 5, United States code, including a position under a temporary appointment.

b. A member of the uniformed services, as defined in the subsection 101(3), Title 37, United States Code.

c. A special Government employee, as defined in Section 202, Title 18, United States Code.

d. An individual who is a member of a Federal advisory committee, as defined by the Federal Advisory Committee Act, Title 5, United States Code, Appendix section 3.

6. Person, as used in this clause, means an individual, corporation, company, association, authority, firm, partnership, society, State, and local government, regardless of whether such entity is operated for profit, or not for profit. This term excludes an Indian tribe, tribal organization or any other Indian organization with respect to expenditures specifically permitted by other Federal law.

7. Reasonable compensation, as used in this clause, means with respect to a regularly employed officer of employee of any person, compensation that is consistent with the normal compensation for such officer or employee for work that is not furnished to, not funded by, or not furnished in cooperation with the Federal Government.

8. Reasonable payment, as used in this clause means, with respect to professional and other technical services, a payment in an amount that is consistent with the amount normally paid for such services in the private sector.

9. Recipient, as used in this clause, includes the CONSULTANT and all subcontractors. This term excludes an Indian tribe, tribal organization, or any other Indian organization with respect to expenditures specifically permitted by other Federal law.

10. Regularly employed, as used in this clause, means, with respect to an officer or employee of a person requesting or receiving by such person for at least 130 working days within one year immediately preceding the date of the submission that initiates agency consideration of such person for receipt of such contract. An officer or employee who is employed by such person for less than 130 working days within one year immediately preceding the date of the submission that initiates agency consideration of such person shall be considered to be regularly employed as soon as he or she is employed by such person for 130 working days.

11. State, as used in this clause, means a State of the United States, the District of Columbia, the Commonwealth of Puerto Rico, a territory or possession of the United States, an agency or instrumentality of a State, and a multi-State regional or interstate entity having governmental duties and powers.

B. PROHIBITIONS

1. Section 1352 of Title 31, United States Code, among other things, prohibits a recipient of a Federal contract, grant, loan or cooperative agreement from using appropriated funds to pay any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with any of the following covered Federal actions: the awarding of any Federal contract; the making of any Federal grant; the making of any Federal loan; the entering into of any cooperative agreement; or, the modification of any Federal contract, grant, loan, or cooperative agreement.

2. The Act also requires consultant to furnish a disclosure if any funds other than Federal appropriated funds (including profit or fee received under a covered Federal transaction) have been paid, or will be paid, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with a Federal contract, grant, loan or cooperative agreement.

3. The prohibitions of the Act do not apply under the following conditions:

   a. Agency and legislative liaison by own employees.

      (1) The prohibition on the use of appropriated funds, in subparagraph C.1. of this clause, does not apply in the case of payment of reasonable compensation made to an officer or employee of a person requesting or receiving a covered Federal action if the payment is for agency and legislative liaison activities not directly related to a covered Federal action.

      (2) For purposes of paragraph C.3.a.(1) of this clause, providing any information specifically requested by an agency or Congress is permitted at any time.

      (3) The following agency and legislative liaison activities are permitted any time where they are not related to a specific solicitation for any covered Federal action:

         i. Discussing with an agency (including individual demonstrations) the qualities and characteristics of the person's products or services, conditions or terms of sale, and service capabilities.

         ii. Technical discussions and other activities regarding the application of adaptation of the person's products or services for an agency's use.

(4) The following agency and legislative liaison activities are permitted where they are prior to formal solicitation of any covered Federal action:

i. Providing any information not specifically requested but necessary for an agency to make an informed decision about initiation of a covered Federal action;

b. Technical discussions regarding the preparation of an unsolicited proposal prior to its official submission; and,

(1) Capability presentations by persons seeking awards from an agency pursuant to the provisions of the Small Business Act, as amended by Public Law 95-507, and subsequent amendments.

(2) Only those services expressly authorized by paragraph C.3.a.(1) of this clause are permitted under this clause.

c. Professional and technical services

(1) The prohibition on the use of appropriated funds, in subparagraph C.1. of this clause, does not apply in the case of:

i. A payment of reasonable compensation made to an officer or employee of a person requesting or receiving a covered Federal action or an extension, continuation, renewal, amendment, or modification of covered Federal action, if payment is for professional or technical services rendered directly in the preparation, submission, or negotiation of any bid, proposal, or application for that Federal action or for meeting requirements imposed by or pursuant to law as condition for receiving that Federal action.

ii. Any reasonable payment to a person, other than an officer or employee of a person requesting or receiving a covered Federal action or an extension, continuation, renewal, amendment, or modification of a covered Federal action if the payment is for professional or technical services rendered directly in the preparation, submission or negotiation of any bid, proposal, or application or that Federal action or for meeting requirements imposed by or pursuant to law as a condition for receiving that Federal action. Persons other than officers or employees of a person requesting or receiving a covered Federal action include contractors and trade associations.

iii. For purposes of paragraph C.3.a.(1) of this clause, professional and technical services shall be limited to advise

and analysis directly applying any professional or technical discipline. For example, drafting of a legal document accompanying a bid or proposal is allowable. Similarly, technical advice provided by an engineer on the performance or operational capability of a piece of equipment rendered directly in the negotiation of a contract is allowable. However, communications with the intent to influence made by a professional (such as a licensed lawyer) or a technical person (such as a licensed accountant) are not allowable under this section unless they provide advice and analysis directly applying their professional or technical expertise and unless the advice or analysis is rendered directly and solely in the preparation, submission, or negotiation of a covered Federal action. Thus, for example, communications with the intent to influence made by a lawyer that do not provide legal advice or analysis directly and solely related to the legal aspects of his or her client's proposal, but generally advocate one proposal over another are not allowable under this section because the lawyer is not providing professional legal services. Similarly, communications with the intent to influence made by an engineer providing an engineering analysis prior to the preparation or submission of a bid or proposal are not allowable under this section since the engineer is providing technical services but not directly in the preparation, submission, or negotiation of a covered Federal action.

iv. Requirements imposed by or pursuant to law as a condition for receiving a covered Federal award include those required by law or regulation and any other requirements in the actual award documents.

v. Only those services expressly authorized by paragraph C.3.a.(1) and (2) of this clause are permitted under this clause.

vi. The reporting requirements of FAR 3.803(a) shall not apply with respect to payments of reasonable compensation made to regularly employed officers or employees of a person.

d. Disclosure

(1) The consultant who requests or receives from an agency a Federal contract shall file with that agency a disclosure form OMB standard form LLL, Disclosure of Lobbying Activities, (Attachment to the bid package) if such person has made or had agreed to made any payment using non appropriated funds (to include profits from any covered Federal action), which would be prohibited under

subparagraph B.1. of this clause, if paid for with appropriated funds.

(2) The consultant shall file a disclosure form at the end of each calendar quarter in which there occurs any event that materially affects the accuracy of the information contained in any disclosure form previously filed by such person under subparagraph II.A. of this clause. An event that materially affects the accuracy of the information reported includes:

i. A cumulative increase of $25,000 or more in the amount paid or expected to be paid for influencing or attempting to influence a covered Federal action; or

ii. A change in the person(s) or individual(s) influencing or attempting to influence a covered Federal action; or

iii. A change in the officer(s), employee(s), or Member(s) contacted to influence or attempt to influence a covered Federal action.

(3) The consultant shall require the submittal of a certification, and if required, a disclosure form by any person who requests or receives any subcontract exceeding $100,000 under the Federal contract.

(4) All subcontractor disclosure forms (but not certifications) shall be forwarded from tier to tier until received by the prime CONSULTANT. The prime CONSULTANT shall submit all disclosures to the District at the end of the calendar quarter in which the disclosure form is submitted by the subcontractor. Each subcontractor certification shall be retained in the subcontract file of the awarding CONSULTANT.

e. Agreement

(1) The consultant agrees not to make any payment prohibited by this clause.

f. Penalties

(1) Any person who makes an expenditure prohibited under paragraph a) of this clause or who fails to file or amend the disclosure form to be filed or amended by paragraph d) of this clause shall be subject to civil penalties as provided for by 31 U.S.C. 1352. An imposition of a civil penalty does not prevent the Government from seeking any other remedy that may be applicable.

(2) Consultants may relay without liability on the representation made by their subcontractors in the certification and disclosure forms.

g. Cost Allowability:

(1) Nothing in this clause is to be interpreted to make allowable or reasonable any costs, which will otherwise be unallowable or unreasonable. Conversely, costs made specifically unallowable by the requirements in this clause will not be made allowable under any other provisions.

CERTIFICATION OF RESTRICTIONS ON LOBBYING

I, _____ , hereby certify on behalf (name of offeror) of

_____ that:
(Firm name)

A. No federal appropriated funds have been paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer of employee of any agency, a member of congress, an officer or employee of congress, or an employee of a member of congress in connection with the awarding of any federal contract, the making of any federal grant, the making of any federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any federal contract, grant, loan, or cooperative agreement.

1. If any funds, other than Federal appropriated funds, have been paid or will be paid to any person for making lobbying contracts to an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit the attached Standard Form-LLL, "Disclosure of Lobbying Activities", in accordance with its instructions.

2. The undersigned shall require that the language of this certification be included in all subcontracts, and that all subcontractors shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance is placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by section 1352, title 31, U.S. Code. Any person who fails to file the required certification shall be subject to civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

The Bidder, _____, certifies or affirms the truthfulness and accuracy of each statement of its certification and disclosure, if any. In addition, the Bidder understands and agrees that the provisions of 31 U.S.C. 3801, et seq. apply to this certification and disclosure, if any.

Executed this _____day of _____,201__

By _____
(Signature of authorized official)

_____
(Title of authorized official)

DISCLOSURE OF LOBBYING ACTIVITIES

Approved by OMB 003480045

Complete this form to disclose lobbying activities pursuant to 31 U.S.C. 1352
(See reverse for public burden disclosure.)

1. Type of Federal Action:	2. Status of Federal Action:	3. Report Type:
☐ a. contract b. grant c. cooperative agreement d. loan e. loan guarantee f. loan insurance	☐ a. bid/offer application b. initial award c. post-award	☐ a. initial filing b. material changes For Material Change Only: year _____ quarter _____ date of last report _____

4. Name and Address of Reporting Entity:	5. If Reporting Entity in No. 4 is Subawardee, Enter Name and Address of Prime:
☐ Prime ☐ Subawardee Tier _____, *if known*: Congressional District, *if known*:	Congressional District, *if known*:
6. Federal Department/Agency:	7. Federal Program Name/Description: CFDA number, *if applicable*: _____
8. Federal Action Number, *if known*:	9. Award Amount, *if known*: $
10. a. Name and Address of Lobbying Entity (if individual, last name, first name, MI)	b. Individuals Performing Services (including address if different from No 10a) (last name, first name, MI):

(attach Continuation Sheet(s) SF - LLL - A if necessary)

11. Amount of Payment (check all that apply):	13. Type of Payment (check all that apply):
$_____ ☐ actual ☐ planned	☐ a. retainer ☐ b. one-time fee ☐ c. commission ☐ d. contingent fee ☐ e. deferred ☐ f. other specify: _____
12. Forum of Payment (check all that apply): ☐ a. cash ☐ b. in-kind; specify nature: _____ value: _____	

14. Brief Description of Services Performed or to be Performed and Date(s) of Service, including officer(s), employee(s) or Member(s) contracted for Payment indicated in Item, 11:

(attach Continuation Sheet(s) SF-LLL-A if necessary)

15. Continuation Sheet(s) SF-LLL-A attached: ☐ Yes ☐ No

16. Information requested through this form is authorized by Code 31 U.S.C. Section 1352. This disclosure of lobbying activities is a material representation of fact upon which reliance was placed by the tier above when this transaction was made or entered into. This disclosure is required pursuant to 31 U.S.C. 1352. This information will be reported to the Congress semi-annually and will be available for public inspection. Any person who fails to file the required disclosure shall be subject to a civil penalty of not less than $10,000.00 and not more than $100,000.00 for each such failure.	Signature: _____ Print name: _____ Title: _____ Telephone No: _____ Date: _____

Federal Use Only	Authorized for Local Reproduction Standard Form - LLL

Approved by OMB 003480045

INSTRUCTIONS FOR COMPLETION OF SF-LLL DISCLOSURE OF LOBBYING ACTIVITIES

This DISCLOSURE FORMS SHALL BE COMPLETED BY the reporting entity, whether Subawardee or prime Federal recipient, at the initiation or receipt of a covered Federal action, or a material change to a previous filing, pursuant to title 31 U.S.C. section 1352. The filing of a form is required for each payment or agreement to make payment to any lobbying entity for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with a covered Federal action. Use the SF-LLL-A Continuation Sheet for additional information if the space on the form is inadequate. Complete all items that apply for both the initial filing and material change report. Refer to the implementing guidance published by the Office of Management and Budget for additional information.

1. Identify the type of covered Federal action for which lobbying activity is and/or has been secured to influence the outcome of a covered Federal action.

2. Identify the status of the covered Federal action.

3. Identify the appropriate classification of this report. If this is a follow-up report caused by a material change to the information previously reported, enter the year and quarter in which the change occurred. Enter the date of the last previously submitted report by this reporting entity for this covered Federal action.

4. Enter the full name, address, city, state and zip code of the reporting entity. Include Congressional District, if known. Check the appropriate classification of the reporting entity that designates if it is, or expects to be a prime or subaward recipient. Identify the tier of the subawardee e.g., the first subawardee of the prime is the first tier. Subawards include but are not limited to subcontracts, subgrants and contract awards under grants.

5. If the organization filing the report in item 4 checks "Subawardee" then enter the full name, address city, state, and zip code of the prime Federal recipient. Include Congressional District.

6. Enter the name of the Federal agency making the award or loan commitment. Include at least one organizational level below agency, name if known. For example, Department of Transportation, United State Coast Guard.

7. Enter the Federal program name for description of the covered Federal action (item 1). If known, enter the full Catalog of Federal Domestic Assistance (CFDA) number for grants, cooperative agreements, loans, and loan commitments.

8. Enter the most appropriate Federal identifying number available for the Federal action identified in item 1 (e.g. Request for Proposal (RFP) number, Invitation for Bid (IFB) number, grant announcement number, the contract, grant, or loan award number, the application/ proposal control number assigned by the Federal agency). Include prefixes, e.g., "RFP DE-90-001."

9. For a covered Federal action where there has been an award or loan commitment by the Federal agency, enter the Federal amount of the award/loan commitment for the prime entity identified in item 4 or 5.

10. (a) Enter the full name, address, city, state, and zip code of the lobbying entity engaged by the reporting entity identified in item 4 to influence the covered Federal action.

    (b) Enter the full names of the individual(s) performing services, and include full address if different from 10 (a.). Enter Last Name, First Name, and Middle Initial (MI).

11. Enter the amount of compensation paid or reasonably expected to be paid by the reporting entity (item 4) to the lobbying entity (item 10). Indicate whether the payment has been made (actual) or will be made (planned). Check all boxes that apply. If this is a material change report, enter the cumulative amount of payment made or planned to be made.

12. Check the appropriate box (es). Check all boxes that apply. If payment is made through an in-kind contribution, specify the nature and value of the in-kind payment.

13. Check the appropriate box (es). Check all boxes that apply. If other, specify nature.

14. Provide a specific and detailed description of the services that the lobbyist has performed, or will be expected to perform, and the date(s) of any services rendered. Include all preparatory and related activity, not just time spent in actual contact with Federal officials. Identify the Federal official(s) or employee(s) contacted or the officer(s), employee(s), or Member(s) of Congress that were contacted.

15. Check whether or not a SF-LLL-A Continuation Sheet(s) is attached.

16. The certifying official shall sign and date the form, print his/her name, title, and telephone number.

Approved by
OMB
003480045

DISCLOSURE OF LOBBYING ACTIVITIES CONTINUATION SHEET

Reporting Entity:_____ **Page** _____ **of** _____

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SECTION III: ADDITIONAL CONTRACTUAL EXHIBITS

SECTION III. ADDITIONAL CONTRACTUAL EXHIBITS

The following Exhibits will be attached to and incorporated into the signed Agreement resulting from this IFB.

A. PERFORMANCE BOND – EXHIBIT E

The successful bidder shall furnish at its own expense a Performance Bond (Exhibit E) satisfactory to the Authority in the amount of one hundred percent (100%) of the full amount of the contract as a guarantee of good faith on behalf of the Contractor that the terms of the contract, including all warranty provisions, shall be complied with in every particular. The bond shall be issued by a corporation surety (not an individual surety) required in the state of California and registered to do business in the county of Orange. The bond shall not be issued from a corporation surety that requires a funds control, funds disbursement, or funds administration company for the issuance of the performance bond.

The bond shall specifically provide that if the Contractor, or its subcontractor, fails to fully perform that the surety or sureties will pay for the same in an amount not exceeding the amount specified in the bond and in case suit is brought against the Authority, that the surety will undertake the defense of same.

B. PAYMENT BOND – EXHIBIT F

The successful bidder shall furnish a Payment Bond (Exhibit F) satisfactory to the Authority in the amount of one hundred percent (100%) of the full amount of the contract. Such bonds shall be in effect during the entire term of the contract and warranty and shall be issued directly by a corporate surety (not an individual surety) registered in the state of California and registered to do business in the county of Orange. The bond shall not be issued from a corporation surety that requires a funds control, funds disbursement, or funds administration company for the issuance of the performance bond.

The bond shall specifically provide that if the Contractor fails to pay for amounts due under the Employment Insurance Act that the surety or sureties will pay for the same in an amount not exceeding the amount specified in the bond and in case suit is brought against the Authority, that the surety will undertake the defense of same.

Pursuant to California Civil Code sections 9550 through 9554, in conjunction with the Bond and Undertaking Law (Code of Civil Procedure sections 995.010, et. seq.), Bidders must provide the following information as part of their payment bond; a certificate of Authority from the Orange County Clerks Office indicating that the insurer has not been surrendered, revoked, canceled, annulled, or suspended or, in the event that it has, that renewed Authority has been granted.

C. GUARANTY – EXHIBIT G

The successful bidder shall also submit to the Authority the executed and notarized Guaranty form (Exhibit G) in this IFB.

All forms must be completed and submitted to the Contract Administrator responsible for this procurement within ten (10) calendar days of award notice by the Authority. Failure to submit the completed and signed forms will result in cancellation of the award.

PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS:

That we, _____
hereinafter referred to as "Contractor", as principal, and _____
as surety, are held and firmly bound unto the Orange County Transportation Authority, State of California, in the sum _____
Dollars, ($_____), lawful money of the United States of America, for the payment of which sum, well and truly to be made, we bind ourselves, jointly and severally, firmly by these presents.

The condition of the foregoing obligation is such that,

WHEREAS, said Contractor has been awarded and is about to enter into the annexed Agreement with the Orange County Transportation Authority for the **IFB 7-2047, "CONSTRUCTION OF THE RIGHT OF WAY SLOPE STABILIZATION PROJECT,"** as specified in said Agreement, which is incorporated herein to this bond by reference, and is required under the terms of said Agreement to give this bond in connection with the execution thereof;

NOW THEREFORE, if the said Contractor shall well and truly do and perform all of the covenants and obligations of said Agreement on his part to be done and performed at the times and in the manner specified herein, then this obligation shall be null and void, otherwise it shall be and remain in full force and effect; and in the event said Contractor fails to fully perform all requirements in accordance with the terms and conditions of said Agreement, then surety shall enforce performance by the Contractor or shall pay the Orange County Transportation Authority for the same in an amount not exceeding the amount specified in this bond; and, further, if in the event suit is brought upon this bond then said surety shall pay the Orange County Transportation Authority for reasonable attorneys' fees to be fixed by the court;

PROVIDED, that any changes in the work to be done, or the material to be furnished, whether or not made pursuant to the terms of said contract, shall not in any way release either the Contractor or the surety there under, nor shall any extensions of time granted under the provisions of said contract release either the Contractor or the surety, and notice of such changes or extensions of the contract is hereby waived by the surety.

WITNESS our hands this _____ day of _____, 201_.

(SEAL)

_____
(Contractor)
By _____

Approved:

_____
(Title)

_____
(SEAL)

_____
(Surety)
By _____

PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS:

That we, _____
hereinafter referred to as "Contractor", as principal, and _____
as surety, are held and firmly bound unto the Orange County Transportation Authority, State of California, in the sum _____
Dollars, ($_____), lawful money of the United States of America, for the payment of which sum, well and truly to be made, we bind ourselves, jointly and severally, firmly by these presents.

The Condition of the foregoing obligation is such that,

WHEREAS, said Contractor has been awarded and is about to enter into the annexed Agreement with the ORANGE COUNTY TRANSPORTATION AUTHORITY for the **IFB 7-2047, "CONSTRUCTION OF THE RIGHT OF WAY SLOPE STABILIZATION PROJECT,"** as specified in said Agreement, which is incorporated herein to this bond by reference, and is required under the terms of said Agreement to give this bond in connection with the execution thereof;

NOW, THEREFORE, if said Contractor or a subcontractor fails to pay any of the persons named in Section 9100 of the Civil Code of the State of California, or amounts due under the Unemployment Insurance Code with respect to work or labor performed under the contract, or for any amounts required to be deducted, withheld and paid over to the Employment Development Department from the wages of employees of said Contractor and subcontractors pursuant to Section 13020 of the Unemployment Insurance Code with respect to such work and labor, then said surety will pay for the same, in an amount not exceeding the sum specified in this bond, and also, in case suit is brought upon this bond, a reasonable attorney's fee, to be fixed by the court. This bond shall inure to the benefit of all persons named in Section 9100 of the Civil Code of the State of California so as to give a right of action to such persons or their assigns in any suit brought upon this bond. This bond shall be subject to and include all of the provisions of Title 3 of Part 64 of Division 4 of the Civil Code of California relating to Payment Bond for Public Works, including but not confined to, Civil Code Sections 8150 – 8154, inclusive and Sections 9550 - 9566, inclusive.

PROVIDED, that any changes in the work to be done or the material to be furnished, whether or not made pursuant to the terms of said contract, shall not in any way release either the Contractor or the surety thereunder, nor shall any extensions of time granted under the provisions of said contract release either the Contractor or the surety, and notice of such alterations or extensions of the contract is hereby waived by the surety.

PAYMENT BOND, PAGE 2

WITNESS our hands this _____ day of _____, 201_.

(SEAL)

_____
(Contractor)

By _____

_____
(Title)

Approved:

_____
(Surety)

_____ By _____
(SEAL)

GUARANTY

The undersigned, as "Contractor," guarantees to the Orange County Transportation Authority that the materials furnished and the completed installation work, and the related work performed by the Contractor pursuant to Agreement No. **C-7-2047, "CONSTRUCTION OF THE RIGHT OF WAY SLOPE STABILIZATION PROJECT".**

A. For a period of one (1) year from the date of completion, as evidenced by the date of final acceptance of the work by the Authority, the Contractor warrants to the Authority that work performed and materials furnished under this Contract conforms to the Contract requirements and shall be free from any defect in design, material or workmanship performed by the Contractor or its subcontractors or suppliers. Notwithstanding the foregoing, Contractor shall not be liable for any defects of design, material or equipment provided by Authority.

B. Under this guaranty, the Contractor shall remedy at its own expense any such failure to conform or any such defect.

C. Nothing in the above intends or implies that this warranty shall apply to work, which has been abused or neglected by the Authority.

D. This guaranty shall be in addition to the other guarantees and warranties specified in the Agreement and shall be enforceable concurrently with, or in lieu of, said other guarantees.

Should any of the materials or equipment prove defective or should the work as a whole prove defective, due to faulty workmanship, material furnished or methods of installation, or should the work or any part thereof fail to operate properly as originally intended and in accordance with the plans and specifications, due to any of the above causes, all within twelve (12) months after the date on which the work is accepted by the Authority, the undersigned agrees to reimburse the Authority, upon demand, for its expenses incurred in restoring any such equipment or materials replaced and the cost of removing and replacing any other work without cost to the Authority so that said work will function correctly as originally contemplated.

The Authority shall have the unqualified option to make any needed replacements or repairs itself or to have such replacements or repairs done by the undersigned. In the event the Authority elects to have said work performed by the undersigned, the undersigned agrees that the repairs shall be made and such materials as are necessary shall be furnished and installed within a reasonable time after the receipt of demand from the Authority. If the undersigned shall fail or refuse to comply with its obligations under this guaranty, the Authority shall be entitled to all costs and expenses, including attorneys' fees, reasonably incurred by reasons of the said failure or refusal.

GUARANTY, PAGE 2

Subscribed and sworn to before me

this ___ day of _____, 201_

Seal of Notary

_____
Name

_____
Title

_____
Signature

_____ _____
Notary Public Date

SECTION IV: DISADVANTAGED BUSINESS ENTERPRISES

DISADVANTAGED BUSINESS ENTERPRISE (DBE) PARTICIPATION

1.0 DBE Goal

To assist Bidders in ascertaining DBE availability based on the specific items of work associated with this procurement, the Authority has determined that DBEs could reasonably be expected to compete for subcontracting opportunities on this project based on their likely availability for work. The DBE Goal for this contract is **11%**.

2.0 DBE Policy and Applicability

In accordance with federal financial assistance agreements with the U.S. Department of Transportation (U.S. DOT), the Orange County Transportation Authority (Authority) has adopted a Disadvantaged Business Enterprise (DBE) Policy and Program, in conformance with Title 49 CFR Part 26, "Participation by Disadvantaged Business Enterprises in Department of Transportation Financial Assistance Programs." The contract is subject to the following stipulated regulations. Pursuant to the intent of these Regulations, it is the policy of the Authority to:

2.1 Implement strategies that promote the spirit and intent of the Federal DBE Program regulations published under U.S. DOT Title 49 CFR Part 26, by ensuring that DBEs have equitable access and opportunities to participate in all of Authority's DOT-assisted contracting opportunities.

2.2 Ensure non-discrimination in the award and administration of Authority's DOT-assisted contracts.

2.3 Create a level playing field on which DBEs can compete fairly for DOT-assisted contracts.

2.4 Ensure that only firms that meet 49 CFR Part 26 eligibility standards are permitted to participate as DBEs.

2.5 Help remove barriers to the participation of DBEs in DOT-assisted contracts.

.

2.6 Provide training and other assistance through our resource partners to address capital, bonding and insurance needs.

2.7 Assist in the development of firms that can compete successfully in the marketplace outside the DBE Program.

Bidders shall not discriminate on the basis of race, color, national origin, or sex in the award and performance of subcontracts.

Any terms used in this section that are defined in 49 CFR Part 26, or elsewhere in the Regulations, shall have the meaning set forth in the Regulations. In the event of any conflicts or inconsistencies between the Regulations and the Authority's DBE Program with respect to DOT-assisted contracts, the Regulations shall prevail.

Race-Neutral/Race-Conscious DBE Program Measures

The Authority will utilize both Race-Neutral and Race-Conscious means to meet its overall DBE Program goals.

Race-Neutral measures will include but are not limited to conducting outreach, training, providing other resource assistance and assessing bid delivery schedules to ensure that DBEs interested in bidding for DOT-assisted solicitations are provided accurate and adequate information about the plans, specifications, and requirements of the solicitation in a timely manner to assist them in responding to the bid. Additional Authority Race-Neutral measures include ensuring that DBEs and other small business are afforded ample opportunity to participate in the Authority's DOT-assisted solicitations by unbundling large contracts to make them more accessible to small businesses and requiring or encouraging Prime Contractor to subcontract portions of work that they might, otherwise, perform with their own forces. Race-Neutral participation also includes any time a DBE obtains a Prime Contract through customary competitive procurement procedures or is awarded a subcontract on a Prime Contract that does not carry a DBE goal.

In conjunction with the Race-Neutral measures listed above the Authority will implement Race-Conscious measures through the reinstatement of contract goals and good faith efforts. The Authority reinstates the use of meeting the contract-specific goal by committing to utilize DBEs or documenting a bona fide good faith effort to do so, as a condition of award. Contract-specific goals are specifically targeted at DBEs (*DBEs owned and controlled by Black Americans, Hispanic Americans, Asian-Pacific Americans, Native Americans, Asian-Pacific Americans, Sub-Continent Asian Americans, and Women*). In the event of a substitution, a DBE must be substituted with another DBE or documented adequate good faith efforts to do so must be made, in order to meet the contract goal and DBE contract requirements.

3.0 Definitions

The following definitions apply to the terms as used in these provisions:

3.1 ***"Disadvantaged Business Enterprise (DBE)"*** means a small business concern: (a) which is at least 51 percent owned by one or more socially and economically disadvantaged individuals or, in the case of any publicly-owned business, at least 51 percent of the stock of which is owned by one or more socially and economically disadvantaged individuals; and (b) whose management and daily business operations are controlled by one or more of the socially and economically disadvantaged individuals who own it.

3.2 ***"Small Business Concern"*** means a small business as defined pursuant to Section 3 of the Small Business Act and relevant regulations promulgated pursuant thereto, except that a small business concern shall not include any concern or group of concerns controlled by the same socially and economically disadvantaged individual or individuals which has annual average gross receipts in excess of $19.57 million over the previous three fiscal years.

3.3 ***"Socially and Economically Disadvantaged Individuals"*** means those individuals who are citizens of the United States (or lawfully admitted permanent residents) and who are Black Americans, Hispanic Americans, Native Americans, Asian-Pacific Americans, or Asian-Indian Americans, women and any other minorities or individuals found to be disadvantaged by the Small Business Administration pursuant to Section 8(a) of the Small Business Act, or by the Authority pursuant to 49 CFR Part 26.65. Members of the following groups are presumed to be socially and economically disadvantaged:

3.3.1 "Black Americans," which includes persons having origins in any of the Black racial groups of Africa;

3.3.2 "Hispanic Americans," which includes persons of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish or Portuguese culture or origin, regardless of race;

3.3.3 "Native Americans," which includes persons who are American Indians, Eskimos, Aleuts, or Native Hawaiians;

3.3.4 "Asian-Pacific Americans," which includes persons whose origins are from Japan, China, Taiwan, Korea, Vietnam, Laos, Cambodia, the Philippines, Samoa, Guam, the U.S. Trust Territories of the Pacific, and the Northern Marianas;

3.3.5 "Asian-Indian Americans," which includes persons whose origins are from India, Pakistan, and Bangladesh; and

3.3.6 Women, regardless of ethnicity or race.

3.4 ***"Owned and Controlled"*** means a business: (a) which is at least 51 percent owned by one or more "Socially and Economically Disadvantaged Individuals" or, in the case of a publicly-owned business, at least 51 percent of the stock of which is owned by one or more "Socially and Economically Disadvantaged Individuals"; and (b) whose management and daily business operations are controlled by one or more such individuals.

3.5 ***"Manufacturer"*** means a firm that operates or maintains a factory or establishment that produces on the premises the materials or supplies obtained by the contractor.

3.6 ***"Regular Dealer"*** means a firm that owns, operates or maintains a store, warehouse, or other establishment in which the materials or supplies required for the performance of the contract are bought, kept in stock, and regularly sold to the public in the usual course of business. The firm must engage in, as its principal business, and in its own name, the purchase and sale of the product in question. A regular dealer in such bulk items as steel, cement, gravel, stone and petroleum products need not keep such products in stock if it owns or operates distribution equipment.

3.7 **"Fraud"** includes a firm that does not meet the eligibility criteria of being a certified DBE and that attempts to participate in a DOT-assisted program as a DBE on the basis of false, fraudulent, or deceitful statements or representations or under circumstances indicating a serious lack of business integrity or honesty. The Authority may take enforcement action under 49 CFR Part 31, Program Fraud and Civil Remedies, against any participant in the DBE program whose conduct is subject to such action under 49 CFR Part 31. The Authority may refer cases of identified fraud to the Department of Justice, for prosecution under 18 U.S.C. 1001 or other applicable provisions of law, any person who makes a false or fraudulent statement in connection with participation of a DBE in any DOT-assisted program or otherwise violates applicable Federal statutes.

3.8 ***"Other Socially and Economically Disadvantaged Individuals"*** means those individuals who are citizens of the United States (or lawfully admitted permanent residents) and who, on a case-by-case basis, are determined by Small Business Administration or the Authority to meet the social and economic disadvantage criteria described below.

3.8.1 Social Disadvantage

3.8.1.1 The individual's social disadvantage must stem from his/her color, national origin, gender, physical handicap, long-term residence in an environment isolated from the mainstream of American society, or other similar cause beyond the individual's control.

3.8.1.2 The individual must demonstrate that he/she has personally suffered social disadvantage.

3.8.1.3 The individual's social disadvantage must be rooted in treatment, which he/she has experienced in American society, not in other countries.

3.8.1.4 The individual's social disadvantage must be chronic, longstanding and substantial, not fleeting or insignificant.

3.8.1.5 The individual's social disadvantage must have negatively affected his/her entry into and/or advancement in the business world.

3.8.1.6 A determination of social disadvantage must be made before proceeding to make a determination of economic disadvantage.

3.8.2 Economic Disadvantage

3.8.2.1 The individual's ability to compete in the free enterprise system has been impaired due to diminished capital and credit opportunities, as compared to others in the same line of business and competitive market area that are not socially disadvantaged.

3.8.2.2 The following criteria will be considered when determining the degree of diminished credit and capital opportunities of a person claiming social and economic disadvantage:

With respect to the individual:

- availability of financing
- bonding capability
- availability of outside equity capital
- available markets

With respect to the individual and the business concern:

- personal and business assets
- personal and business net worth
- personal and business income and profits

4.0 DBE Bid Submission Requirements

Bidder shall complete and submit the following DBE Exhibits (forms) at the times specified with their Bid:

- **"**DBE Participation Commitment(s) Form" (Exhibit I-1)
- "Bidders List" (Exhibit I-2)
- "DBE Information - Good Faith Efforts" (Exhibit I-3)

4.1 "DBE Participation Commitment(s) Form" (Exhibit I-1) required at time of Bid. The Bidder is to provide the following information for each DBE that will participate in the contract:

4.1.1 The complete name and address of each DBE who will participate in the contract;

4.1.2 A description of the work that each DBE will perform or provide;

4.1.3 The dollar amount of the work to be performed or provided by the DBE;

4.1.4 Valid DBE Certification eligibility status, in conformance with 49 CFR Part 26;

4.1.5 The Bidder shall also submit, for each DBE to perform under this contract, a written confirmation from the DBE acknowledging that it is participating in the contract for a specified value, including the corresponding scope of work (a subcontract bid can serve in lieu of the written confirmation).

4.2 "Bidders List" (Exhibit I-2)

The Authority is required by Regulations to create and maintain a "Bidders List" of all firms bidding or quoting on the Authority's DOT-assisted contracts for use in calculating the Authority's overall DBE goal. Bidders are required to complete and submit the requested information listed on the "Bidders List Form" for all firms (DBE[s] and Non-DBE[s]) who submitted a bid, quote and/or bid, including firms who were contracted by the Prime Bidder.

The "Bidders List" must be included with the bid submission.

4.3 "DBE Information - Good Faith Efforts" (Exhibit I-3)

A Bidder must, in order to be a responsible and/or responsive bidder, make good faith efforts to meet the goal. The Bidder can meet this requirement in either of two ways. First, the Bidder can meet the goal, documenting commitments for participation by DBE firms sufficient for this purpose. Second, even if it doesn't meet that the establish DBE goal, the bidder took all necessary and reasonable steps to achieve the DBE goal or other requirement of this part which, by their scope, intensity, and appropriateness to the objective, could reasonably be expected to obtain sufficient DBE participation, even if they were not fully successful.

If the Bidder did not meet or obtain enough DBE participation to meet the DBE goal, the Bidder must complete and submit the "DBE Information – Good Faith Efforts form demonstrating that the Bidder made adequate good faith efforts to meet the goal.

If the Bidder has met the DBE goal based on the Bided participation of DBEs listed on the Bidder's **"**DBE Participation Commitment(s) Form ", it is at the Bidder's discretion (not mandatory) whether or not to submit "DBE Information – Good Faith Efforts" form However, the submission of Good Faith Efforts documentation can protect the Bidder's eligibility for award of the contract if the Authority determines that the Bidder failed to meet the goal for various reasons, e.g., a DBE firm was not certified at bid submission or the Bidder made a mathematical error. Submittal of only the "DBE Participation Commitment(s) Form" form may not provide sufficient documentation to demonstrate that adequate good faith efforts were made.

Good Faith Efforts documentation must be submitted with the bid.

Good Faith Efforts documentation must include the following information and supporting documents, as necessary:

4.3.1 Items of work you have made available to DBE firms. Identify those items of work you might otherwise perform with your own forces and those items that have been broken down into economically feasible units to facilitate DBE participation. For each item listed, show the dollar value and percentage of the total contract. It is your responsibility to demonstrate that sufficient work to meet the goal was made available to DBE firms.

4.3.2 Names of certified DBEs and dates on which they were solicited to bid on the project. Include the items of work offered. Describe the methods used for following up initial solicitations to determine with certainty if the DBEs were interested, and the dates of the follow-up.

Attach supporting documents such as copies of letters, memos, facsimiles sent, telephone logs, telephone billing statements, and other evidence of solicitation. You are reminded to solicit DBEs through all reasonable and available means and provide sufficient time to allow DBEs to respond.

4.3.3 Name of selected firm and its status as a DBE for each item of work made available. Include name, address, and telephone number of each DBE that provided a quote and their price quote. If the firm selected for the item is not a DBE, provide the reasons for the selection and rejection of the DBE.

4.3.4 Name and date of each publication in which you solicited DBE participation for the project. Attach copies of the published advertisements (In the event the IFB submission due date is extended, bidders are to re-advertise the new bid due date).

4.3.5 Names of agencies and organizations, and dates on which they were contacted to provide assistance in contacting, recruiting, and using DBE firms. Bidder to provide copies of supporting documents of this effort.

4.3.6 List of efforts made to provide interested DBEs with adequate information about the plans, specifications, and requirements of the contract to assist them in responding to a solicitation. If you have provided information, identify the name of the DBE assisted, the nature of the information provided, and date of contact. Provide copies of supporting documents, as appropriate.

4.3.7 List of efforts made to assist interested DBEs in obtaining bonding, lines of credit, insurance, and other technical assistance afforded. If such assistance is provided by you, identify the name of the DBE assisted, nature of the assistance offered, and date. Provide copies of supporting documents, as appropriate.

4.3.8 Any additional data to support demonstration of good faith efforts undertaken prior to bid submission shall be provided.

For further guidance, refer to the United States Department of Transportation's (U.S. DOT) DBE Program, Appendix A of Title 49 CFR Part 26- "Guidance Concerning Good Faith Efforts."

SECTION V: CALIFORNIA UNIFIED CERTIFICATION PROGRAM

Dear Business Owner:

Thank you for your interest in participating in the Unified Certification Program (UCP) of California for Disadvantaged Business Enterprises (DBEs). As mandated by the United States Department of Transportation (U.S. DOT) in the DBE Program, Final Rule 49 Code of Federal Regulations (CFR), Part 26, all U.S. DOT recipients of federal financial assistance must participate in a statewide UCP by March 2002. The UCP is a "One-Stop Shopping" certification procedure that will eliminate the need for DBE firms to obtain certifications from multiple agencies within the State.

The UCP of California is charged with the responsibility of certifying firms and compiling and maintaining the Database of certified DBEs for U.S. DOT grantees in California, pursuant to 49 CFR Part 26. The Database is intended to expand the use of DBE firms by maintaining complete and current information on those businesses and the products and services they can provide to all grantees of California.

Please complete the attached application and supplemental questionnaire if you wish to be considered for DBE certification and your business meets the following general guidelines:

1. The firm must be at least 51% owned by one or more socially and economically disadvantaged individuals.

2. The firm must be an independent business, and one or more of the socially and economically disadvantaged owners must control its management and daily operations.

3. Only existing for-profit "Small Business Concerns," as defined by the Small Business Act and Small Business Administration (SBA) regulations may be certified. DBE applicants are first subject to the applicable small business size standards of the SBA. Second, the average annual gross receipts for the firm (including its affiliates) over the previous three fiscal years must not exceed U.S. DOT's cap of $17.42 million.

For firm applying for airport concession DBE certification: The average annual gross receipts for the firm (including its affiliates) over the previous three fiscal years must not exceed $30 million.

4. The Personal Net Worth (PNW) of each socially and economically disadvantaged owner must not exceed $750,000. The PNW excludes the individual's ownership interest in the applicant firm and the equity in his/her primary residence.

For firm applying for airport concession DBE certification: A PNW is not required at this time.

Socially and economically disadvantaged individual means any individual who is a citizen of the United States (or lawfully admitted permanent resident) and who is a member of the following groups: Black American, Hispanic American, Native American, Asian-Pacific American, Subcontinent Asian American, or Women,

or

Any individual found to be socially and economically disadvantaged on a case-by-case basis by a certifying agency pursuant to the standards of the U.S. DOT 49 CFR Part 26.

In order to avoid unnecessary delays, please complete all portions of the application and supplemental questionnaire, placing "N/A" next to items that are not applicable. Include all copies of documents requested on the application, and have the Affidavit of Certification, Affidavit of Social and Economic Disadvantage and Personal Net Worth Statement notarized. Additional documentation may be requested if it is considered necessary to make a certification determination. Incomplete applications/supplemental questionnaires or applications/supplemental questionnaires without all the required documents will not be evaluated until such documents are submitted. We recommend keeping a copy of all submitted documents for your records.

REMEMBER: It is no longer necessary to apply at more than one agency. If your firm meets the criteria for certification, it will be entered into the Database of DBEs for all U.S. DOT grantees in California. Only firms currently certified as eligible DBEs may participate in the DBE programs of U.S. DOT grantees of California.

The California UCP has established four Regional DBE Certification Clusters throughout the State to effectively facilitate statewide DBE certification activities. Please forward your completed certification packet to one of the agencies serving the county where your firm has its principal place of business. (See enclosed Roster of Certifying Agencies.)

For Out-of-State Firms: The California UCP will not process a new application for DBE certification from a firm having its principal place of business in another state unless the firm has already been certified in that state. If your firm is located outside of California and is certified as a DBE at its home state, please forward your completed certification packet, along with a copy of your DBE certificate, to the California Department of Transportation. (See page 3 of the enclosed Roster of Certifying Agencies.)

CALIFORNIA UNIFIED
CERTIFICATION PROGRAM

DEFINITIONS OF TERMS USED IN UNIFORM CERTIFICATION APPLICATION

Alaska Native Corporation (ANC) – Any Regional Corporation, Village Corporation, Urban Corporation, or Group Corporation organized under the laws of the State of Alaska in accordance with the Alaska Native Claims Settlement Act, as amended.

Concession – A grant of property made by a government or other controlling authority in return for stipulated services or a promise that the property will be used for a specific purpose.

Corporate Tax Returns – Federal Tax Return Form 1120 or 1120S, including Schedules E or C.

Indian Tribe – Any Indian tribe, band, nation, or other organized group or community of Indians, including any ANC, which is recognized as eligible for the special programs and services provided by the United States to Indians because of their status as Indians, or is recognized as such by the State in which the tribe, band, nation, group, or community resides. See definition of Tribally-Owned Concern.

Key Person Insurance – Life insurance and long-term disability income insurance on major employees, with benefits payable to the business.

Native Hawaiian – Any individual whose ancestors were natives, prior to 1778, of the area, which now comprises the State of Hawaii.

Native Hawaiian Organization – Any community service organization serving Native Hawaiians in the State of Hawaii which is a not-for-profit organization chartered by the State of Hawaii, is controlled by Native Hawaiians and whose business activities will principally benefit such Native Hawaiians.

Partnership Tax Returns – Federal Tax Return Form 1065, including Schedules K and K-1.

Personal Net Worth – The net value of the assets of an individual remaining after total liabilities are deducted. An individual's personal net worth does not include: The individual's ownership interest in an applicant or participating DBE firm; or the individual's equity in his or her primary place of residence. An individual's personal net worth includes only his or her own share of assets held jointly or as community property with the individual's spouse.

Personal Tax Returns – Federal Tax Return Form 1040, including Schedules B and C.

Regular Dealer – A firm that owns, operates, or maintains a store, warehouse, or other establishment in which the materials, supplies, articles or equipment are bought, kept in stock, and regularly sold or leased to the public in the usual course of business. Packagers, brokers, manufacturers' representatives, or other persons who arrange or expedite transactions are not regular dealers.

Socially and Economically Disadvantaged Individual – Any individual who is a citizen (or lawfully admitted permanent resident) of the United States and who is –

1. Any individual who a recipient finds to be a socially and economically disadvantaged individual on a case-by-case basis.

2. Any individual in the following groups, members of which are rebuttably presumed to be socially and economically disadvantaged:

   - "African Americans" or "Black Americans," which includes persons having origins in any of the Black racial groups of Africa.

   - "Hispanic Americans," which includes persons of Mexican, Puerto Rican, Cuban, Dominican, Central or South American, or other Spanish or Portuguese culture or origin, regardless of race.

   - "Native Americans," which includes persons who are American Indians, Eskimos, Aleuts, or Native Hawaiians.

   - "Asian-Pacific Americans," which includes persons whose origins are from Japan, China, Taiwan, Korea, Burma (Myanmar), Vietnam, Laos, Cambodia (Kampuchea), Thailand, Malaysia, Indonesia, the Philippines, Brunei, Samoa, Guam, the U.S. Trust Territories of the Pacific Islands (Republic of Palau), the Commonwealth of the Northern Marianas Islands, Macao, Fiji, Tonga, Kirbati, Juvalu, Nauru, Federated States of Micronesia, or Hong Kong.

   - "Asian Indian Americans" or "Subcontinent Asian Americans," which includes persons whose origins are from India, Pakistan, Bangladesh, Bhutan, the Maldives Islands, Nepal or Sri Lanka.

   - Women.

   - Any additional groups whose members are designated as socially and economically disadvantaged by the SBA, at such time as the SBA designation becomes effective.

Tribally-Owned Concerns – Any concern at least 51 percent owned by an Indian tribe.

DISADVANTAGED BUSINESS ENTERPRISE PROGRAM
49 CFR PART 26

UNIFORM CERTIFICATION APPLICATION

Under Sec. 26.107 of 49 CFR Part 26, dated February 2, 1999, if at any time, the Department or a recipient has reason to believe that any person or firm has willfully and knowingly provided incorrect information or made false statements, the Department may initiate suspension or debarment proceedings against the person or firm under 2 CFR Parts 180 and 1200, take enforcement action under 49 CFR Part 31, Program Fraud and Civil Remedies, and/or refer the matter to the Department of Justice under 18 U.S.C. 1001.

ROADMAP FOR APPLICANTS

← **Should I apply?**
Your firm must meet the following requirements to qualify as a DBE under the United States Department of Transportation (DOT) DBE program:

- ❒ Disadvantaged owners are U.S. citizens or legal permanent residents.
- ❒ Firm's annual gross income does NOT exceed $23.98 million (averaged over 3 years).
- ❒ Firm is at least 51% owned and controlled by socially and economically disadvantaged individuals.
- ❒ Firm meets SBA small business size in the primary industry group (13 CFR Part 121).
- ❒ Firm owned by ANCs, Indian Tribes, and Native Hawaiian Organizations meet the small business size requirements and are controlled by socially and economically disadvantaged individuals.
- ❒ Firm and owners meet the requirements of part 26 concerning licenses and credentials.
- ❒ Firm must be for-profit.

Note: Firm must undergo an on-site review.

↑ **Is there an easier way to apply?**
If you are currently certified as an 8(a), or SDB firm, you may be eligible for a streamlined certification application process pursuant to a Memorandum of Understanding (MOU) between DOT and the SBA. Under the MOU, the certifying agency to which you are applying will accept your current SBA application package in lieu of requiring you to submit an entirely new application. You must still meet the requirements for the DBE program.

→ **What documents must I submit with this application?**
The following documents must be attached to your application. Missing documents or incomplete information will delay the processing of your application.

All Applicants

- ❒ Work experience resumes that include places of ownership/employment and corresponding dates.
- ❒ Personal Net Worth statement or statement from CPA.
- ❒ Social & economic disadvantage statement.
- ❒ Entire copy of personal tax returns for the last 3 years, if applicable.
- ❒ Documented proof of contributions used to acquire ownership for each owner (e.g. both sides of cancelled checks).
- ❒ Signed loan agreement and security agreements.
- ❒ Description of real estate and proof of ownership listed.
- ❒ List of equipment leased and signed lease agreements.
- ❒ List of construction equipment and/or vehicles owned and titles/proof of ownership.
- ❒ Signed leases for office/storage space.
- ❒ End of Year Balance Sheets and Income Statements for the past 3 years (or life of firm if less than 3 years). A new business must provide a current Balance Sheet.
- ❒ Copies of relevant licenses.
- ❒ DBE/MBE/WBE, SBA 8(a) or SDB certifications or denials and decertifications.
- ❒ Bank Authorizations and Signatory cards.
- ❒ Schedule of salaries paid to all officers, managers, owners or directors of the firm (W-2s).

Sole Proprietorship

- ❒ Assumed name, fictitious name or other registration certificate from appropriate governmental agency.

Partnership or Joint Venture

- ❒ Original and any amended Partnership or Joint Venture Agreements.
- ❒ Assumed name, fictitious name, or other registration Certificate from appropriate governmental agency, if applicable.
- ❒ Partnership tax returns for last 3 years.

Corporation or LLC

- ❒ Official Articles of Incorporation (signed by the state official).
- ❒ Both sides of all Corporate Stock Certificates and Stock.
- ❒ Transfer Ledger.
- ❒ Entire copy of corporate tax returns for the last 3 years.
- ❒ Shareholders' Agreement.
- ❒ Minutes of all Stockholders' and Board of Directors' meetings.
- ❒ Corporate By-laws and any amendments.

NOTE: The specific state or recipient to which you are applying may have additional requirements.

↓ **Where can I find more information?**
U.S. DOT – http://osdbuweb.dot.gov/business/dbe/index.html

SECTION 1: CERTIFICATION INFORMATION

1. Prior/Other Certifications.

(a) Is your firm currently certified for any of the following programs? *(If Yes, attach a copy of your certification(s)).*	□ DBE	Name of certifying agency:
		Has this firm's home state conducted an on-site visit? □Yes, on _____/_____/_____ □ No
	□ 8(a) □ SDB	Stop! You may not have to complete this application. Ask about the streamlined application process under the SBA/DOT MOU.
(b) Has your firm applied for certification for any program listed in 1(a) in the past? □ Yes, on____/____/____ □ No If Yes, identify: Other names your company has used: Identification and certification numbers:		
(c) Has this firm or any of its owners, Board of Directors, officers or management personnel been denied certification or decertified before by any agency in any state, local or Federal entity? □ Yes, on ____/____/____ □ No If Yes, identify State and name of agency:		

SECTION 2: GENERAL INFORMATION

2. Contact Information.

Contact Person:		Legal name of firm:	
Phone #:	Cell #:	Fax #:	
E-Mail:	Web Site *(if firm has one)*:		
Street address of firm: *(No P.O. box no.)*			
Mailing address of firm:			
City:	County/Parish:	State:	Zip:

3. Business Profile.

Primary nature of business/NAICS code: Federal tax ID:
Federal identification number or Applicant's Social Security number:
This firm was established on ____/____/____ I(we) have owned this firm since: ____/____/____
Did the business exist under a different type of ownership prior to the date indicated above? □ Yes □ No If Yes, Explain.
Method of acquisition *(check all that apply):* □ Started new business □ Bought existing business □ Inherited business □ Secured concession □ Merger or consolidation □ Other *(explain)*_____
Has this firm operated under a different name during the past five years? □ Yes □ No If Yes, explain.
Has this firm applied for reorganization under Chapter 11 and/or liquidation under Chapter 7, within the last 3 years? *(If Yes, provide court papers)* □ Yes □ No
Type of firm *(Check all applicable)*: □ Sole proprietorship *(provide a copy of the assumed name certificate)* □ Partnership (provide copies of all partnership agreements and the assumed named certificate) □ Corporation (provide Articles of Incorporation, copies of the stock certificates (both sides), Stock Transfer Ledger, Shareholders' Agreement, all minutes of the shareholders' meetings and Board of Directors' meetings, the Corporate Bylaws and Bylaws Amendments (if applicable), the Corporate Bank Resolution and Bank Signature Cards) □ Limited Liability Partnership □ Joint Venture □ Other
Number of employees: Permanent Full-time___ Temporary Full-time___ Seasonal Full-time___ Permanent Part-time___ Temporary Part-time___ Seasonal Part-time___ Where do you obtain seasonal employees?
Does your firm directly pay, in its own name, all its employees? □ Yes □ No If No, explain.
Specify the gross receipts of the firm for the last 3 years: Year ending_____ Total receipts: $_____ *(Attach copies of full transactions for each year)* Year ending_____ Total receipts: $_____ Year ending_____ Total receipts: $_____

SECTION 3: OWNERSHIP

4. Identify all individuals or holding companies with any ownership interest. List their cash, equipment and/or real estate and/or other investment in the firm; and attach the documentation of the source of these investments. *(Attach work experience resumes of each person; If more than two owners, attach a separate sheet.)*

First Person

Name:	Title:	Home Phone#:
Home Address *(street and number)*:		
City:	State:	Zip

Gender: □ Male □ Female U.S. Citizen: □ Yes □ No Legal permanent resident: □ Yes □ No	Ethnic Group *(attach proof of status)*: □ African American □ Hispanic □ Native American □ Caucasian □ Asian Pacific □ Asian Indian □ Other Ethnic Group *(explain)*_____

Number of years owned: Percentage owned: Familial relationship to other owners:	Initial investment to acquire ownership interest in firm:	Type Cash Real Estate Equipment Other	Dollar Value $ $ $ $

Shares of Stock: Number Percentage Class Date Acquired Method Acquired

Additional contributions made by anyone since the business was started/acquired:

Second Person

Name:	Title:	Home Phone#:
Home Address (street and number):		
City:	State:	Zip:

Gender: □ Male □ Female U.S. Citizen: □ Yes □ No Legal permanent resident: □ Yes □ No	Ethnic Group (Attach proof of status): □ African American □ Hispanic □ Native American □ Caucasian □ Asian Pacific □ Asian Indian □ Other Ethnic Group (explain)_____

Number of years owned: Percentage owned: Familial relationship to other owners:	Initial investment to acquire ownership interest in firm:	Type Cash Real Estate Equipment Other	Dollar Value $ $ $ $

Shares of Stock: Number Percentage Class Date Acquired Method Acquired

Additional contributions made by anyone since the business was started/acquired:

SECTION 4: CONTROL

5. Identify Officers & Board of Directors. *(Attach work experience resumes of each person; If additional space is required, attach a separate sheet.)*

	Name	Title/Date Appointed	Ethnicity	Gender
Company Officers	1. 2. 3. 4. 5.			
Board of Directors	1. 2. 3. 4 5.			

6. Identify management personnel who control the firm in the following areas. (Attach work experience resumes, including dates of employment at each company for each person; if more than two persons, attach a separate sheet)

	Name	Title	Ethnicity	Gender
Financial Decision (*responsibility for check signing, acquisition of lines of credit, surety bonding, supplies, etc.)*	1. 2.			
Estimating, bidding and negotiating *(cost estimates, bid preparation and submission, negotiation or contract execution)*	1. 2.			
Hiring/firing of management personnel	1. 2.			
Field/Production Operations Supervisor *(site supervision/scheduling, project management services)*	1. 2.			
List all field supervisors	1. 2.			
Office management	1. 2.			
Marketing/Sales	1. 2.			
Purchasing of major equipment	1. 2.			

7. Identify persons or firms who provide the following services.

	Name of firm	Name of person	Address	Phone No.
External management or technical/ Computer service				
Accountant				
Attorney				
Principal Suppliers	1. Materials or equipment supplied _____ 2. Materials or equipment supplied _____			

8. Identify those union(s), business(es), or professional association(s) in which the owner(s) or management personnel have membership.

Name of union, business or professional association	Address	Phone No.
1.		
2.		
3.		

9. Attach a list of equipment and/or vehicles within your firm's possession or under your control (indicate separately), office space (owned or leased) and storage space (owned or leased), including signed leasing agreements.

10. Financial Information.

(a) Banking Information
Name of bank: _____Phone No. ( )_____
Name of officer: _____
Address of bank: _____City: _____State: _____ Zip:_____

(b) Bonding Information: If you have bonding capacity, identify:
Name of agent or broker:_____ Phone No: ( )_____
Address of agent/broker:_____ City_____State: _____Zip :_____
Bonding limit: Aggregate limit $_____ Project limit $_____

(c) Attach copies of year end balance sheet and profit and loss (income) statements for the last 3 years, or if business has been in operation for less than one year, provide a current balance sheet, a projected profit and loss statement for the next 12 month period and a projected balance sheet for the end of that period.

11. Identify all sources, amount and purposes of money loaned to the firm, including name of person or firm securing the loan, if other than owner(s). *(Attach copies of all loan agreements.)*

Name of Source	Address of Source	Amount
1.		
2.		
3.		

12. List current licenses *(e.g. contractor, engineer, architect, ICC, etc.). (Attach copies of licenses.)*

Name of Individual or Firm	Name of License	Expiration Date	License Number
1.			
2.			
3.			

13. Does your firm have key person insurance? □ Yes □ No
(If Yes, attach a list of the persons named and the value.)

14. List the 3 largest contracts completed by this firm in the past 3 years.

Name of owner/contractor	Name/location of project	Type of work performed
1.		
2.		
3.		

15. List *all* active jobs this firm is currently working on. *(If additional space is required, attach a separate sheet.)*

Name of prime contractor and project number	Location of project	Type of work	Date project began	Anticipated completion date
1.				
2.				
3.				

SECTION 5: AFFILIATION

16. Affiliation with other businesses.

(a) Affiliate companies:	
(b) Do any of the people listed in question 4, 5, or 6 perform a management or supervisory function for any other business? □ Yes □ No If Yes, identify: Person:_____ Title:_____ Business:_____ Function:_____	
(c) Do any of the people listed in questions 4, 5, or 6 own or work for other firms that have a business relationship with yours? *(e.g., ownership interest, shared office space, financial investments, equipment leases or personnel sharing)*? □ Yes □ No If Yes, identify: Firm: _____ Person:_____ Business Relationship_____	
(d) Whether affiliated or not, is the applicant firm co-located at any of it business locations, or does it share a telephone number, P.O. Box, office space, yard, warehouse, facilities, equipment, or office staff, with any other business, organization, or entity? □ Yes □ No If Yes, identify: Firm's name:_____ Tax ID number_____ Explain nature of shared facilities: _____ _____	
(e) At present or in the past 5 years: If you answered Yes to any to any of these questions, identify on a separate piece of paper any relevant names, addresses, dates and explanations.	Has this firm been a subsidiary of any other firm? □ Yes □ No
	Has this firm consisted of a partnership in which one or more of the partners are other firms? □ Yes □ No
	Has any other firm owned 5% or more of this firm? □ Yes □ No
	Has this firm had any subsidiaries? □ Yes □ No
	Has this firm owned 5% or more of any other firm? □ Yes □ No

SECTION 6: OTHER

17. Are you a trucking firm? □ Yes □ No
(If Yes, attach proof of ownership of a fully operational truck and trailer. Documentation should include insurance and titles.)

18. Are you a regular dealer? □ Yes □ No
(If Yes, attach proof of warehouse, product lines carried, and distribution equipment.)

AFFIDAVIT OF CERTIFICATION

A MATERIAL OR FALSE STATEMENT OR OMISSION MADE IN CONNECTION WITH THIS APPLICATION IS SUFFICIENT CAUSE FOR DENIAL OF CERTIFICATION, REVOCATION OF A PRIOR APPROVAL, INITIATION OF SUSPENSION OR DEBARMENT PROCEEDINGS, AND MAY SUBJECT THE PERSON AND/OR ENTITY MAKING THE FALSE STATEMENT TO ANY AND ALL CIVIL AND CRIMINAL PENALTIES AVAILABLE PURSUANT TO APPLICABLE FEDERAL AND STATE LAW.

I_____ (full name), swear or affirm under penalty of law that I am _____(title) of applicant firm_____ (firm name) and that I have read and understood all of the questions in this application and that all of the foregoing information and statements submitted in this application and its attachments and supporting documents are true and correct to the best of my knowledge, and that all responses to the questions are full and complete, omitting no material information. The responses include all material information necessary to fully and accurately identify and explain the operations, capabilities and pertinent history of the named firm, as well as the ownership, control, and affiliations thereof.

I recognize that the information submitted in this application is for the purpose of inducing certification approval by a government agency. I understand that a government agency may, by means it deems appropriate, determine the accuracy and truth of the statements in the application, and I authorize such agency to contact any entity named in the application, and the named firm's bonding companies, banking institutions, credit agencies, contractors, clients, and other certifying agencies for the purpose of verifying the information supplied and determining the named firm's eligibility.

I agree to submit to government audit, examination and review of books, records, documents and files, in whatever form they exist, of the named firm and its affiliates, inspection of its place(s) of business and equipment, and to permit interviews of its principals, agents, and employees. I understand that refusal to permit such inquiries shall be grounds for denial of certification.

If awarded a contract or subcontract, I agree to promptly and directly provide the prime contractor, if any, and the Department, recipient agency, or federal funding agency on an ongoing basis, current, complete and accurate information regarding (1) work performed on the project; (2) payments; and (3) proposed changes, if any, to the foregoing arrangements.

I agree to provide written notice to the recipient agency or Unified Certification Program (UCP) of any material change in the information contained in the original application within 30 calendar days of such change (e.g., ownership, address, telephone number, etc.).

I acknowledge and agree that any misrepresentations in this application or in records pertaining to a contract or subcontract will be grounds for terminating any contract or subcontract which may be awarded; denial or revocation of certification; suspension and debarment; and for initiating action under federal and/or state law concerning false statement, fraud or other applicable offenses.

I declare under penalty of perjury that the foregoing is true and correct.

Signature of owner, officer or partner_____Date*(mm/dd/yy)*_____

I declare under penalty of perjury that the information provided in this application and supporting documents relating to my disadvantaged status and me is true and correct.

Print Name: _____ Signature: _____ Date:_____

Print Name: _____ Signature: _____ Date:_____

Print Name: _____ Signature: _____ Date:_____

Print Name: _____ Signature: _____ Date:_____

Print Name: _____ Signature: _____ Date:_____

NOTARY CERTIFICATION

STATE OF_____

}SS:

COUNTY OF_____

Subscribed and sworn to before me this _____day of _____, 20___

Signature of Notary Public_____

Printed/typed name of Notary Public_____

County of residence_____ Date commission expires _____

AFFIDAVIT OF SOCIAL AND ECONOMIC DISADVANTAGE

This form must be signed and notarized for <u>each</u> owner upon which disadvantaged status is relied.

SOCIAL DISADVANTAGE

I hereby certify under penalty of perjury that I am a member of one of the following groups:
□ African American □ Hispanic □ Native American □ Caucasian □ Asian Pacific
□ Asian Indian □ Other Ethnic Group *(explain)*_____

And that I have held myself out as a member of that group and have acted as a member of that group.

I further certify that I am an owner of the company seeking DBE certification and that I have experienced social disadvantage due to the effect of discrimination based upon my (check all that apply)
□ race □ ethnicity □ gender □ other *(explain)*_____

Print Name:_____Signature:_____Date:_____

PERSONAL FINANCIAL STATEMENT

I hereby certify under penalty of perjury that my personal net worth does not exceed $1,320,000.

Print Name:_____Signature:_____Date:_____

This statement is supported by (check one)
□ A signed, notarized statement of personal net worth, with appropriate supporting documentation.
□ A signed, notarized statement from a certified public accountant (CPA) attesting that he/she has examined my personal net worth and determined, consistent with the provisions of 49 CFR Section 26.67(a)(2) and generally accepted accounting standards, that my personal net worth does not exceed $1,320,000.

NOTARY CERTIFICATION

STATE OF_____
}SS:
COUNTY OF_____

Subscribed and sworn to before me this _____day of _____, 20___

Signature of Notary Public_____

Printed/typed name of Notary Public_____

County of residence_____ Date commission expires _____

PERSONAL NET WORTH STATEMENT
(49 CFR PART 26)

As of _____

For firm applying for airport concession DBE certification: A PNW is not required at this time.

Each individual owner of a DBE firm whose ownership or control is relied upon for DBE certification is required to provide Personal Net Worth (PNW) information and include it in the notarized DBE Certification Application package. For a firm with more than one owner relied upon for DBE certification, please make additional copies of this Statement. The Unified Certification Program of California reserves the right to request additional information as necessary and may conduct an on-site visit to verify the information contained in this Statement.

I understand that all personal financial information I submit will remain confidential unless I give my written consent to release this information to a third party. I also understand that the only exception to this confidentiality provision is if I decide to appeal a decision by the Unified Certification Program of California.

Name_____ Phone _____
Business Address_____
City, State, & Zip Code_____
Business Name_____

Assets[1]		**Liabilities**	
Cash on Hand & in Banks	$_____	Accounts Payable	$_____
Savings Accounts	$_____	Notes Payable to Banks and Others	$_____
IRA or Other Retirement Accounts	$_____	Installment Accounts (Auto)	$_____
Accounts/Notes Receivable	$_____	(Mo. Payments $_____)	
Life Insurance/Cash Surrender Value	$_____	Other Installment Accounts	$_____
Stocks and Bonds	$_____	(Mo. Payments $_____)	
Real Estate[2]	$_____	Loans on Life Insurance	$_____
Automobile – Present Value	$_____	Mortgages on Real Estate[2]	$_____
Other Personal Property	$_____	Unpaid Taxes	$_____
Other Assets	$_____	Other Liabilities	$_____
Total Assets	**$**_____	**Total Liabilities**	$_____
		NET WORTH	$_____

Sources of Income		**Contingent Liabilities**	
Salary	$_____	As Endorse or Co-Maker	$_____
Net Investment Income	$_____	Legal Claims and Judgment	$_____
Real Estate Income	$_____	Provision for Federal Income Tax	$_____
Other Income[3]	$_____	Other Special Debt	$_____

Is any portion of the equity in the individual's primary residence attributable to withdrawal(s) from the firm applying for DBE certification? _____ If yes, how much? $_____

The undersigned does hereby swear that the foregoing statements are true, accurate, and complete.

Signature_____ Date _____

1. Exclude an individual's ownership interest in the firm applying for DBE certification.
   For individuals claiming to be Alaska Native, exclude any of the following which the individual receives from any Alaska Native Corporation ("ANC"): Cash (including cash dividends on stock received from an ANC) to the extent that it does not, in the aggregate, exceed $2,000 per individual per year; a partnership interest; land, or an interest in land (including land or an interest in land received from an ANC as a dividend or distribution on stock); and an interest in a settlement trust.
2. Do not include the individual's primary residence.
3. Alimony or child support payments need not be disclosed in "Other Income" unless it is desired to have such payments counted toward total income.

PERSONAL NET WORTH STATEMENT
NOTARY ACKNOWLEDGEMENT

STATE OF _____

COUNTY OF _____

On this ___ day of _____ , _____before me, the undersigned Notary Public, personally appeared _____ personally known to me (or proved to me on the basis of satisfactory evidence) to be the person(s) whose name(s) is/are subscribed to the within Affidavit, and acknowledged that he/she/they executed the same in his/her/their authorized capacity, and that by his/her/their signature on the instrument, the person(s) executed the instrument.

WITNESS my hand and Official Seal.

Signature: _____

Name: _____
(Typed or Printed)

CALIFORNIA UNIFIED CERTIFICATION PROGRAM (CUCP)

UNIFIED CERTIFICATION PROGRAM

SUPPLEMENTAL QUESTIONNAIRE

***For firm applying for airport concession DBE certification*:** A Supplemental Questionnaire is not required at this time.

Firm Name: _____

1. Is the firm's principal place of business in California? Yes _____ No

   If no, please include a copy of the firm's DBE certificate issued in its home state. (The California UCP will not process a new application for DBE certification from a firm having its principal place of business in another state unless the firm has already been certified in that state.)
2. Is the firm authorized to do business in the State of California? Yes _____ No

3. List all office locations in California:_____
   _____
   _____
   _____

4. Has the firm ever done business with any U.S. DOT Grantees of California? Yes _____ No

   If yes, please indicate the agency name(s) and latest year(s):

Agency	Latest Year

Agency	Latest Year

5. Is there an upcoming project in which the firm is interested and therefore, would need to be certified prior to a specific date in order to be counted toward DBE participation? Yes _____ No

   If yes, please answer the following:
   Agency letting contract: _____
   Contract number and name:_____
   Bid opening date (If Request for Proposal, submission due date): _____

6. Indicate areas where you prefer to do your work. You may select Statewide (SW) to indicate you are willing to work anywhere in the State.

□ SW Statewide	□ 10 Fresno □ 50 Stanislaus	□ 20 Madera	□ 30 Orange	□ 40 San Luis Obispo
□ 01 Alameda	□ 11 Glenn □ 51 Sutter	□ 21 Marin	□ 31 Placer	□ 41 San Mateo
□ 02 Alpine	□ 12 Humboldt □ 52 Tehema	□ 22 Mariposa	□ 32 Plumas	□ 42 Santa Barbara
□ 03 Amador	□ 13 Imperial □ 53 Trinity	□ 23 Mendocino	□ 33 Riverside	□ 43 Santa Clara
□ 04 Butte	□ 14 Inyo □ 54 Tulare	□ 24 Merced	□ 34 Sacramento	□ 44 Santa Cruz

CALIFORNIA UNIFIED CERTIFICATION PROGRAM (CUCP)

□ 05 Calavaras	□ 15 Kern □ 55 Tuolumne	□ 25 Modoc	□ 35 San Benito	□ 45 Shasta
□ 06 Colusa	□ 16 Kings □ 56 Ventura	□ 26 Mono	□ 36 San Bernardino	□ 46 Sierra
□ 07 Contra Costa	□ 17 Lake □ 57 Yolo	□ 27 Monterey	□ 37 San Diego	□ 47 Siskiyou
□ 08 Del Norte	□ 18 Lassen □ 58 Yuba	□ 28 Napa	□ 38 San Francisco	□ 48 Solano
□ 09 El Dorado	□ 19 Los Angeles	□ 29 Nevada	□ 39 San Joaquin	□ 49 Sonoma

CALIFORNIA UNIFIED CERTIFICATION PROGRAM (CUCP)

WORK CATEGORY CODES

Please review the enclosed Work Category Codes list and indicate below areas of expertise that you prefer to perform in order of importance. DBE applicants are first subject to the applicable small business size standards of the Small Business Administration (SBA). Second, the average annual gross receipts for the firm (including its affiliates) over the previous three fiscal years must not exceed the U.S. Department of Transportation's cap of $17.42 million. Please note that size standards are subject to change at any time by the SBA. To determine if the firm meets SBA's and U.S. DOT's size standards, please contact one of the certifying agencies on the enclosed roster.

For firm applying for airport concession DBE certification: The average annual gross receipts for the firm (including its affiliates) over the previous three fiscal years must not exceed $30 million.

Work Code	*Title (Description of Work/Service)*

CALIFORNIA UNIFIED CERTIFICATION PROGRAM (CUCP)

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AGRICULTURE, FORESTRY, AND FISHING

A0110	CASH GRAINS
A0130	FIELD CROPS, EXCEPT CASH GRAINS
A0160	VEGETABLES & MELONS
A0170	FRUITS & TREE NUTS
A0180	HORTICULTURAL SPECIALTIES
A0190	GENERAL FARMS, PRIMARILY CROP
A0210	LIVESTOCK, EXCEPT DAIRY AND POULTRY
A0240	DAIRY FARMS
A0250	POULTRY & EGGS
A0270	ANIMAL SPECIALTIES
A0290	GENERAL FARMS, PRIMARILY ANIMAL
A0710	SOIL PREPARATION SERVICES
A0720	CROP SERVICES
A0740	VETERINARY SERVICES
A0750	ANIMAL SERVICES, EXCEPT VETERINARY
A0760	FARM LABOR & MANAGEMENT SERVICES
A0780	LANDSCAPE & HORTICULTURAL SERVICES
A0810	TIMBER TRACTS
A0830	FOREST PRODUCTS
A0850	FORESTRY SERVICES
A0910	COMMERCIAL FISHING
A0920	FISH HATCHERIES & PRESERVES
A0970	HUNTING, TRAPPING, GAME PROPAGATION

MINING

B1010	IRON ORES
B1020	COPPER ORES
B1030	LEAD & ZINC ORES
B1040	GOLD & SILVER ORES
B1060	FERROALLOY ORES, EXCEPT VANADIUM
B1080	METAL MINING SERVICES
B1090	MISC METAL ORES
B1220	BITUMINOUS COAL & LIGNITE MINING
B1230	ANTHRACITE MINING
B1240	COAL MINING SERVICES
B1310	CRUDE PETROLEUM & NATURAL GAS
B1320	NATURAL GAS LIQUIDS
B1380	OIL & GAS FIELD SERVICES
B1410	DIMENSION STONE
B1420	CRUSHED & BROKEN STONE
B1440	SAND & GRAVEL
B1450	CLAY, CERAMIC, & REFRACTORY MINERALS
B1470	CHEMICAL & FERTILIZER MINERALS
B1480	NONMETALLIC MINERALS SERVICES
B1490	MISC NONMETALLIC MINERALS

CONSTRUCTION

C0600	MISC SUPPLIERS
C0612	SAFETY
C0620	LANDSCAPING & NURSERY
C0624	PETROLEUM, OIL, LUBRICANTS
C0625	SAND & GRAVEL
C0626	GRANITE & MARBLE
C0639	ASPHALT
C0649	PILINGS
C0651	CONCRETE & CEMENT
C0652	REINFORCING BAR SECTION
C0655	STEEL
C0656	DOORS & FRAMES
C0657	LUMBER
C0658	PAPER
C0659	PAINT
C0670	PIPE
C0680	FENCING
C0683	GUARD RAILINGS & BARRIERS
C0685	PAVEMENT MARKERS
C0686	ELECTRICAL & SIGNALS
C0687	GLASS & GLASS BLOCK
C0698	BUILDING MATERIAL
C0699	TOOLS
C0700	CONSTRUCTION STAKING
C1200	CONSTRUCTION AREA SIGNS
C1201	TRAFFIC CONTROL SYSTEM
C1522	RESET, ADJUST ROADWAY ITEMS
C1531	PLANE ASPHALT CONCRETE
C1575	REMOVE BRIDGE ITEM
C1580	MODIFY BRIDGE ITEM
C1601	CLEARING & GRUBBING
C1701	DEVELOP WATER SUPPLY
C1801	DUST PALLIATIVE
C1901	ROADWAY EXCAVATION
C1910	GRADING
C1920	STRUCTURE EXCAVATION
C1925	SHAPED BEDDING
C1930	STRUCTURE BACKFILL
C1940	DITCHES EXCAVATION
C1970	EMBANKMENT CONSTRUCTION
C1980	IMPORTED BORROW
C2000	HIGHWAY PLANTING
C2020	SOIL AMENDMENTS
C2021	HYDROSEEDING

CALIFORNIA UNIFIED CERTIFICATION PROGRAM (CUCP)

CONSTRUCTION (CONTINUED)

C2030	EROSION CONTROL
C2065	IRRIGATION SYSTEM
C2201	FINISHING ROADWAY
C2401	LIME TREATMENT
C2501	AGGREGATE SUBBASE
C2602	AGGREGATE BASE
C2700	CEMENT TREATED BASE
C2800	CONCRETE BASE
C3600	PENETRATION TREATMENT & PRIME COAT
C3701	SEAL COAT
C3901	ASPHALT CONCRETE
C3910	PAVING ASPHALT (ASPHALT CONCRETE)
C3930	PAVEMENT REINFORCING FABRIC
C3940	PLACE ASPHALT CONCRETE DIKE & MISC
C3990	RECYCLE, RECLAIM ASPHALT CONCRETE
C4010	PORTLAND CEMENT & CONCRETE PAVEMENT
C4040	CLEAN & SEAL PAVEMENT JOINTS - ROUT & SEAL CRACKS
C4101	PAVEMENT SUBSEALING & JACKING
C4201	GROOVE & GRIND PAVEMENT
C4901	FURNISH & DRIVE PILING
C4906	CAST-IN-DRILLED-HOLE CONCRETE PILING
C5000	PRESTRESSING CONCRETE CAST-IN-PLACE
C5100	CONCRETE STRUCTURE
C5105	MINOR CONCRETE STRUCTURE
C5110	CONCRETE SURFACE FINISH
C5111	CONCRETE OVERLAY – DRILL & BOND
C5120	FURNISH PRECAST CONCRETE DECK UNIT
C5124	ERECT PRECAST CONCRETE
C5135	CONCRETE BLOCK & MASONRY RETAINING WALL
C5136	REINFORCED CONCRETE CRIB WALL
C5150	CORE CONCRETE - REPAIR BRIDGE DECK
C5180	SOUND WALL (MASONRY BLOCK - CONCRETE)
C5190	JOINT SEAL - WATER STOP
C5201	REINFORCING STEEL
C5301	AIR-BLOWN MORTAR
C5310	PIPE LINING (CEMENT MORTAR)
C5401	WATERPROOFING
C5501	STEEL STRUCTURES
C5570	STEEL CRIB WALL
C5601	SIGN STRUCTURE
C5620	ROADSIDE SIGN
C5701	LUMBER & TIMBER
C5900	CLEAN & PAINT STEEL
C6101	RAILROAD WORK
C6200	ALTERNATIVE PIPE CULVERT
C6301	CAST-IN-PLACE CONCRETE PIPE
C6401	ASBESTOS-CEMENT PIPE
C6500	REINFORCED CONCRETE PIPE
C6552	JACKED REINFORCED CONCRETE PIPE
C6591	NON-REINFORCED CONCRETE PIPE
C6650	CORRUGATED METAL PIPE (CSP)
C6680	JACKED CORRUGATED STEEL PIPE)
C6700	STRUCTURAL STEEL PLATE PIPE, ARCH & PIPE ARCH
C6800	SUBSURFACE DRAIN
C6811	EDGE DRAIN
C6815	HORIZONTAL DRAIN
C6819	FILTER FABRIC
C6820	PERMEABLE MATERIAL
C6900	DOWNDRAIN
C7000	PLASTIC PIPE
C7006	CORRUGATED STEEL PIPE INLET & RISER
C7026	CORRUGATED STEEL PIPE ENERGY DISSIPATOR
C7035	WELDED STEEL PIPE
C7041	JACKED WELDED STEEL PIPE
C7065	DEBRIS RACK-DRAINAGE GATE
C7112	REINFORCED CONCRETE SEWER PIPE
C7140	CLAY SEWER PIPE
C7160	ASBESTOS-CEMENT SEWER PIPE
C7180	CAST IRON SEWER PIPE
C7191	SEWER MANHOLE
C7194	JUNCTION CHAMBER
C7200	ROCK SLOPE PROTECTION
C7215	CONCRETED-ROCK SLOPE PROTECTION
C7218	AIR-BLOWN MORTAR (SLOPE PAVING)
C7250	SACKED CONCRETE
C7301	CONCRETE CURB & SIDEWALK - MISC
C7405	DRAINAGE PUMPING EQUIPMENT
C7410	PUMPING PLANT ELECTRICAL EQUIPMENT
C7415	ENGINE GENERATOR SET
C7500	MISC IRON & STEEL FRAME, COVER & GRATE
C7505	MISC BRIDGE METAL PUMPING PLANT METAL
C7600	DEVELOP, TEST, DRILL, MAINTAIN WELLS
C8000	FENCING
C8101	SURVEY OR HISTORICAL MONUMENT
C8201	OBJECT MARKER
C8320	METAL BEAM GUARD RAILING
C8330	METAL RAILING
C8331	CONCRETE BARRIER
C8391	METAL BEAM BARRIER
C8405	THERMOPLASTIC TRAFFIC STRIPE & MARKING
C8406	PAINTED TRAFFIC STRIPE & MARKING
C8501	PAVEMENT MARKING

CALIFORNIA UNIFIED CERTIFICATION PROGRAM (CUCP)

CONSTRUCTION (CONTINUED)

C8602	SIGNAL & LIGHTING
C8603	SIGNAL
C8604	LIGHTING
C8605	MESSAGE SIGNS, LIGHTING & SIGN ILLUMINATION
C8608	DETECTOR
C8609	TRAFFIC COUNT STATION
C8610	SPEED MONITORING STATION
C8611	RAMP METERING SYSTEM
C8700	CONSULTANT
C8701	BUSINESS ADMINISTRATION
C8702	MANAGEMENT INFORMATION SYSTEMS
C8703	TRAFFIC ENGINEER
C8704	ARCHITECTURAL
C8705	DESIGN
C8706	DESIGN BRIDGES
C8707	FEASIBILITY STUDIES
C8710	ENGINEERING
C8711	COMPUTER
C8712	PUBLIC RELATIONS
C8716	ARCHITECTURAL ENGINEER
C8720	CIVIL ENGINEERING
C8721	RIGHT OF WAY ENGINEER
C8722	ENVIRONMENTAL ENGINEER
C8730	SAFETY STUDIES
C8740	ELECTRICAL ENGINEERS
C8742	MECHANICAL ENGINEERS
C8744	LANDSCAPE ARCHITECTS
C8750	REAL ESTATE
C8760	SURVEYOR
C8761	GEOPHYSICS
C8765	DRAFTING
C8770	CONSTRUCTION MANAGEMENT
C8900	RAIL CAR SERVICES
C8901	AIR CONDITIONING/SHEET METAL
C8902	HEATING
C8903	ELECTRICAL
C8904	GLASS INSTALLATION
C8905	SEATS
C8906	AUTO SERVICE
C8907	MACHINING
C8908	PERSONNEL TRANSPORTATION
C9602	BOTTOM DUMP TRUCKING
C9605	FLAT BED TRUCKING
C9632	HAZARDOUS WASTE TRUCKING
C9670	TRUCK RENTAL
C9771	TRUCK BROKER
C9774	TRUCKER
C9801	BUILDING CONSTRUCTION
C9810	SMALL STRUCTURES
C9822	CARPENTRY
C9826	LAND SURVEYING
C9827	DRYWALL CONSTRUCTION
C9828	CRANE WORK
C9829	RETAINER WALLS
C9830	WALL COVERING
C9834	CABINETRY
C9835	LATHING
C9836	PLASTERING
C9837	ROOFING
C9838	CERAMIC TILE
C9839	CARPET & DRAPES
C9840	FLOOR COVERING
C9842	MASONRY
C9846	ADDITIONS, ALTERATIONS OR REPAIRS
C9850	PLUMBING
C9852	EXTERMINATORS
C9854	PAINTING STRUCTURES
C9858	RESIDENTIAL ELECTRICAL
C9860	WATER METER & TEMP FACILITIES
C9862	RESIDENTIAL AIR CONDITIONING & SHEET METAL
C9864	SHOWER DOORS & MIRROR INSTALLATION
C9866	HEATING & AIR CONDITIONING
C9868	INSULATION
C9869	ASBESTOS REMOVAL/ABATEMENT
C9872	SEWER CONNECTION
C9874	HARDWARE (ROUGH)
C9876	HARDWARE (FINISH)
C9878	SIDING, STUCCO, VENEER
C9901	MISC SERVICES – CALTRANS FACILITIES
C9902	FUEL SYSTEMS
C9903	CONSTRUCTION CLEAN UP
C9904	CORING
C9905	CUTTING
C9906	SANDBLASTING
C9907	CONSTRUCTION EQUIPMENT RENTAL
C9908	HEAVY EQUIPMENT RENTAL
C9947	ELEVATOR
C9980	DEMOLITION
C9981	BUILDING MOVER
C9988	MOVING & STORAGE
C9999	BROKER (FOR FEE ONLY)

CALIFORNIA UNIFIED CERTIFICATION PROGRAM (CUCP)

UNIFIED CERTIFICATION PROGRAM

MANUFACTURING

D2010	MEAT PRODUCTS
D2020	DAIRY PRODUCTS
D2030	PRESERVED FRUITS & VEGETABLES
D2040	GRAIN MILL PRODUCTS
D2050	BAKERY PRODUCTS
D2060	SUGAR & CONFECTIONERY PRODUCTS
D2070	FATS & OILS
D2080	BEVERAGES
D2090	MISC FOOD & KINDRED PRODUCTS
D2110	CIGARETTES
D2120	CIGARS
D2130	CHEWING & SMOKING TOBACCO
D2140	TOBACCO STEMMING & REDRYING
D2210	BROADWOVEN FABRIC MILLS, COTTON
D2220	BROADWOVEN FABRIC MILLS, MANMADE
D2230	BROADWOVEN FABRIC MILLS, WOOL
D2240	NARROW FABRIC MILLS
D2250	KNITTING MILLS
D2260	TEXTILE FINISHING, EXCEPT WOOL
D2270	CARPETS & RUGS
D2280	YARN & THREAD MILLS
D2290	MISC TEXTILE GOODS
D2310	MEN'S & BOYS' SUITS & COATS
D2320	MEN'S & BOYS' FURNISHINGS
D2330	WOMEN'S & MISSES' OUTERWEAR
D2340	WOMEN'S & CHILDREN'S UNDERGARMENTS
D2350	HATS, CAPS, & MILLINERY
D2360	GIRLS' & CHILDREN'S OUTERWEAR
D2370	FUR GOODS
D2380	MISC APPAREL & ACCESSORIES
D2390	MISC FABRICATED TEXTILE PRODUCTS
D2410	LOGGING
D2420	SAWMILLS & PLANING MILLS
D2430	MILLWORK, PLYWOOD & STRUCTURAL MEMBERS
D2440	WOOD CONTAINERS
D2450	WOOD BUILDINGS & MOBILE HOMES
D2490	MISC WOOD PRODUCTS
D2510	HOUSEHOLD FURNITURE
D2520	OFFICE FURNITURE
D2530	PUBLIC BUILDING & RELATED FURNITURE
D2540	PARTITIONS & FIXTURES
D2590	MISC FURNITURE & FIXTURES
D2610	PULP MILLS
D2620	PAPER MILLS
D2630	PAPERBOARD MILLS
D2650	PAPERBOARD CONTAINERS & BOXES
D2670	MISC CONVERTED PAPER PRODUCTS
D2710	NEWSPAPERS
D2720	PERIODICALS
D2730	BOOKS
D2740	MISC PUBLISHING
D2750	COMMERCIAL PRINTING
D2760	MANIFOLD BUSINESS FORMS
D2770	GREETING CARDS
D2780	BLANKBOOKS & BOOKBINDING
D2790	PRINTING TRADE SERVICES
D2810	INDUSTRIAL INORGANIC CHEMICALS
D2820	PLASTICS MATERIALS & SYNTHETICS
D2830	DRUGS
D2840	SOAP, CLEANERS, & TOILET GOODS
D2850	PAINTS & ALLIED PRODUCTS
D2860	INDUSTRIAL ORGANIC CHEMICALS
D2870	AGRICULTURAL CHEMICALS
D2890	MISC CHEMICAL PRODUCTS
D2910	PETROLEUM REFINING
D2950	ASPHALT PAVING & ROOFING MATERIALS
D2990	MISC. PETROLEUM & COAL PRODUCTS
D3010	TIRES & INNER TUBES
D3020	RUBBER & PLASTICS FOOTWEAR
D3050	HOSE & BELTING & GASKETS & PACKING
D3060	FABRICATED RUBBER PRODUCTS, NEC
D3080	MISC PLASTICS PRODUCTS, NEC
D3110	LEATHER TANNING & FINISHING
D3130	FOOTWEAR CUT STOCK
D3140	FOOTWEAR, EXCEPT RUBBER
D3150	LEATHER GLOVES & MITTENS
D3160	LUGGAGE
D3170	HANDBAGS & PERSONAL LEATHER GOODS
D3190	LEATHER GOODS, NEC
D3210	FLAT GLASS
D3220	GLASS & GLASSWARE, PRESSED OR BLOWN
D3230	PRODUCTS OF PURCHASED GLASS
D3240	CEMENT, HYDRAULIC
D3250	STRUCTURAL CLAY PRODUCTS
D3260	POTTERY & RELATED PRODUCTS
D3270	CONCRETE, GYPSUM, & PLASTER PRODUCTS
D3280	CUT STONE & STONE PRODUCTS
D3290	MISC NONMETALLIC MINERAL PRODUCTS
D3310	BLAST FURNACE & BASIC STEEL PRODUCTS
D3320	IRON & STEEL FOUNDRIES
D3330	PRIMARY NONFERROUS METALS
D3340	SECONDARY NONFERROUS METALS
D3350	NONFERROUS ROLLING & DRAWING
D3360	NONFERROUS FOUNDRIES (CASTINGS)

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MANUFACTURING (CONTINUED)

D3390	MISC PRIMARY METAL PRODUCTS
D3410	METAL CANS & SHIPPING CONTAINERS
D3420	CUTLERY, HANDTOOLS, & HARDWARE
D3430	PLUMBING & HEATING, EXCEPT ELECTRIC
D3440	FABRICATED STRUCTURAL METAL PRODUCTS
D3450	SCREW MACHINE PRODUCTS, BOLTS, ETC.
D3460	METAL FORGINGS & STAMPINGS
D3470	METAL SERVICES, NEC
D3480	ORDNANCE & ACCESSORIES, NEC
D3490	MISC FABRICATED METAL PRODUCTS
D3510	ENGINES & TURBINES
D3520	FARM & GARDEN MACHINERY
D3530	CONSTRUCTION & RELATED MACHINERY
D3540	METALWORKING MACHINERY
D3550	SPECIAL INDUSTRY MACHINERY
D3560	GENERAL INDUSTRIAL MACHINERY
D3570	COMPUTER & OFFICE EQUIPMENT
D3580	REFRIGERATION & SERVICE MACHINERY
D3590	INDUSTRIAL MACHINERY, NEC
D3610	ELECTRIC DISTRIBUTION EQUIPMENT
D3620	ELECTRICAL INDUSTRIAL APPARATUS
D3630	HOUSEHOLD APPLIANCES
D3640	ELECTRIC LIGHTING & WIRING EQUIPMENT
D3650	HOUSEHOLD AUDIO & VIDEO EQUIPMENT
D3660	COMMUNICATIONS EQUIPMENT
D3670	ELECTRONIC COMPONENTS & ACCESSORIES
D3690	MISC ELECTRICAL EQUIPMENT & SUPPLIES
D3710	MOTOR VEHICLES & EQUIPMENT
D3720	AIRCRAFT & PARTS
D3730	SHIP & BOAT BUILDING & REPAIRING
D3740	RAILROAD EQUIPMENT
D3750	MOTORCYCLES, BICYCLES, & PARTS
D3760	GUIDED MISSILES, SPACE VEHICLES, PARTS
D3790	MISC TRANSPORTATION EQUIPMENT
D3810	SEARCH & NAVIGATION EQUIPMENT
D3820	MEASURING & CONTROLLING DEVICES
D3840	MEDICAL INSTRUMENTS & SUPPLIES
D3850	OPHTHALMIC GOODS
D3860	PHOTOGRAPHIC EQUIPMENT & SUPPLIES
D3870	WATCHES, CLOCKS, WATCHCASES & PARTS
D3910	JEWELRY, SILVERWARE, & PLATED WARE
D3930	MUSICAL INSTRUMENTS
D3940	TOYS & SPORTING GOODS
D3950	PENS, PENCILS, OFFICE, & ART SUPPLIES
D3960	COSTUME JEWELRY & NOTIONS
D3990	MISC MANUFACTURES

TRANSPORTATION & PUBLIC UTILITIES

E4010	RAILROADS
E4110	LOCAL & SUBURBAN TRANSPORTATION
E4120	TAXICABS
E4130	INTERCITY & RURAL BUS TRANSPORTATION
E4140	BUS CHARTER SERVICE
E4150	SCHOOL BUSES
E4170	BUS TERMINAL & SERVICE FACILITIES
E4210	TRUCKING & COURIER SERVICES, EX. AIR
E4220	PUBLIC WAREHOUSING & STORAGE
E4230	TRUCKING TERMINAL FACILITIES
E4310	U. S. POSTAL SERVICE
E4410	DEEP SEA FOREIGN TRANS. OF FREIGHT
E4420	DEEP SEA DOMESTIC TRANS. OF FREIGHT
E4430	FREIGHT TRANS. ON THE GREAT LAKES
E4440	WATER TRANSPORTATION OF FREIGHT, NEC.
E4480	WATER TRANSPORTATION OF PASSENGERS
E4490	WATER TRANSPORTATION SERVICES
E4510	AIR TRANSPORTATION, SCHEDULED
E4520	AIR TRANSPORTATION, NONSCHEDULED
E4580	AIRPORTS, FLYING FIELDS, & SERVICES
E4610	PIPELINES, EXCEPT NATURAL GAS
E4720	PASSENGER TRANSPORTATION ARRANGEMENT
E4724	TRAVEL SERVICE
E4730	FREIGHT TRANSPORTATION ARRANGEMENT
E4740	RENTAL OF RAILROAD CARS
E4780	MISC TRANSPORTATION SERVICES
E4810	TELEPHONE COMMUNICATIONS
E4820	TELEGRAPH & OTHER COMMUNICATIONS
E4830	RADIO & TELEVISION BROADCASTING
E4840	CABLE & OTHER PAY TV SERVICES
E4890	COMMUNICATIONS SERVICES, NEC
E4910	ELECTRIC SERVICES
E4920	GAS PRODUCTION & DISTRIBUTION
E4930	COMBINATION UTILITY SERVICES
E4940	WATER SUPPLY
E4950	SANITARY SERVICES, NEC
E4952	SEWERAGE SYSTEMS
E4953	WASTE COLLECTION AND DISPOSAL
E4954	HAZARDOUS WASTE COLLECTION AND DISPOSAL
E4960	STEAM & AIR-CONDITIONING SUPPLY
E4970	IRRIGATION SYSTEMS

CALIFORNIA UNIFIED CERTIFICATION PROGRAM (CUCP)

UNIFIED CERTIFICATION PROGRAM

SUPPLIERS

(Construction suppliers listed in Construction section.)

F5030 LUMBER AND CONSTRUCTION MATERIAL
F5040 PROFESSIONAL & COMMERCIAL EQUIPMENT
F5044 OFFICE EQUIPMENT
F5045 COMPUTERS, PERIPHERALS & SOFTWARE
F5050 METALS & MINERALS, EXCEPT PETROLEUM
F5060 ELECTRICAL GOODS
F5070 HARDWARE, PLUMBING & HEATING EQUIPMENT
F5080 MACHINERY, EQUIPMENT, & SUPPLIES
F5085 COMPUTER EQUIPMENT & SUPPLIES
F5088 TRANSPORTATION EQUIPMENT & SUPPLIES
F5090 MISC DURABLE GOODS
F5110 PAPER & PAPER PRODUCTS
F5130 APPAREL, PIECE GOODS, & NOTIONS
F5140 GROCERIES & RELATED PRODUCTS
F5150 FARM-PRODUCT RAW MATERIALS
F5160 CHEMICALS & ALLIED PRODUCTS
F5170 PETROLEUM & PETROLEUM PRODUCTS
F5180 BEER, WINE, & DISTILLED BEVERAGES
F5190 MISC NONDURABLE GOODS
F5210 LUMBER & OTHER BUILDING MATERIALS
F5230 PAINT, GLASS, & WALLPAPER STORES
F5251 HARDWARE STORES
F5260 RETAIL NURSERIES & GARDEN STORES
F5270 MOBILE HOME DEALERS
F5310 DEPARTMENT STORES
F5330 VARIETY STORES
F5390 MISC GENERAL MERCHANDISE STORES
F5410 GROCERY STORES
F5420 MEAT & FISH MARKETS
F5430 FRUIT & VEGETABLE MARKETS
F5440 CANDY, NUT, & CONFECTIONERY STORES
F5450 DAIRY PRODUCTS STORES
F5460 RETAIL BAKERIES
F5490 MISC FOOD STORES
F5510 NEW & USED CAR DEALERS
F5520 USED CAR DEALERS
F5530 AUTO & HOME SUPPLY STORES
F5540 GASOLINE SERVICE STATIONS
F5550 BOAT DEALERS
F5560 RECREATIONAL VEHICLE DEALERS
F5570 MOTORCYCLE DEALERS
F5590 AUTOMOTIVE DEALERS, NEC
F5610 MEN'S & BOYS' CLOTHING STORES
F5620 WOMEN'S CLOTHING STORES
F5630 WOMEN'S ACCESSORY
F5640 CHILDREN'S & INFANTS' WEAR STORES
F5650 FAMILY CLOTHING STORES
F5660 SHOE STORES
F5690 MISC APPAREL & ACCESSORY STORES
F5710 FURNITURE & HOMEFURNISHINGS STORES
F5720 HOUSEHOLD APPLIANCE STORES
F5730 RADIO, TELEVISION, & COMPUTER STORES
F5810 EATING & DRINKING PLACES
F5820 CATERING
F5910 DRUG STORES & PROPRIETARY STORES
F5920 LIQUOR STORES
F5930 USED MERCHANDISE STORES
F5940 MISC SHOPPING GOODS STORES
F5960 NONSTORE RETAILERS
F5980 FUEL DEALERS
F5990 RETAIL STORES, NEC
F5992 FLORIST

FINANCE INSURANCE & REAL ESTATE

H6010 CENTRAL RESERVE DEPOSITORIES
H6020 COMMERCIAL BANKS
H6030 SAVINGS INSTITUTIONS
H6060 CREDIT UNIONS
H6080 FOREIGN BANK & BRANCHES & AGENCIES
H6090 FUNCTIONS CLOSELY RELATED TO BANKING
H6110 FEDERAL & FED.-SPONSORED CREDIT
H6140 PERSONAL CREDIT INSTITUTIONS
H6150 BUSINESS CREDIT INSTITUTIONS
H6160 MORTGAGE BANKERS & BROKERS
H6210 SECURITY BROKERS & DEALERS
H6220 COMMODITY CONTRACTS BROKERS, DEALERS
H6230 SECURITY & COMMODITY EXCHANGES
H6280 SECURITY & COMMODITY SERVICES
H6310 LIFE INSURANCE
H6320 MEDICAL SERVICE & HEALTH INSURANCE
H6330 FIRE, MARINE, & CASUALTY INSURANCE
H6350 SURETY INSURANCE
H6360 TITLE INSURANCE
H6370 PENSION, HEALTH, & WELFARE FUNDS
H6390 INSURANCE CARRIERS, NEC
H6410 INSURANCE AGENTS, BROKERS, & SERVICE
H6510 REAL ESTATE OPERATORS & LESSORS
H6530 REAL ESTATE AGENTS & MANAGERS
H6531 REAL ESTATE APPRAISERS & BROKERS
H6540 TITLE ABSTRACT OFFICES
H6550 SUBDIVIDERS & DEVELOPERS
H6710 HOLDING OFFICES
H6720 INVESTMENT OFFICES
H6730 TRUSTS
H6790 MISC INVESTING

CALIFORNIA UNIFIED CERTIFICATION PROGRAM (CUCP)

SERVICES

I7010	HOTELS & MOTELS
I7020	ROOMING & BOARDING HOUSES
I7030	CAMPS & RECREATIONAL VEHICLE PARKS
I7040	MEMBERSHIP-BASIS ORG. HOTELS
I7210	LAUNDRY, CLEANING, & GARMENTS
I7220	PHOTOGRAPHIC STUDIOS, PORTRAIT
I7230	BEAUTY SHOPS
I7240	BARBER SHOPS
I7250	SHOE REPAIR & SHOESHINE PARLORS
I7260	FUNERAL SERVICE & CREMATORIES
I7290	MISC PERSONAL SERVICES
I7291	TAX RETURN PREPARATION SERVICES
I7310	ADVERTISING
I7320	CREDIT REPORTING & COLLECTION
I7330	MAILING, REPRODUCTION, STENOGRAPHIC
I7336	COMMERICAL ART AND GRAPHIC DESIGN
I7340	SERVICES TO BUILDINGS
I7341	JANITORIAL SERVICES
I7342	DISINFECTING AND PEST CONTROL
I7349	BUILDING MAINTENANCE SERVICES
I7350	MISC EQUIPMENT RENTAL & LEASING
I7360	PERSONNEL SUPPLY SERVICES
I7370	COMPUTER & DATA PROCESSING SERVICES
I7371	COMPUTER PROGRAMMING
I7372	PREPACKAGED SOFTWARE
I7373	INTEGRATED SYSTEMS & CAD/CAM SYSTEMS
I7375	INFORMATION RETRIEVAL SYSTEMS
I7377	COMPUTER RENTAL AND LEASING
I7378	COMPUTER MAINTENANCE & REPAIR
I7380	MISC BUSINESS SERVICES
I7381	DETECTIVE & ARMORED CAR SERVICES
I7382	SECURITY SYSTEMS SERVICES
I7388	INTERIOR DECORATING & DESIGN
I7510	AUTOMOTIVE RENTALS, NO DRIVERS
I7520	AUTOMOBILE PARKING
I7530	AUTOMOTIVE REPAIR SHOPS
I7540	AUTOMOTIVE SERVICES, EXCEPT REPAIR
I7550	TOWING
I7620	ELECTRICAL REPAIR SHOPS
I7630	WATCH, CLOCK, & JEWELRY REPAIR
I7640	REUPHOLSTERY & FURNITURE REPAIR
I7690	MISC REPAIR SHOPS
I7698	LOCKSMITH
I7810	MOTION PICTURE & VIDEO TAPE PRODUCTION
I7820	MOTION PICTURE & VIDEO TAPE DISTRIBUTION
I7830	MOTION PICTURE THEATERS
I7840	VIDEO TAPE RENTAL
I7850	MISCELLANEOUS AUDIO VISUAL SERVICES
I7910	DANCE STUDIOS, SCHOOLS, & HALLS
I7920	PRODUCERS, ORCHESTRAS, ENTERTAINERS
I7930	BOWLING CENTERS
I7940	COMMERCIAL SPORTS
I7990	MISC AMUSEMENT, RECREATION SERVICES
I8010	OFFICES & CLINICS OF MEDICAL DOCTORS
I8020	OFFICES & CLINICS OF DENTISTS
I8030	OFFICES OF OSTEOPATHIC PHYSICIANS
I8040	OFFICES OF OTHER HEALTH PRACTITIONERS
I8050	NURSING & PERSONAL CARE FACILITIES
I8060	HOSPITALS
I8070	MEDICAL LABORATORIES
I8073	DRUG TESTING
I8080	HOME HEALTH CARE SERVICES
I8090	HEALTH & ALLIED SERVICES, NEC
I8110	LEGAL SERVICES
I8210	ELEMENTARY & SECONDARY SCHOOLS
I8220	COLLEGES & UNIVERSITIES
I8230	LIBRARIES
I8240	VOCATIONAL SCHOOLS
I8290	SCHOOLS & EDUCATIONAL SERVICES, NEC
I8320	INDIVIDUAL & FAMILY SERVICES
I8330	JOB TRAINING & RELATED SERVICES
I8350	CHILD DAY CARE SERVICES
I8360	RESIDENTIAL CARE
I8390	SOCIAL SERVICES, NEC
I8410	MUSEUMS & ART GALLERIES
I8420	BOTANICAL & ZOOLOGICAL GARDENS
I8610	BUSINESS ASSOCIATIONS
I8620	PROFESSIONAL ORGANIZATIONS
I8630	LABOR ORGANIZATIONS
I8640	CIVIC & SOCIAL ASSOCIATIONS
I8650	POLITICAL ORGANIZATIONS
I8660	RELIGIOUS ORGANIZATIONS
I8690	MEMBERSHIP ORGANIZATIONS, NEC
I8720	ACCOUNTING, AUDITING, & BOOKKEEPING
I8730	RESEARCH & TESTING SERVICES
I8734	LABORATORY TESTING AND ANALYSIS
I8740	MANAGEMENT & PUBLIC RELATIONS
I8810	PRIVATE HOUSEHOLDS
I8990	SERVICES, NEC
I8991	RECYCLING

PUBLIC ADMINISTRATION

J9110 EXECUTIVE OFFICES
J9120 LEGISLATIVE BODIES
J9130 EXECUTIVE & LEGISLATIVE COMBINED
J9190 GENERAL GOVERNMENT, NEC
J9210 COURTS
J9220 PUBLIC ORDER & SAFETY
J9410 ADMIN. OF EDUCATIONAL PROGRAMS
J9430 ADMIN. OF PUBLIC HEALTH PROGRAMS
J9440 ADMIN. OF SOCIAL & MANPOWER PROGRAMS
J9450 ADMINISTRATION OF VETERANS' AFFAIRS
J9510 ENVIRONMENTAL QUALITY
J9530 HOUSING & URBAN DEVELOPMENT
J9610 ADMIN. OF GENERAL ECONOMIC PROGRAMS
J9620 REGULATIONS, ADMIN. OF TRANSPORTATION
J9630 REGULATION, ADMIN. OF UTILITIES
J9640 REGULATION OF AGRICULTURAL MARKETING
J9650 REGULATION MISC COMMERCIAL SECTORS
J9660 SPACE RESEARCH AND TECHNOLOGY
J9710 NATIONAL SECURITY
J9720 INTERNATIONAL AFFAIRS

CALIFORNIA UNIFIED CERTIFICATION PROGRAM (CUCP)

UNIFIED CERTIFICATION PROGRAM

ROSTER OF CERTIFYING AGENCIES

Note: Underlined website includes the California Unified Certification Program Application Package.

If firm has its principal place of business in another state and is certified in that state, please contact the California Department of Transportation in Cluster 4.

Area	Counties	Certifying Agencies
Riverside, Imperial & San Diego (RIS) *Cluster 1*	Imperial Riverside San Diego	**SAN DIEGO UNIFIED PORT DISTRICT** Equal Opportunity Management P.O. Box 120488 San Diego, CA 92112-0488 Phone: (619) 686-6420 or (800) 854-2757 Fax: (619) 686-6413 www.portofsandiego.org **CITY OF SAN DIEGO** Equal Opportunity Contracting Program 1010 Second Avenue, #500 San Diego, CA 92101 Phone: (619) 533-4492 Fax: (619) 533-4474 www.sannet.gov **SUNLINE TRANSIT AGENCY** Contracts and Compliance 32-505 Harry Oliver Trail Thousand Palms, CA 92276-3501 Phone: (760) 343-3456, Ext. 167 Fax: (760) 343-3845 www.sunline.org
Los Angeles Area *Cluster 2*	Kern Los Angeles Orange San Bernardino San Luis Obispo Santa Barbara Ventura	**CITY OF LOS ANGELES** Office of Contract Compliance 600 South Spring St., Suite 1300 Los Angeles, CA 90014 Phone: (213) 847-6480 Fax: (213) 847-5566 www.lacity.org/bca **COUNTY OF ORANGE** **JOHN WAYNE AIRPORT** 3160 Airway Avenue Costa Mesa, CA 92626 Phone: (949) 252-5175 Fax: (949) 252-5225 www.ocair.com **LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY (MTA)** Small Business Diversity and Labor Compliance One Gateway Plaza Los Angeles, CA 90012 Phone: (213) 922-2600 Fax: (213) 922-7660 www.mta.net

Roster of Certifying Agencies (Continued)

CALIFORNIA UNIFIED CERTIFICATION PROGRAM (CUCP)

UNIFIED CERTIFICATION PROGRAM

Area	Counties	Certifying Agencies
BayArea **Central Valley** *Cluster 3*	Alameda Amador Calaveras Contra Costa Fresno Kings Madera Marin Mariposa Merced Monterey Napa San Benito San Francisco San Joaquin San Mateo Santa Clara Santa Cruz Solano Sonoma Stanislaus Tulare Tuolumne	**SANTA CLARA VALLEY TRANSPORTATION AUTHORITY (VTA)** Small & Disadvantaged Businesses 3331 North First Street San Jose, CA 95134-1906 Phone: (408) 321-5962 Fax: (408) 955-9729 www.vta.org **BAY AREA RAPID TRANSIT DISTRICT (BART)** Office of Civil Rights 1330 Broadway, #1702 Oakland, CA 94612 Phone: (510) 464-6195 Fax: (510) 464-7848 www.bart.gov **SAN JOAQUIN REGIONAL RAIL COMMISSION** DBE Liaison Officer 5000 S. Airport Way, #102 Stockton, CA 95206 Phone: (209) 468-5600 Fax: (209) 468-5613 www.acerail.com **CITY OF FRESNO** **DBE Program** 2101 G Street, Building A Fresno, CA 93706 Phone: (559) 498-4071 Fax: (559) 488-1069 www.ci.fresno.ca.us **CITY OF OAKLAND** Contract Compliance Office 250 Frank H. Ogawa Plaza, #3341 Oakland, CA 94612 Phone: (510) 238-3970 Fax: (510) 238-3363 www.oaklandnet.com **SAN MATEO COUNTY TRANSIT DISTRICT (SAMTRANS)/ PENINSULA CORRIDOR JOINT POWERS BOARD (JPB)** DBE Office 1250 San Carlos Avenue San Carlos, CA 94070 Phone: (650) 508-7939 Fax: (650) 508-7738 www.samtrans.com **CENTRAL CONTRA COSTA TRANSIT AUTHORITY (CCCTA)** Office of Civil Rights 2477 Arnold Industrial Way Concord, CA 94520-5327 Phone: (925) 676-1976 Fax: (925) 686-2630 www.cccta.org **ALAMEDA-CONTRA COSTA TRANSIT DISTRICT (AC TRANSIT)** DBE Program Compliance Administrator 1600 Franklin Street, 6th Floor Oakland, CA 94612 Phone: (510) 891-7176 Fax: (510) 891-4724 www.actransit.org **SAN FRANCISCO PUBLIC TRANSPORTATION DEPT.** Accessible Services and Contract Compliance 1145 Market Street, 7th Floor San Francisco, CA 94103 Phone: (415) 934-3987 Fax: (415) 934-3980 www.sfmuni.com **AIRPORT CONCESSIONS ONLY: SF INTERNATIONAL AIRPORT** Airport Minority/Women Opportunity P.O. Box 8097 San Francisco, CA 94128 Phone: (650) 821-5021 Fax: (650) 821-5146 www.flysfo.com

CALIFORNIA UNIFIED CERTIFICATION PROGRAM (CUCP)

Roster of Certifying Agencies (Continued)

Area	Counties	Certifying Agencies	
Northern California *Cluster 4*	Alpine Butte Colusa Del Norte El Dorado Glenn Humboldt Inyo Lake Lassen Mendocino Modoc Mono Nevada Placer Plumas Sacramento Shasta Sierra Siskiyou Sutter Tehama Trinity Yolo Yuba	**CALIFORNIA DEPARTMENT OF TRANSPORTATION (CALTRANS)** Civil Rights MS 79 1823 14th Street Sacramento, CA 95814 Phone: (916) 324-1700 or (866) 810-6346 Fax: (916) 324-1862 www.dot.ca.gov	**YOLO COUNTY TRANSPORTATION DISTRICT** DBE Programs 350 Industrial Way Woodland, CA 95776 Phone: (530) 661-0816 Fax: (530) 661-1732 www.yctd.org

SECTION VI: AGREEMENT

AGREEMENT NO. C- 7-2024

BETWEEN

ORANGE COUNTY TRANSPORTATION AUTHORITY

AND

_____

THIS AGREEMENT is effective this _____ day of _____, 2018, by and between the Orange County Transportation Authority, 550 South Main Street, P.O. Box 14184, Orange, CA 92863-1584, a public corporation of the State of California (hereinafter referred to as "AUTHORITY"), and _____ (hereinafter referred to as "CONTRACTOR").

WITNESSETH:

WHEREAS, AUTHORITY has determined that it requires construction of the slope stabilization project within the AUTHORITY's owned operating railroad right-of-way; and

WHEREAS, said work cannot be performed by the regular employees of AUTHORITY; and

WHEREAS, CONTRACTOR has represented that it has the requisite personnel, experience, material, and equipment and is otherwise qualified to perform such services; and

WHEREAS, CONTRACTOR wishes to perform these services; and

WHEREAS, AUTHORITY's Board of Directors authorized this Agreement on _____.

NOW, THEREFORE, it is mutually understood and agreed by AUTHORITY and CONTRACTOR as follows:

ARTICLE 1. COMPLETE AGREEMENT

A. This Agreement, including all exhibits and other documents incorporated herein and made applicable by reference, constitutes the complete and exclusive statement of the terms and conditions of the Agreement between AUTHORITY and CONTRACTOR and it supersedes all prior representations, understandings and communications. The invalidity in whole or in part of any term or condition of this Agreement shall not affect the validity of other terms or conditions.

/

B. AUTHORITY's failure to insist in any one or more instances upon the performance of any terms or conditions of this Agreement shall not be construed as a waiver or relinquishment of AUTHORITY's right to such performance by CONTRACTOR or to future performance of such terms or conditions and CONTRACTOR's obligation in respect thereto shall continue in full force and effect. CONTRACTOR shall be responsible for having taken steps reasonably necessary to ascertain the nature and location of the work, and the general and local conditions, which can affect the work or the cost thereof. Any failure by CONTRACTOR to do so will not relieve it from responsibility for successfully performing the work without additional expense to AUTHORITY.

C. AUTHORITY assumes no responsibility for any understanding or representations concerning conditions made by any of its officers, employees or agents prior to the execution of this Agreement, unless such understanding or representations by AUTHORITY are expressly stated in this Agreement.

D. Time shall be of the essence hereunder; but CONTRACTOR shall perform work hereunder only to the minimum extent consistent with requirements herein.

E. Changes to any portion of this Agreement shall not be binding upon AUTHORITY except when specifically confirmed in writing by an authorized representative of AUTHORITY and issued in accordance with the provisions of this Agreement.

ARTICLE 2. AUTHORITY DESIGNEE

The Chief Executive Officer of AUTHORITY, or designee, shall have the authority to act for and exercise any of the rights of AUTHORITY as set forth in this Agreement.

ARTICLE 3. SCOPE OF WORK

CONTRACTOR shall provide all labor, equipment, materials and facilities necessary for all work related to construction of the slope stabilization project at AUTHORITY's in strict compliance with all the requirements specified herein and in

Attachment A, entitled “Disadvantaged Business Enterprise (DBE) Contract Provisions Federally Funded Contracts with DBE Goals”

Attachment A-1, entitled “DBE Commitment Form”

Exhibit A, entitled "General Provisions"; Addendum No's ___;

Exhibit B, entitled "Project Specifications";

Exhibit C, entitled "List of Drawings";

Exhibit D-1, entitled "List of Subcontractors";

Exhibit E, entitled "Performance Bond";

Exhibit F, entitled "Payment Bond"; and

Exhibit G, entitled "Guaranty";

Exhibit H, entitled "Level 3 Safety Specifications";

all of which documents are attached to and, by this reference, incorporated in and made a part of this Agreement. By this reference, also incorporated in and made a part of this Agreement are all applicable provisions of IFB and all representations made by CONTRACTOR in its original bid to AUTHORITY, including, but not limited to, CONTRACTOR's certifications relative to Workers' Compensation Insurance, and compliance with Section 7028.15 of the State of California Business and Professions Code.

ARTICLE 4. DELIVERY / RECOVERY SCHEDULE

A. CONTRACTOR shall fully complete the herein above described work within (144) calendar days from the effective date of written Notice to Proceed (NTP) issued by AUTHORITY. CONTRACTOR shall give AUTHORITY not less than seventy-two (72) hours advance notice of the start of any work. Within five (5) calendar days after said notice, CONTRACTOR shall provide any construction schedules as may be requested by AUTHORITY.

B. If at any time, the critical path schedule reflects -30 or a greater negative number of days of total float, then CONTRACTOR, within ten (10) calendar days after CONTRACTOR first becomes aware of such schedule delay, shall prepare and submit to AUTHORITY for review and approval a Recovery Schedule demonstrating CONTRACTOR's proposed plan to regain lost schedule progress and to achieve the original contractual milestones in accordance with the Contract. AUTHORITY shall notify CONTRACTOR within ten (10) calendar days after receipt of each such Recovery Schedule whether the schedule is deemed accepted or rejected. Within five (5) calendar days after AUTHORITY's rejection of

the schedule, CONTRACTOR will resubmit a revised Recovery Schedule incorporating AUTHORITY's comments. When AUTHORITY accepts CONTRACTOR's Recovery Schedule, CONTRACTOR shall, within five (5) calendar days after AUTHORITY's acceptance, incorporate and fully include such schedule into the Project Schedule and deliver it to AUTHORITY.

C. All costs incurred by CONTRACTOR in preparing, implementing and achieving the Recovery Schedule shall be borne by CONTRACTOR and shall not result in a change to the contract price.

D. In the event that CONTRACTOR fails to provide an acceptable Recovery Schedule within thirty (30) calendar days of CONTRACTOR's receipt of a notice to do so, CONTRACTOR shall have no right to receive progress payments until CONTRACTOR has prepared and AUTHORITY has approved such Recovery Schedule.

ARTICLE 5. START OF WORK

CONTRACTOR shall incur no costs, and shall not perform or furnish any work, services, materials or equipment under this Agreement, unless and until a written Notice to Proceed has been given to CONTRACTOR by AUTHORITY. Conditions precedent to AUTHORITY issuing said Notice to Proceed are CONTRACTOR furnishing the Exhibit E "Performance Bond," Exhibit F "Payment Bond," Exhibit G "Guaranty," and certificates of insurance as set forth in Article 11 hereunder. CONTRACTOR shall furnish said documents within ten (10) calendar days after notification of contract award from AUTHORITY. Upon receipt of acceptable bonds, guaranty, and insurance certificates, AUTHORITY will within ten (10) calendar days thereafter issue the written Notice to Proceed.

ARTICLE 6. PAYMENT

A. For CONTRACTOR's full and complete performance of its obligations under this Agreement, and subject to the maximum cumulative payment obligation provision set forth in Article 8, AUTHORITY shall pay CONTRACTOR the firm fixed sum of Dollars ($ .00).

B. Progress payments and the final payment will be made by AUTHORITY to CONTRACTOR in accordance with the terms as set forth in Exhibit A, "General Provisions," under the "Progress Payments" and "Final Payment and Claims" sections therein. The acceptance by CONTRACTOR of

AUTHORITY's final payment hereunder shall constitute a waiver of all claims against AUTHORITY under or arising out of this herein Agreement, as such may from time to time be amended.

C. Failure by AUTHORITY to pay amount in dispute shall not alleviate, diminish or modify in any respect the CONTRACTOR's obligation to achieve final acceptance of and all work in accordance with the contract documents, and CONTRACTOR shall not cease or slow down its performance under this Agreement on account of any such amount in dispute. CONTRACTOR shall proceed as directed by AUTHORITY pending resolution of dispute. Upon resolution of dispute, each party shall promptly pay any amount owing.

ARTICLE 7. PROMPT PAYMENT CLAUSE

A. Upon receipt of payment by AUTHORITY, CONTRACTOR agrees to promptly pay each subcontractor for the satisfactory work performed under this Agreement, no later than seven (7) calendar days. CONTRACTOR agrees further to return retainage payments to each subcontractor within thirty (30) calendar days after the subcontractor's work is satisfactorily completed. AUTHORITY reserves the right to request the appropriate documentation from CONTRACTOR showing payment has been made to the subcontractors. Any delay or postponement of payment from the above referenced time frames may occur only for good cause following written approval by AUTHORITY. In accordance with Revised §26.29 "Prompt Payment Provisions" (Federal Register - dated June 16, 2003) AUTHORITY, at its discretion may elect to utilize one of the following method to comply with the prompt payment of retainage requirement.

1. Hold retainage from CONTRACTOR and provide for prompt and regular incremental acceptances of portions of the CONTRACTOR, pay retainage to prime contractors based on these acceptances, and require a contract clause obligating the CONTRACTOR to pay all retainage owed to the subcontractors for satisfactory completion of the accepted work within 30 days after payment to the CONTRACTOR.

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B. Failure to comply with this provision or delay in payment without prior written approval from AUTHORITY will constitute noncompliance, which may result in appropriate administrative sanctions, including, but not limited to a penalty of two percent (2%) of the invoice amount due per month for every month that payment is not made.

C. These prompt payment provisions must be incorporated in all subcontract agreements issued by CONTRACTOR under this Agreement. Each subcontract shall require the subcontractor to make payments to sub-subcontractors and suppliers in a similar manner.

ARTICLE 8. MAXIMUM OBLIGATION

Notwithstanding any provisions of this Agreement to the contrary, AUTHORITY and CONTRACTOR mutually agree that AUTHORITY's maximum cumulative payment obligation hereunder (including obligation for CONTRACTOR 's profit), shall be _ Dollars ($ .00), which shall include all amounts payable to CONTRACTOR for its subcontracts, leases, materials and costs arising from, or due to termination of, this Agreement.

ARTICLE 9. NOTICES

All notices hereunder and communications regarding the interpretation of the terms of this Agreement, or changes thereto, shall be effected by delivery of said notices in person or by depositing said notices in the U.S. mail, registered or certified mail, returned receipt requested, postage prepaid and addressed as follows:

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To CONTRACTOR:	To AUTHORITY:
	Orange County Transportation Authority
	550 South Main Street
	P.O. Box 14184
	Orange, CA 92863-1584
ATTENTION:	ATTENTION: Michael Le
Title:	Title: Contract Administrator
Tel: E-Mail:	Tel: (714) 560 - 5314 E-Mail: mle1@octa.net

ARTICLE 10. INDEPENDENT CONTRACTOR

CONTRACTOR's relationship to AUTHORITY in the performance of this Agreement is that of an independent contractor. CONTRACTOR's personnel performing work under this Agreement shall at all times be under CONTRACTOR's exclusive direction and control and shall be employees of CONTRACTOR and not employees of AUTHORITY. CONTRACTOR shall pay all wages, salaries and other amounts due its employees in connection with this Agreement and shall be responsible for all reports and obligations respecting them, such as social security, income tax withholding, unemployment compensation, workers' compensation insurance, and similar matters.

ARTICLE 11. INSURANCE

A. CONTRACTOR shall procure and continuously maintain in full force and affect through contract completion, insurance coverages specified herein. Coverages shall not be subject to self-insurance provisions. CONTRACTOR shall provide the following insurance coverage:

1. Commercial General Liability, to include Products/Completed Operations, Independent Contractors', Contractual Liability, and Personal Injury with a minimum limit of $1,000,000 per occurrence and $2,000,000 general aggregate.

2. Automobile Liability to include owned, hired and non-owned autos with a combined single limit of $1,000,000 each accident.

3. Workers' Compensation with limits as required by the State of California, including waiver of subrogation, in favor of AUTHORITY, its officers, directors, employees and agents.

4. Employers' Liability with minimum limits of $1,000,000; and

5. Professional Liability with minimum limits of $1,000,000 per claim.

6. Railroad Protective Liability insurance listing the Railroad as the named insured with coverage of at least $2,000,000 per occurrence and $6,000,000 in the aggregate. The policy shall be issued on a standard ISO form CG 00 35 10 93 and include the following:

a) No other endorsements restricting coverage may be added.

b) The original policy must be provided to the Railroad prior to performing any work or services under this Agreement.

c) All policies (applying to coverage listed above) must not contain an exclusion for punitive damages and certificates of insurance must reflect that no exclusion exists.

d) CONTRACTOR agrees to waive its right of recovery against Railroad and AUTHORITY for all claims and suits against Railroad and AUTHORITY. In addition, its insurers, through the terms of the policy or policy endorsement, waive their right of subrogation against Railroad and AUTHORITY for all claims and suits. The certificate of insurance must also have attached the waiver of subrogation endorsement. CONTRACTOR further waives its right of recovery, and its insurers also waive their right of subrogation against Railroad and AUTHORITY for loss of its owned or leased property or property under CONTRACTOR's care, custody or control.

B. The CONTRACTOR and all subcontractors, if applicable, must maintain the insurance coverages set forth herein, and list the State of California, SCRRA, BNSF Railway, Amtrak, and Union Pacific Corporation, as additional insureds, and release, defend and indemnify the Railroad to the same extent and under the same terms and conditions as the CONTRACTOR.

C. Prior to commencement of any work hereof, CONTRACTOR shall furnish to AUTHORITY's Contract Administrator broker-issued insurance certificate, including an insurance company issued endorsement showing the required insurance coverages and further providing that:

1. AUTHORITY, its officers, directors, employees and agents must be named as additional insured on Commercial General Liability and Automobile Liability certificates and on the insurance policy endorsement with respect to performance hereunder; and

2. The coverage shall be primary and noncontributory as to any other insurance with respect to performance hereunder; and

3. Thirty (30) days prior written notice of cancellation or material change be given to AUTHORITY.

D. "Occurrence," as used herein, means any event or related exposure to conditions, which result in bodily injury or property damage.

E. The Certificate of Insurance shall reference Agreement Number C- 7-2024; and, the Contract Administrator's Name, Michael Le.

F. Upon AUTHORITY's request, certified, true and exact copies of each of the insurance policies shall be provided to AUTHORITY.

G. AUTHORITY shall notify CONTRACTOR in writing of any changes in the requirements to insurance required to be provided by CONTRACTOR. Except as set forth in this Article, any additional cost from such change shall be paid by AUTHORITY and any reduction in cost shall reduce the contract price pursuant to a change order.

H. CONTRACTOR shall also include in each subcontract the stipulation that subcontractors shall maintain coverage in the amounts required as provided in this Agreement.

I. CONTRACTOR shall be required to immediately notify AUTHORITY of any modifications or cancellation of any required insurance policies.

ARTICLE 12. BONDS

A. By submitting Exhibit E, entitled "Performance Bond," and Exhibit F, entitled "Payment Bond," CONTRACTOR shall satisfy AUTHORITY's requirements that CONTRACTOR deposit with AUTHORITY bonds with values in the sum of 100 percent of this Agreement's price to cover CONTRACTOR's failure to fully perform hereunder and CONTRACTOR's failure to pay its labor, material or failure to comply with

Article 39 of this Agreement, in performing hereunder. If the contract price is increased in connection with a Change Order, AUTHORITY may, in its sole discretion, require a corresponding increase in the amount of the Performance and Payment bonds or new bonds covering the Change Order work.

B. Notwithstanding any other provision set forth in this Agreement, performance by a Surety or Guarantor of any obligations of CONTRACTOR shall not relieve CONTRACTOR of any of its obligations thereunder.

ARTICLE 13. ORDER OF PRECEDENCE

Conflicting provisions hereof, if any, shall prevail in the following descending order of precedence: (1) the provisions of this Agreement, including its Exhibits; (2) the provisions of IFB including all Addendums; (3) the bid submitted to AUTHORITY by CONTRACTOR in response to said IFB; and (4) any other documents, cited herein or incorporated by reference. In the event of conflicting provisions of Exhibit B ("Project Specifications"), and Exhibit C ("List of Drawings"), Project Specifications (Exhibit B) shall take precedence.

ARTICLE 14. CHANGES

A. By written notice or order, AUTHORITY may, from time to time, order work suspension and/or make any change in the general scope of this Agreement, including, but not limited to, changes in the drawings, specifications, schedules (either deceleratory or acceleratory) or any other particular of the specifications or provisions of this Agreement. If any such work suspension or change causes an increase or decrease in the price or time required for performance, CONTRACTOR shall promptly notify AUTHORITY thereof and assert its claim for adjustment within ten (10) calendar days after the change or work suspension is ordered, and an equitable adjustment shall be negotiated. However, nothing in this clause shall excuse CONTRACTOR from proceeding immediately with the Agreement as changed. Changes will be made in accordance with the terms as set forth in Exhibit A, "General Provisions," paragraph F, Extra Work and Changes, by written Change Order.

B. No claims by CONTRACTOR for equitable adjustment hereunder shall be allowed if asserted after final payment under this Agreement.

C. Any work done beyond the technical provisions specified in this Agreement, or any extra work done without AUTHORITY's written authority, will be considered unauthorized work and will not be paid for. Upon order of AUTHORITY's Engineer or its designee, unauthorized work shall be remedied, removed or replaced at CONTRACTOR's expense.

ARTICLE 15. MODIFICATION PROPOSALS-PRICE BREAKDOWN

CONTRACTOR, in connection with any proposal it makes for an agreement modification, shall furnish a price breakdown, itemized as required by AUTHORITY. Unless otherwise directed, the breakdown shall be in sufficient detail to permit an analysis of all material, labor, equipment, subcontract and overhead costs, as well as profit, and shall cover all work involved in the modification, whether such work was deleted, added or changed. Any amount claimed for subcontracts shall be supported by a similar price breakdown. In addition, if the proposal includes a time extension, a justification therefore shall also be furnished. The proposal, together with the price breakdown and time extension justification, shall be furnished by the date specified by AUTHORITY.

ARTICLE 16. DISPUTES

A. Except as otherwise provided in this Agreement, when a dispute arises between CONTRACTOR and AUTHORITY, the project managers shall meet to resolve the issue. If project managers do not reach a resolution, the dispute will be decided by AUTHORITY's Director of Contracts Administration and Materials Management (CAMM), who shall reduce the decision to writing and mail or otherwise furnish a copy thereof to CONTRACTOR. The decision of the Director, CAMM, shall be the final and conclusive administrative decision.

B. Pending final decision of a dispute hereunder, CONTRACTOR shall proceed diligently with the performance of this Agreement and in accordance with the decision of AUTHORITY's Director, CAMM. Nothing in this Agreement, however, shall be construed as making final the decision of any AUTHORITY official or representative on a question of law, which questions shall be settled in accordance with the laws of the State of California.

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ARTICLE 17. TERMINATION FOR CONVENIENCE

A. AUTHORITY may terminate this Agreement for its convenience at any time in whole or in part, by giving CONTRACTOR written notice thereof. AUTHORITY shall terminate by delivering to CONTRACTOR a written Notice of Termination for Convenience specifying the extent of termination and its effective date. Upon termination, AUTHORITY shall pay CONTRACTOR its allowable costs incurred to date of that portion terminated. The rights, duties and obligations of the parties shall be construed in accordance with the applicable provisions of CFR Title 48, Chapter 1, Part 49, of the Federal Acquisition Regulation (FAR) and specific subparts and other provisions thereof applicable to termination for convenience. If AUTHORITY sees fit to terminate this Agreement for convenience, said notice shall be given to CONTRACTOR in accordance with the provisions of the FAR referenced above and Article 9, herein. Upon receipt of said notification, CONTRACTOR shall immediately proceed with all obligations, regardless of any delay in determining or adjusting any amounts due under this Article, and agrees to comply with all applicable provisions of the FAR pertaining to termination for convenience.

ARTICLE 18. TERMINATION FOR DEFAULT-DAMAGES FOR DELAY-TIME EXTENSIONS

A. If CONTRACTOR refuses or fails to prosecute the work, or any separable part thereof, with such diligence as will ensure its completion within the time specified in this Agreement, or any extension thereof, or fails to complete said work within such time, AUTHORITY may, by written notice to CONTRACTOR that specifies the nature of the default, terminate CONTRACTOR's right to proceed with the work or such part of the work as to which there has been delay. In such event, AUTHORITY may take over the work and prosecute the same to completion, by Agreement or otherwise, and may take possession of and utilize in completing the work such materials, appliances and plant as may be on the site of the work and necessary therefore. Whether or not CONTRACTOR's right to proceed with the work is terminated, it and its sureties shall be liable for any damage to AUTHORITY resulting from its refusal or failure to complete the work within the specified time.

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B. If AUTHORITY so terminates CONTRACTOR's right to proceed, the resulting damage will consist of such liquidated damages as set forth in the Article 38 in this Agreement entitled "Liquidated Damages," until such reasonable time as may be required for final completion of the work together with any increased costs occasioned AUTHORITY in completing the work. If AUTHORITY does not so terminate CONTRACTOR's right to proceed, the resulting damage will consist of such liquidated damages until the work is completed or accepted.

C. CONTRACTOR's right to proceed shall not be so terminated nor the CONTRACTOR charged with resulting damage if:

1. The delay in completing the work arises from unforeseeable causes beyond the control and without the fault or negligence of CONTRACTOR, including but not restricted to, acts of God, acts of the public enemy, acts or omissions of AUTHORITY, acts of another CONTRACTOR in the performance of an Agreement with AUTHORITY, fires, floods, epidemics, quarantine restrictions, freight embargoes, unusually severe weather, or delays of subcontractors or suppliers arising from unforeseeable causes beyond the control and without the fault or negligence of both CONTRACTOR and such subcontractors or suppliers; and

2. CONTRACTOR, within ten (10) calendar days from the beginning of any such delay, notifies AUTHORITY in writing of the causes of delay. AUTHORITY shall ascertain the facts and the extent of the delay and extend the time for completing the work when, in its judgment, the findings of fact justify such an extension, and its findings of fact shall be final and conclusive on the parties, subject only to appeal as provided in the "Disputes" clause of this Agreement. Any such time extensions will not become effective until approved by AUTHORITY's Engineer in writing. AUTHORITY's Engineer will furnish CONTRACTOR a weekly statement showing the number of calendar days charged to the Agreement for the preceding week, the number of calendar days of time extensions being considered or approved, the number of calendar days originally specified for the completion of this Agreement and the number of calendar days remaining to complete this Agreement, and the extended date for completion thereof.

3. Should at any time extensions be included by AUTHORITY's Engineer on the Weekly Statement of Contract Calendar Days, a change order covering the sum total of the time extensions will be issued to CONTRACTOR at periodic intervals during the project.

D. If, after notice of termination of CONTRACTOR's right to proceed under the provisions of this clause, it is determined for any reason that CONTRACTOR was not in default under the provisions of this clause, or that the delay was excusable under the provisions of this clause, the rights and obligations of the parties shall be the same as if the notice of termination had been issued pursuant to Article 17, entitled "Termination for Convenience."

E. The rights and remedies of AUTHORITY provided in this clause are in addition to any other rights and remedies provided by law or under this Agreement.

F. As used in paragraph C.1 of this Article, the term "subcontractors or suppliers," means subcontractors or suppliers at any tier.

ARTICLE 19. INDEMNIFICATION

CONTRACTOR shall indemnify, defend and hold harmless AUTHORITY, its officers, directors, employees and agents from and against any and all claims (including attorney's fees and reasonable expenses for litigation or settlement) for any loss or damages, bodily injuries, including death, damage to or loss of use of property caused by the negligent acts, omissions or willful misconduct of CONTRACTOR, its officers, directors, employees, agents, subcontractors or suppliers, in connection with or arising out of the performance of this Agreement.

ARTICLE 20. ASSIGNMENTS AND SUBCONTRACTS

A. Neither this Agreement nor any interest herein nor claim hereunder may be assigned by CONTRACTOR either voluntarily or by operation of law. CONTRACTOR shall not have the right to make any substitutions of any subcontractor listed in Exhibit D, entitled "List of Subcontractors," except in accordance with the provisions of the Subletting and Subcontractors Fair Practices Act, Public Contract Code section 4100 et. seq. AUTHORITY's consent shall not be deemed to relieve CONTRACTOR of its obligation to fully comply with the requirements of this Agreement.

B. CONTRACTOR shall be fully responsible to AUTHORITY for all acts and omissions of its own employees, and of subcontractors and their employees. CONTRACTOR shall coordinate the work performed by subcontractor.

C. AUTHORITY shall have the right, but not the obligation, to review the form of subcontract used by CONTRACTOR for the project and to require modifications thereto to conform to the requirements set forth herein.

ARTICLE 21. ACCESS TO RECORDS AND REPORTS

CONTRACTOR shall provide AUTHORITY, the U.S. Department of Transportation (DOT), the Comptroller General of the United States, or other agents of AUTHORITY, such access to CONTRACTOR's accounting books, records, payroll documents and facilities of the CONTRACTOR which are directly pertinent to this Agreement for the purposes of examining, auditing and inspecting all accounting books, records, work data, documents and activities related hereto. CONTRACTOR shall maintain such books, records, data and documents in accordance with generally accepted accounting principles and shall clearly identify and make such items readily accessible to such parties during CONTRACTOR's performance hereunder and for a period of four (4) years from the date of final payment by AUTHORITY, except in the event of litigation or settlement of claims arising from the performance of this Agreement, in which case CONTRACTOR agrees to maintain same until AUTHORITY, or any of their duly authorized representatives, have disposed of all such litigation, appeals, claims or exceptions related thereto. AUTHORITY's right to audit books and records directly related to this Agreement shall also extend to all first-tier subcontractors. CONTRACTOR shall permit any of the foregoing parties to reproduce documents by any means whatsoever or to copy excerpts and transcriptions as reasonably necessary.

ARTICLE 22. CONFLICT OF INTEREST

CONTRACTOR agrees to avoid organizational conflicts of interest. An organizational conflict of interest means that due to other activities, relationships or contracts, the CONTRACTOR is unable, or potentially unable to render impartial assistance or advice to AUTHORITY; CONTRACTOR's objectivity

in performing the work identified in the Scope of Work is or might be otherwise impaired; or CONTRACTOR has an unfair competitive advantage. CONTRACTOR is obligated to fully disclose to AUTHORITY in writing Conflict of Interest issues as soon as they are known to CONTRACTOR. All disclosures must be submitted in writing to AUTHORITY pursuant to the Notice provision herein. This disclosure requirement is for the entire term of this Agreement.

ARTICLE 23. CODE OF CONDUCT

CONTRACTOR agrees to comply with AUTHORITY's Code of Conduct as it relates to Third-Party contracts which is hereby referenced and by this reference is incorporated herein. CONTRACTOR agrees to include these requirements in all of its subcontracts.

ARTICLE 24. PROHIBITION ON PROVIDING ADVOCACY SERVICES

CONTRACTOR and all subcontractor performing work under this Agreement, shall be prohibited from concurrently representing or lobbying for any other party competing for a contract with AUTHORITY, either as a prime contractor or subcontractor. Failure to refrain from such representation may result in termination of this Agreement.

ARTICLE 25. FEDERAL, STATE AND LOCAL LAWS

CONTRACTOR warrants that in the performance of this Agreement it shall comply with all applicable federal, state and local laws, statutes and ordinances and all lawful orders, rules and regulations promulgated thereunder.

ARTICLE 26. EQUAL EMPLOYMENT OPPORTUNITY

A. Race, Color, Creed, National, Origin, Sex: In connection with its performance under this Agreement, CONTRACTOR agrees that it shall not discriminate against any employee or applicant for employment because of race, religion, color, creed, sex, age or national origin. CONTRACTOR shall take affirmative action to ensure that applicants are employed, and that employees are treated during their employment, without regard to their race, religion, color, sex, age or national origin. Such actions shall include, but not be limited to, the following: employment, upgrading, demotion or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation;

and selection for training, including apprenticeship. CONTRACTOR agrees to abide by Title VII of the Civil Rights Act, as amended, 42 U.S.C. Section 2000(e), Federal transit laws at 49 U.S.C. Section 5332, the applicable equal employment opportunity requirements of U.S. Department of Labor regulations, "Office of Federal Contract Compliance Programs, Equal Employment Opportunity, Department of Labor," 41 CFR Parts 60, et seq. (which implement Executive Order No. 11246, as amended), and with any applicable Federal statutes, executive orders, regulations, and Federal policies.

B. Age: In accordance with Section 4 of the Age Discrimination in Employment Act of 1967, as amended, 29 U.S.C. Sections 623 and Federal transit law at 49 U.S.C. Section 5332, CONTRACTOR agrees to refrain from discrimination against present and prospective employees for reason of age. CONTRACTOR agrees to comply with implementing requirements FTA may issue.

C. Disabilities: In accordance with section 102 of the Americans with Disabilities Act, as amended, 42 U.S.C. Section 12112, CONTRACTOR agrees to comply with the requirements of U.S. Equal Employment Opportunity Commission, "Regulations to Implement the Equal Employment Provisions of the Americans with Disabilities Act," 29 CFR Part 1630, pertaining to employment of persons with disabilities. CONTRACTOR agrees to comply with implementing requirements FTA may issue.

D. CONTRACTOR agrees to include these requirements in each subcontract.

ARTICLE 27. FINISHED AND PRELIMINARY DATA

A. All of CONTRACTOR's finished technical data, including but not limited to illustrations, photographs, tapes, software, software design documents, including without limitation source code, binary code, all media, technical documentation and user documentation, photoprints and other graphic information required to be furnished under this Agreement, shall be AUTHORITY's property upon payment and shall be furnished with unlimited rights and, as such, shall be free from proprietary restriction except as elsewhere authorized in this Agreement. CONTRACTOR further agrees that it shall have no interest or claim to such finished, AUTHORITY-owned, technical data; furthermore, said data is subject to the provisions of the Freedom of Information Act, 5 U.S.C. Section 552.

B. It is expressly understood that any title to preliminary technical data is not passed to AUTHORITY but is retained by CONTRACTOR. Preliminary data includes roughs, visualizations, software design documents, layouts and comprehensives prepared by CONTRACTOR solely for the purpose of demonstrating an idea or message for AUTHORITY's acceptance before approval is given for preparation of finished artwork. Preliminary data title and right thereto shall be made available to AUTHORITY if CONTRACTOR causes AUTHORITY to exercise Article 17, and a price shall be negotiated for all preliminary data.

ARTICLE 28. CIVIL RIGHTS ASSURANCE

During the performance of this Agreement, CONTRACTOR, for itself, its assignees and successors in interest agree as follows:

A. Compliance with Regulations: CONTRACTOR shall comply with the Regulations relative to nondiscrimination in federally assisted programs of the Department of Transportation (hereinafter, "DOT") Title 49, Code of Federal Regulations, Part 21, as they may be amended from time to time, (hereinafter referred to as the Regulations), which are herein incorporated by reference and made a part of this Agreement.

B. Nondiscrimination: CONTRACTOR, with regard to the work performed by it during the Agreement, shall not discriminate on the grounds of race, color, national origin, sex, age, or disability in the selection and retention of subcontractors, including procurements of materials and leases of equipment. CONTRACTOR shall not participate either directly or indirectly in the discrimination prohibited by Section 21.5 of the Regulations, including employment practices when the Agreement covers a program set forth in Appendix B of the Regulations. In determining the types of property or services to acquire, no person in the United States shall, on the grounds of race, color, creed, national origin, sex, or age be excluded from participation in, be denied the benefits of, or otherwise be subjected to discrimination under any program or activity receiving Federal financial assistance in violation of Title VI of the Civil Rights Act of 1964, as amended, 42 U.S.C. Sections 2000(d) et seq., DOT regulations, "Nondiscrimination in Federally Assisted Programs of the Department of Transportation—Effectuation of

Title VI of the Civil Rights Act of 1964," 49 CFR Part 21, section 303 of the Age Discrimination Act of 1975, as amended, 42 U.S.C. Section 6102, and Federal transit law at 49 U.S.C. Section 5332. In addition, FTA Circular 4702.1B, "Title VI Requirements and Guidelines for Federal Transit Administration Recipients," 10-1-12, provides FTA guidance and instructions for implementing DOT's Title VI regulations. CONTRACTOR agrees to comply with applicable Federal implementing regulations and other implementing regulations FTA may issue.

C. The Americans with Disabilities Act of 1990 ("ADA"), as amended, 42 U.S.C. Sections 12101 et seq., prohibits discrimination against qualified individuals with disabilities in all programs, activities, and services of public entities, as well as imposes specific requirements on public and private providers of transportation.

D. Solicitations for Subcontracts, Including Procurement of Materials and Equipment: In all solicitations either by competitive bidding or negotiation made by CONTRACTOR for work to be performed under a subcontract, including procurements of materials or leases of equipment, each potential subcontractor or supplier shall be notified by CONTRACTOR of CONTRACTOR's obligations under this Agreement and the Regulations relative to nondiscrimination on the grounds of race, color, national origin, sex, age, or disability.

E. Information and Reports: CONTRACTOR shall provide all information and reports required by the Regulations or directives issued pursuant thereto, and shall permit access to its books, records, accounts, other sources of information and its facilities as may be determined by AUTHORITY to be pertinent to ascertain compliance with such Regulations, orders and instructions. Where any information required of CONTRACTOR is in the exclusive possession of another who fails or refuses to furnish this information, CONTRACTOR shall so certify to AUTHORITY as appropriate, and shall set forth what efforts it has made to obtain the information.

F. Sanctions for Noncompliance: In the event of CONTRACTOR's noncompliance with nondiscrimination provisions of this Agreement, AUTHORITY shall impose Agreement sanctions as it may determine to be appropriate, including, but not limited to:

1. Withholding of payments to CONTRACTOR under the Agreement until CONTRACTOR complies; and/or cancellation, termination, or suspension of the Agreement, in whole or in part.

G. Incorporation of Provisions: CONTRACTOR shall include the provisions of paragraphs (A) through (G) in every subcontract, including procurements of materials and leases of equipment, unless exempt by the Regulations, or directives issued pursuant thereto. CONTRACTOR shall take such action with respect to any subcontract or procurement as AUTHORITY may direct as a means of enforcing such provisions including sanctions for noncompliance. Provided, however, that in the event CONTRACTOR becomes involved in, or is threatened with, litigation with a subcontractor or supplier as a result of such direction, CONTRACTOR may request AUTHORITY to enter into such litigation to protect the interests of AUTHORITY, and, in addition, CONTRACTOR may request the United States to enter into such litigation to protect the interests of the United States.

ARTICLE 29. DISADVANTAGED BUSINESS ENTERPRISES

At the time of contract execution, CONTRACTOR committed to utilize Disadvantaged Business Enterprise(s) ("DBE") in the performance of this DOT-assisted contract, and further agrees to ensure that any DBE subcontractor listed on the **"**DBE Participation Commitment Form Attachment A-1**,"** will perform work and/or supply materials in accordance with original commitments, unless otherwise directed and/or approved by AUTHORITY prior to CONTRACTOR effectuating any changes to its race-conscious DBE participation commitment(s). CONTRACTOR shall comply with all the requirements set forth in Attachment "A" titled, "DBE CONTRACT PROVISIONS FOR FTA-ASSISTED CONTRACTS WITH DISADVANTAGED BUSINESS ENTERPRISE (DBE) GOALS, " which is attached to and, by this reference, incorporated in and made a part of this Agreement.

ARTICLE 30. PRIVACY ACT

A. CONTRACTOR shall comply with, and assures the compliance of its employees with, the information restrictions and other applicable requirements of the Privacy Act of 1974, 5 U.S.C. Section 552(a). Among other things, CONTRACTOR agrees to obtain the express consent of the Federal

Government before CONTRACTOR or its employees operate a system of records on behalf of the Federal Government. CONTRACTOR understands the requirements of the Privacy Act, including the civil and criminal penalties for violation of that Act, apply to those individuals involved, and that failure to comply with the terms of the Privacy Act may result in termination of the underlying Agreement.

B. CONTRACTOR agrees to include this requirement in all of its subcontracts.

ARTICLE 31. OWNERSHIP OF REPORTS AND DOCUMENTS

A. The originals of all letters, documents, reports and other products and data produced under this Agreement shall be delivered to, and become the property of AUTHORITY. Copies may be made for CONTRACTOR'S records but shall not be furnished to others without written authorization from AUTHORITY. Such deliverables shall be deemed works made for hire and all rights in copyright therein shall be retained by AUTHORITY.

B. All ideas, memoranda, specifications, plans, manufacturing, procedures, drawings, descriptions, and all other written information submitted to CONTRACTOR in connection with the performance of this Agreement shall not, without prior written approval of AUTHORITY, be used for any purposes other than the performance under this Agreement, nor be disclosed to an entity not connected with the performance of the project. CONTRACTOR shall comply with AUTHORITY's policies regarding such material. Nothing furnished to CONTRACTOR, which is otherwise known to CONTRACTOR or is or becomes generally known to the related industry shall be deemed confidential. CONTRACTOR shall not use AUTHORITY's name, photographs of the project, or any other publicity pertaining to the project in any professional publication, magazine, trade paper, newspaper, seminar or other medium without the express written consent of AUTHORITY.

C. No copies, sketches, computer graphics or graphs, including graphic artwork, are to be released by CONTRACTOR to any other person or agency except after prior written approval by AUTHORITY, except as necessary for the performance of services under this Agreement. All press releases, including graphic display information to be published in newspapers, magazines, etc., are to be handled only by AUTHORITY unless otherwise agreed to by CONTRACTOR and AUTHORITY.

ARTICLE 32. INCORPORATION OF FTA TERMS

All contractual provisions required by DOT, whether or not expressly set forth in this document, as set forth in FTA Circular 4220.1F are hereby incorporated by reference. Anything to the contrary herein notwithstanding, all FTA mandated terms shall be deemed to control in the event of a conflict with other provisions contained in this Agreement. CONTRACTOR shall not perform any act, fail to perform any act, or refuse to comply with any AUTHORITY requests, which would cause AUTHORITY to be in violation of the FTA terms and conditions.

ARTICLE 33. FEDERAL CHANGES

CONTRACTOR shall at all times comply with all applicable FTA regulations, policies, procedures and directives, including without limitation those listed directly or by reference in the agreement between AUTHORITY and FTA , as they may be amended or promulgated from time to time during this Agreement. CONTRACTOR's failure to comply shall constitute a material breach of contract.

ARTICLE 34. NO GOVERNMENT OBLIGATION TO THIRD PARTIES

AUTHORITY and CONTRACTOR acknowledge and agree that, notwithstanding any concurrence by the Federal Government in or approval of the solicitation or award of the underlying Agreement, absent the express written consent by the Federal Government, the Federal Government is not a party to this Agreement and shall not be subject to any obligations or liabilities to AUTHORITY, CONTRACTOR, or any other party (whether or not a party to this Agreement) pertaining to any matter resulting from the underlying Agreement. CONTRACTOR agrees to include this requirement in all of its subcontracts.

ARTICLE 35. PROGRAM FRAUD AND FALSE OR FRAUDULENT STATEMENTS AND ACTS

A. CONTRACTOR acknowledges that the provisions of the Program Fraud Civil Remedies Act of 1986, as amended, 31 U.S.C. Sections 3801 et seq. and U.S. DOT regulations, "Program Fraud Civil Remedies," 49 C.F.R. Part 31, apply to its actions pertaining to this project. By execution of this Agreement, CONTRACTOR certifies or affirms the truthfulness and accuracy of any statement it has

made, it makes, it may make, or causes to be made, pertaining to the underlying Agreement of the FTA assisted project for which this Agreement's work is being performed. In addition to other penalties that may be applicable, CONTRACTOR acknowledges that if it makes, or causes to be made, a false, fictitious, or fraudulent claim, statement, submission, or certification, the Federal Government reserves the right to impose penalties of the Program Fraud Civil Remedies Act of 1986 on the CONTRACTOR to the extent the Federal Government deems appropriate.

B. CONTRACTOR also acknowledges that if CONTRACTOR makes, or causes to be made, a false, fictitious, or fraudulent claim, statement, submission, or certification to the Federal Government under an agreement connected with a project that is financed in whole or part with Federal assistance awarded by FTA under the authority of 49 U.S.C. Sections 5307 *et seq.*, the Government reserves the right, pursuant to 49 U.S.C. 5323(l)(1), to impose the penalties of 18 U.S.C. Section 1001 on the CONTRACTOR, to the extent the Federal Government deems appropriate. CONTRACTOR agrees to include this requirement in all of its subcontracts.

ARTICLE 36. CONVICT LABOR

In connection with the performance of work under this Agreement, CONTRACTOR agrees not to employ any person undergoing sentence of imprisonment at hard labor. This does not include convicts who are on parole or probation.

ARTICLE 37. NOTICE OF LABOR DISPUTE

Whenever CONTRACTOR has knowledge that any actual or potential labor dispute may delay its performance under this Agreement, CONTRACTOR shall immediately notify and submit all relevant information to AUTHORITY. CONTRACTOR shall insert the substance of this entire clause in any subcontract hereunder as to which a labor dispute may delay performance under this Agreement. However, any subcontractor need give notice and information only to its next higher-tier subcontractor.

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ARTICLE 38. LIQUIDATED DAMAGES

If CONTRACTOR fails to complete the work within the time specified in Article 4 of this Agreement, or any AUTHORITY authorized extension thereof, the actual damage to AUTHORITY for the delay will be difficult or impossible to determine. Therefore, in lieu of actual damages, CONTRACTOR shall pay to AUTHORITY as fixed, agreed-to liquidated damages for each calendar day of delay the sum of One Thousand Seven Hundred Dollars ($1,700.00). Alternatively, AUTHORITY may terminate this Agreement in whole or in part as provided in Article 17 of this Agreement, and in that event, CONTRACTOR shall be liable, in addition to the excess costs provided in Article 17 of this Agreement, for such liquidated damages accruing until such time as AUTHORITY may reasonably obtain delivery or performance of similar supplies or services from a different source. CONTRACTOR shall not be charged with liquidated damages when the delay is determined to be excusable in accordance with Article 59 hereunder. AUTHORITY shall ascertain the facts and extent of the delay and shall extend the time for performance of the Agreement when in its judgment, the findings of fact justify an extension.

ARTICLE 39. WARRANTY

A. In addition to any other warranties set forth in this Agreement, whether expressed or implied, CONTRACTOR warrants that (1) all work performed and all equipment and material provided under this Agreement by CONTRACTOR or any of its subcontractors or suppliers at any tier, conforms to the requirements herein and is free of any defects; (2) equipment furnished by CONTRACTOR or any of its subcontractors or suppliers at any tier, shall be of modern design, in good working condition and fit for use of its intended purpose; and (3) all work shall meet all of the requirements of this Agreement. Such warranty shall continue for a period of one (1) year from AUTHORITY's acceptance as shown in Article 42 hereunder. Under this warranty, CONTRACTOR shall remedy at its own expense any such failure to conform or correct any such defect. In addition, CONTRACTOR shall remedy at its own expense any damage to AUTHORITY owned or controlled real or personal property, when that damage is the result of CONTRACTOR's failure to conform to Agreement requirements or any such defect of equipment, material, workmanship or design. CONTRACTOR shall also restore any work damaged in fulfilling the

terms of this clause. CONTRACTOR's warranty with respect to work repaired or replaced hereunder will run for one year from the date of such repair or replacement.

B. AUTHORITY shall notify CONTRACTOR in writing within a reasonable time after the discovery of any failure, defect or damage. CONTRACTOR has seven days from receipt of notice from AUTHORITY to respond to AUTHORITY's notification and indicate how CONTRACTOR will remedy the failure, defect, or damage. If AUTHORITY is not satisfied with the remedy proposed by CONTRACTOR, CONTRACTOR and AUTHORITY shall meet and mutually agree when and how CONTRACTOR shall remedy such violation. In the case of an emergency requiring immediate corrective action, CONTRACTOR shall implement such action, as it deems necessary and shall notify AUTHORITY in writing of the urgency of a decision and action taken. CONTRACTOR and AUTHORITY shall, then promptly meet in order to agree on a remedy. If CONTRACTOR and AUTHORITY fail to agree on the remedy within a five-day period, AUTHORITY, after notice to CONTRACTOR, shall have the right to perform or have performed by third parties the necessary remedy, and the costs thereof shall be borne by CONTRACTOR.

C. Should CONTRACTOR fail to remedy any failure, defect or damage described in paragraph A above within a reasonable time after receipt of notice thereof, AUTHORITY shall have the right to replace, repair or otherwise remedy such failure, defect or damage at CONTRACTOR's expense and CONTRACTOR shall be liable for all damages, including, but not limited to, actual or consequential damages and cost of any suit to enforce AUTHORITY's rights hereunder, including reasonable attorney's fees.

D. In addition to the other rights and remedies provided by this clause, all subcontractors, manufacturers, and suppliers' warranties, expressed or implied, respecting any work and materials furnished hereunder, shall, at the direction of AUTHORITY, be enforced by CONTRACTOR for the benefit of AUTHORITY. In such case if CONTRACTOR's warranty under paragraph A above has expired, any suit directed by AUTHORITY shall be at the expense of AUTHORITY. CONTRACTOR shall obtain any

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warranties, which the subcontractors, manufacturers or suppliers would give in normal commercial practice and shall cause all subcontractor or supplier warranties to be extend to AUTHORITY.

E. If directed by AUTHORITY, CONTRACTOR shall require any such warranties to be executed in writing to AUTHORITY.

F. Notwithstanding any other provision of this clause, unless such a defect is caused by the negligence of CONTRACTOR or its subcontractors or suppliers at any tier, CONTRACTOR shall not be liable for the repair of any defects of material or design furnished by AUTHORITY nor for the repair of any damage which results from any such defect in AUTHORITY furnished material or design.

G. The warranty specified herein shall not limit AUTHORITY's rights under the Inspection and Acceptance clause of this Agreement with respect to latent defects, gross mistakes or fraud.

H. Defects in design or manufacture of equipment specified by AUTHORITY on a "brand name and model" basis shall not be included in this warranty. CONTRACTOR shall require any subcontractors, manufacturers or suppliers thereof to execute their warranties in writing directly to AUTHORITY.

I. Any disagreement between AUTHORITY and CONTRACTOR relating to this section shall be subject to dispute resolution in accordance with Article 16.

ARTICLE 40. GENERAL WAGE RATES AND DAVIS-BACON AND COPELAND ANTI-KICKBACK ACTS

A. Minimum Wages:

1. All laborers and mechanics employed by CONTRACTOR or subcontractor at any tier working on the construction site (or under the United States Housing Act of 1937 or under the Housing Act of 1949 in the construction or development of the project), will be paid unconditionally and not less often than once a week and without any subsequent deduction or rebate on any account (except such payroll deductions as are permitted or required by federal, state or local law, regulation, ordinance, or regulations issued by the Secretary of Labor under the Copeland Act (29 CFR Part 3)), the full amounts due at the time of payment computed at wage rates and per diem rate not less than the aggregate of the highest of the two basic hourly rates and rates of payments, contributions or costs for any fringe benefits

contained in the current general prevailing wage rate(s) and per diem rate(s), established by the Director of the Department of Industrial Relations of the State of California, (as set forth in the Labor Code of the State of California, commencing at Section 1770, et. seq.), or as established by the Secretary of Labor (as set forth in Davis-Bacon Act, 40 U.S.C. Sections 3141, et. seq. as supplemented by the Department of Labor regulations 29 CFR Part 5, and 18 U.S.C. Section 874), regardless of any contractual relationship which may be alleged to exist between CONTRACTOR or subcontractor and their respective mechanics, laborers, journeypersons, workpersons, craftspersons or apprentices. Copies of the current General Prevailing Wage Determinations and Per Diem Rates are on file at AUTHORITY's offices and will be made available to CONTRACTOR upon request. CONTRACTOR shall post a copy thereof at each job site at which work hereunder is performed.

2. Contributions made or costs reasonably anticipated for bona fide fringe benefits under section 1(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of paragraph (A)(5) of this section; also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in 29 CFR Part 5.5(a)(4). Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein: provided, that the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classifications and wage rates conformed under paragraph (A)(2) of this section) and the Davis-Bacon poster (WH-1321) shall be posted at all times by CONTRACTOR and subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers.

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3.

a) AUTHORITY shall require that any class of laborers or mechanics, including helpers, which is not listed in the wage determination and which is to be employed under the contract shall be classified in conformance with the wage determination. AUTHORITY shall approve an additional classification and wage rate and fringe benefits therefore only when the following criteria have been met:

1. Except with respect to helpers as defined as 29 CFR 5.2(n)(4), the work to be performed by the classification requested is not performed by a classification in the wage determination; and
2. The classification is utilized in the area by the construction industry; and
3. The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination; and
4. With respect to helpers as defined in 29 CFR 5.2(n)(4), such a classification prevails in the area in which the work is performed.

b) If CONTRACTOR and laborers and mechanics to be employed in the classification (if known), or their representatives, and AUTHORITY agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by AUTHORITY to the Administrator of the Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, Washington, DC 20210. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise AUTHORITY

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or will notify AUTHORITY within the 30-day period that additional time is necessary.

c) In the event CONTRACTOR, laborers or mechanics to be employed in the classification or their representatives, and AUTHORITY do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), AUTHORITY shall refer the questions, including the views of all interested parties and the recommendation of the contracting officer, to the Administrator for determination. The Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise AUTHORITY or will notify AUTHORITY within the 30- day period that additional time is necessary.

d) The wage rate (including fringe benefits where appropriate) determined pursuant to paragraphs (A)(3) (B) or (C) of this section, shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

4. Whenever the minimum wage rate prescribed in this Agreement for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, CONTRACTOR shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.

5. If CONTRACTOR does not make payments to a trustee or other third person, CONTRACTOR may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, provided, that the Secretary of Labor has found, upon the written request of the contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require CONTRACTOR to set aside in a separate account assets for the meeting of obligations under the plan or program.

6.

a) AUTHORITY shall require that any class of laborers or mechanics which is not listed in the wage determination and which is to be employed under this Agreement shall be classified in conformance with the wage determination. AUTHORITY shall approve an additional classification and wage rate and fringe benefits therefor only when the following criteria have been met:

1. The work to be performed by the classification requested is not performed by a classification in the wage determination; and
2. The classification is utilized in the area by the construction industry; and
3. The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

b) If CONTRACTOR and the laborers and mechanics to be employed in the classification (if known), or their representatives, and AUTHORITY agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by AUTHORITY to the Administrator of the Wage and Hour Division, Employment Standards Administration, Washington, DC 20210. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise AUTHORITY or will notify AUTHORITY within the 30-day period that additional time is necessary.

c) In the event CONTRACTOR, laborers or mechanics to be employed in the classification or their representatives, and AUTHORITY do not agree on the proposed classification and wage rate (including the amount

designated for fringe benefits, where appropriate), AUTHORITY shall refer the questions, including the views of all interested parties and the recommendation of the contracting officer, to the Administrator for determination. The Administrator, or an authorized representative, will issue a determination with 30 days of receipt and so advise AUTHORITY or will notify AUTHORITY within the 30-day period that additional time is necessary.

d) The wage rate (including fringe benefits where appropriate) determined pursuant to paragraphs (A)(6) (B) or (C) of this section, shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

B. Withholding: AUTHORITY shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld from CONTRACTOR under this Agreement or any other Federal contract with CONTRACTOR, or any other federally-assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by CONTRACTOR, so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees, and helpers, employed by CONTRACTOR or any subcontractor the full amount of wages required by this Agreement. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee, or helper, employed or working on the site of the work (or under the United States Housing Act of 1937 or under the Housing Act of 1949 in the construction or development of the project), all or part of the wages required by this Agreement, AUTHORITY may, after written notice to CONTRACTOR, sponsor, applicant, or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.

C. Payrolls and basic records:

1. Payrolls and basic records relating thereto shall be maintained by CONTRACTOR during the course of the work and preserved for a period of three years thereafter for all laborers and

mechanics working at the site of the work (or under the United States Housing Act of 1937, or under the Housing Act of 1949, in the construction or development of the project). Such records shall contain the name, address, and social security number of each such worker, his or her correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in section 1(b)(2)(B) of the Davis-Bacon Act), daily and weekly number of hours worked, deductions made and actual wages paid. Whenever the Secretary of Labor has found under 29 CFR 5.5(a)(1)(iv) that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in section 1(b)(2)(B) of the Davis-Bacon Act, CONTRACTOR shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs.

2.

a) CONTRACTOR shall submit weekly for each week in which any contract work is performed a copy of all payrolls to AUTHORITY for transmission to the Federal Transit Administration. The payrolls submitted shall set out accurately and completely all of the information required to be maintained under section 5.5(a)(3)(i) of Regulations, 29 CFR Part 5. This information may be submitted in any form desired. Optional Form WH-347 is available for this purpose and may be purchased from the Superintendent of Documents (Federal Stock Number 029-005-00014-1), U.S. Government Printing Office, Washington, DC 20402. CONTRACTOR is responsible for the submission of copies of payrolls by all subcontractors.

b) Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by CONTRACTOR or subcontractor or his or her agent who pays or supervises the payment of the persons employed under this Agreement and shall certify the following: under section 5.5(a)(3)(i) of Regulations, 29 CFR Part 5 and that such information is correct and complete;

1. That the payroll for the payroll period contains the information required to be maintained under section 5.5(a)(3)(i) of Regulations, 29 CFR Part 5 and that such information is correct and complete;

2. That each laborer or mechanic (including each helper, apprentice, and trainee) employed on Agreement during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in Regulations, 29 CFR Part 3;

3. That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.

c) The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the "Statement of Compliance" required by paragraph (C)(2)(b) of this section.

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d) The falsification of any of the above certifications may subject CONTRACTOR or subcontractor to civil or criminal prosecution under section 1001 of title 18 and section 231 of title 31 of the United States Code.

3. CONTRACTOR or subcontractor shall make the records required under 5.5(a)(3)(i) of Regulations, 29 CFR Part 5 available for inspection, copying, or transcription by authorized representatives of the Federal Transit Administration or the Department of Labor, and shall permit such representatives to interview employees during working hours on the job. If CONTRACTOR or subcontractor fails to submit the required records or to make them available, the Federal agency may, after written notice to CONTRACTOR, sponsor, applicant, or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR Part 5.12.

D. Apprentices and trainees:

1. Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Bureau of Apprenticeship and Training, or with a State Apprenticeship Agency recognized by the Bureau, or if a person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Bureau of Apprenticeship and Training or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice. The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate on the wage determination for the classification of

work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where CONTRACTOR is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the CONTRACTOR'S or subcontractor's registered program shall be observed. Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeymen hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator of the Wage and Hour Division of the U.S. Department of Labor determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination. In the event the Bureau of Apprenticeship and Training, or a State Apprenticeship Agency recognized by the Bureau, withdraws approval of an apprenticeship program, CONTRACTOR will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

2. Except as provided in 29 CFR Part 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration. The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration. Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall

be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate on the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. In the event the Employment and Training Administration withdraws approval of a training program, the contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

3. The utilization of apprentices, trainees and journeymen under this part shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR Part 30.

E. Compliance with Copeland Act requirements: CONTRACTOR shall comply with the requirements of 29 CFR Part 3, which are incorporated by reference in this contract.

F. Subcontracts: CONTRACTOR or subcontractor shall insert in any subcontracts the clauses contained in 29 CFR Parts 5.5(a)(1) through (10) and such other clauses as the Federal Transit Administration may by appropriate instructions require, and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. CONTRACTOR shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in 29 CFR Part 5.5.

G. Contract termination – debarment: A breach of the contract clauses in 29 CFR Part 5.5 may be grounds for termination of this Agreement, and for debarment as a contractor and a subcontractor as provided in 29 CFR Part 5.12.

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H. Compliance with Davis-Bacon and Related Act requirements: All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR Parts 1, 3, and 5 are herein incorporated by reference.

I. Disputes concerning labor standards: Disputes arising out of the labor standards provisions of Agreement shall not be subject to the general disputes clause of this Agreement. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR Parts 5, 6, and 7. Disputes within the meaning of this clause include disputes between CONTRACTOR (or any of its subcontractors) and AUTHORITY, the U.S. Department of Labor, or the employees or their representatives.

J. Certification of eligibility:

1. By entering into this contract, CONTRACTOR certifies that neither it (nor he or she) nor any person or firm who has an interest in CONTRACTOR'S firm is a person or firm ineligible to be awarded Government contracts by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR Part 5.12(a)(1).

2. No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR Part 5.12(a)(1).

3. The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. Section 1001.

K. In addition to the foregoing, CONTRACTOR agrees to comply with all other provisions of the Labor Code of the State of California.

L. This contract is subject to overview by the California Division of Labor Standard Compliance Monitoring Unit (CMU). The California Department of Industrial Relations shall monitor and enforce compliance with applicable prevailing wage requirements for this contract. The reporting requirements and other information regarding the CMU may be found at http://www.dir.ca.gov/Public-Works/PublicWorksEnforcement.html. CONTRACTOR is responsible for complying with all requirements of the CMU, including filing electronic payroll reports.

M. CONTRACTOR or subcontractor will not be awarded this Agreement for public work on a public works project unless registered with the Department of Industrial Relations pursuant to Labor Code Section 1725.5.

ARTICLE 41. CONTRACT WORK HOURS AND SAFETY STANDARDS

If this Agreement exceeds $100,000, CONTRACTOR agrees to comply with the Federal Contract Work Hours and Safety Standards (40 U.S.C. Sections 3701, *et seq.* as supplemented by 29 CFR Part 5).

A. Overtime requirements: CONTRACTOR, and any subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics, shall not require or permit any such laborer or mechanic in any workweek in which he or she is employed on such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek.

B. Violation; liability for unpaid wages; liquidated damages: In the event of any violation of the clause set forth in paragraph (A) of this section CONTRACTOR and any subcontractor responsible therefor shall be liable for the unpaid wages. In addition, CONTRACTOR and subcontractor shall be liable to the United States for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in paragraph (A) of this section, in the sum of $10 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph (A) of this section.

C. Withholding for unpaid wages and liquidated damages: AUTHORITY shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld, from any moneys payable on account of work performed by CONTRACTOR or subcontractor under any such contract or any other Federal contract with CONTRACTOR, or any other federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held

by CONTRACTOR, such sums as may be determined to be necessary to satisfy any liabilities of CONTRACTOR or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph (B) of this section.

D. Subcontracts**:** CONTRACTOR or subcontractor shall insert in any subcontracts the clauses set forth in paragraphs (A) through (D) of this section and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. CONTRACTOR shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs (A) through (D) of this section.

ARTICLE 42. INSPECTION AND ACCEPTANCE

A. All work (which term includes but is not restricted to materials, equipment, workmanship, and manufacture and fabrication of components) shall be subject to inspection and test by AUTHORITY at all reasonable times and at all places prior to acceptance. Any such inspection and test is for the sole benefit of AUTHORITY and shall not relieve CONTRACTOR of the responsibility of providing quality control measures to assure that the work strictly complies with requirements of this Agreement. No inspection or test by AUTHORITY or its representative shall be construed as constituting or implying acceptance. Inspection or test shall not relieve CONTRACTOR of responsibility for damage to or loss of the material prior to acceptance, nor in any way affect the continuing rights of AUTHORITY after acceptance of the completed work under the terms of paragraph F of this Article, except as herein above provided.

B. CONTRACTOR shall, without charge, replace any material or correct any workmanship found by AUTHORITY not to conform to the requirements of this Agreement, unless in the public interest AUTHORITY consents to accept such material or workmanship with an appropriate adjustment in the price of this Agreement. CONTRACTOR shall promptly segregate and remove rejected material from the premises.

C. CONTRACTOR shall furnish promptly, without additional charge, all facilities, labor, equipment and material reasonably needed for performing such safe and convenient inspection and test as may be required by AUTHORITY. All inspections and tests by AUTHORITY shall be performed in

such manner as to not unnecessarily delay the work. AUTHORITY reserves the right to charge to CONTRACTOR any additional cost of inspection or test when material or workmanship is not ready at the time specified by CONTRACTOR for inspection or test or when reinspection or retest is necessitated by prior rejection.

D. If CONTRACTOR does not promptly replace rejected material or correct rejected workmanship, AUTHORITY (1) may, by Agreement or otherwise, replace such material or correct such workmanship and charge the cost thereof to CONTRACTOR, or (2) may terminate CONTRACTOR's right to proceed in accordance with the clause of this Agreement entitled "Termination for Default."

E. Should it be considered necessary or advisable by AUTHORITY at any time before acceptance of the entire work to make an examination of work already completed, by removing or tearing out same, CONTRACTOR shall, on request, promptly furnish all necessary facilities, labor and material. If such work is found to be defective or nonconforming in any material respect, due to the fault of CONTRACTOR or its subcontractors, CONTRACTOR shall pay all costs of such examination and of satisfactory reconstruction. If, however, such work is found to meet the requirements of this Agreement, an equitable adjustment shall be made in the Agreement price to compensate CONTRACTOR for the additional services involved in such examination and reconstruction and, if completion of the work has been delayed thereby, it shall in addition, be granted a suitable extension of time.

F. Unless otherwise provided in this Agreement, acceptance by AUTHORITY shall be made as promptly as practicable after completion and inspection of all work required by this Agreement, or that portion of the work that AUTHORITY determines can be accepted separately. Acceptance shall be final and conclusive except as regards latent defects, fraud, or such gross mistakes as may amount to fraud or as regards AUTHORITY's rights under the warranty provisions set forth herein.

ARTICLE 43. MATERIAL AND WORKMANSHIP

A. Unless otherwise specifically provided in this Agreement, all equipment, material, and articles incorporated in the work covered by this Agreement are to be new and of the most suitable grade for the purpose intended. Unless otherwise specifically provided in this Agreement, reference to any equipment,

material, article or patented process, by trade name, make or catalog number, shall be regarded as establishing a standard of quality and shall not be construed as limiting competition, and CONTRACTOR may, at its option, use any equipment, material, article or process which, in the judgment of AUTHORITY, is equal to that named. CONTRACTOR shall furnish to AUTHORITY for its approval the name of the manufacturer, the model number and other identifying data and information respecting the performance, capacity, nature and rating of the machinery and mechanical and other equipment, which CONTRACTOR contemplates incorporating in the work. When required by this Agreement or when called for by AUTHORITY, CONTRACTOR shall furnish AUTHORITY, for approval, full information concerning the material or articles, which it contemplates incorporating in the work. When so directed, samples shall be submitted for approval at CONTRACTOR's expense, with all shipping charges prepaid. Machinery, equipment, material and articles installed or used without required approval shall be at the risk of subsequent rejection.

B. All work under this Agreement shall be performed in a skillful and workmanlike manner. Notwithstanding the provisions of Article 3 hereof, AUTHORITY may, in writing, require CONTRACTOR to remove from the work any employee AUTHORITY deems incompetent, careless or otherwise objectionable.

ARTICLE 44. NON-CONFORMING WORK

A. Nonconforming work rejected by AUTHORITY shall be removed and replaced so as to conform to the requirements of this Agreement, at CONTRACTOR's cost and without a time extension; and CONTRACTOR shall promptly take all action necessary to prevent similar deficiencies from occurring in the future. The fact that AUTHORITY may not have discovered the nonconforming work shall not constitute an acceptance of such nonconforming work. If CONTRACTOR fails to correct any nonconforming work within ten days of receipt of notice from AUTHORITY requesting correction, or if such nonconforming work cannot be corrected within ten (10) days, and CONTRACTOR fails to; (1) provide to AUTHORITY a schedule for correcting any such nonconforming work acceptable to AUTHORITY within such ten (10)-day period, (2) commence such corrective work within such ten (10)-

day period and (3) thereafter diligently prosecute such correction in accordance with such approved schedule to completion, then AUTHORITY may cause the nonconforming work to be remedied or removed and replaced and may deduct the cost of doing so from any moneys due or to become due to CONTRACTOR and/or obtain reimbursement from CONTRACTOR for such cost.

B. If AUTHORITY agrees to accept any nonconforming work without requiring it to be fully corrected, AUTHORITY shall be entitled to reimbursement of a portion of the contract price in an amount equal to the greater of the amount deemed appropriate by AUTHORITY to provide compensation for future maintenance and/or other costs relating to the nonconforming work, or 100% of CONTRACTOR's cost savings associated with its failure to perform the work in accordance with Contract requirements. Such reimbursement shall be payable to AUTHORITY within ten (10) days after CONTRACTOR's receipt of an invoice thereof. CONTRACTOR acknowledges and agrees that AUTHORITY shall have sole discretion regarding acceptance or rejection of nonconforming work and that AUTHORITY shall have sole discretion with regard to the amount payable in connection therewith.

ARTICLE 45. CONTRACTOR INSPECTION SYSTEM

CONTRACTOR shall maintain an adequate inspection system and perform such inspections as will assure that the work performed under this Agreement conforms to the specified requirements, and shall maintain and make available to AUTHORITY adequate records of such inspections.

ARTICLE 46. SUPERINTENDENCE BY CONTRACTOR

CONTRACTOR, at all times during performance and until the work is completed and accepted, shall give its personal superintendence to the work or have on the work a competent superintendent, satisfactory to AUTHORITY and with authority to act for and on behalf of CONTRACTOR.

ARTICLE 47. OTHER CONTRACTS

AUTHORITY may undertake or award other agreements for additional work, and CONTRACTOR shall fully cooperate with such other CONTRACTOR's and AUTHORITY's employees and carefully fit its own work to such additional work as may be directed by AUTHORITY. CONTRACTOR shall not commit

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or permit any act, which will interfere with the performance of work by any other CONTRACTOR or by AUTHORITY.

ARTICLE 48. INSPECTION OF SITE

CONTRACTOR acknowledges that it has investigated and satisfied itself as to the conditions affecting the work including, but not restricted to, those bearing upon transportation, disposal, handling and storage of materials, availability of labor, water, electric power and roads and uncertainties of weather, river stages, tides or similar physical conditions at the site, the conformation and conditions of the ground, the character of equipment and facilities needed preliminary to and during prosecution of the work. CONTRACTOR further acknowledges that it has satisfied itself as to the character, quality and quantity of surface and subsurface materials or obstacles to be encountered insofar as this information is reasonably ascertainable from an inspection of the site, including all exploratory work done by AUTHORITY, as well as from information presented by the drawings and specifications made a part of this Agreement. Any failure by CONTRACTOR to acquaint itself with the available information will not relieve it from responsibility for the difficulty or cost of successfully performing the work. AUTHORITY assumes no responsibility for any conclusions or interpretations made by CONTRACTOR on the basis of the information made available by AUTHORITY.

ARTICLE 49. DIFFERING SITE CONDITIONS

A. CONTRACTOR shall immediately, and before such conditions are disturbed, notify AUTHORITY in writing of: (1) subsurface or latent physical conditions at the site which differ materially from those indicated in this Agreement, or (2) unknown physical conditions at the site, of an unusual nature, which differ materially from those ordinarily encountered and generally recognized as inherent in work of the character provided for in this Agreement. AUTHORITY will investigate the conditions within three business days of receipt of notification, and if it finds that such conditions do materially so differ and cause an increase or decrease in CONTRACTOR's cost of, or the time required for, performance of any part of the work under this Agreement, whether or not changed as a result of such conditions, an equitable adjustment shall be made and the Agreement modified in writing accordingly.

B. No claim of CONTRACTOR under this Article shall be allowed unless CONTRACTOR has given the written notice required above; no claim by CONTRACTOR for an equitable adjustment hereunder shall be allowed if asserted after final payment under this Agreement.

ARTICLE 50. SEISMIC SAFETY REQUIREMENTS

CONTRACTOR agrees that the Work performed under this Agreement will be accomplished in accordance with the standards for Seismic Safety required in DOT's Seismic Safety Regulations 49 CFR Part 41 and will certify compliance to the extent required by the regulation for such Work. CONTRACTOR shall ensure that all work performed under this Agreement including work performed by a subcontractor is in compliance with the standards required by the Seismic Safety Regulations and the certification of compliance issued on the project.

ARTICLE 51. RECYCLED PRODUCTS

CONTRACTOR shall comply with all the requirements of Section 6002 of the Resource Conservation and Recovery Act (RCRA), as amended (42 U.S.C. Section 6962), including but not limited to the regulatory provisions of 40 CFR Part 247, and Executive Order 12873, as they apply to the procurement of the items designated in subpart B of 40 CFR Part 247. CONTRACTOR agrees to include this requirement in all of its subcontracts.

ARTICLE 52. ENERGY CONSERVATION REQUIREMENTS

CONTRACTOR shall comply with mandatory standards and policies relating to energy efficiency, which are contained in the state energy conservation plan issued in compliance with the Energy Policy Conservation Act.

ARTICLE 53. CLEAN AIR

CONTRACTOR shall comply with all applicable standards, orders or regulations issued pursuant to the Clean Air Act, as amended, 42 U.S.C. Sections 7401 et seq. CONTRACTOR shall report each violation to AUTHORITY, who will in turn, report each violation as required to assure notification to FTA and the appropriate EPA Regional Office. CONTRACTOR agrees to include this requirement in each subcontractor exceeding $100,000.

ARTICLE 54. CLEAN WATER REQUIREMENTS

CONTRACTOR shall comply with all applicable standards, orders or regulations issued pursuant to the Federal Water Pollution Control Act, as amended, 33 U.S.C. Sections 1251 *et seq.*as amended. CONTRACTOR shall report each violation to AUTHORITY and understands and agrees that AUTHORITY who will in turn, report each violation as required to assure notification to FTA and appropriate EPA Regional Office. CONTRACTOR agrees to include this requirement in each subcontract exceeding $100,000.

ARTICLE 55. OPERATIONS AND STORAGE AREAS

A. All operations of CONTRACTOR (including storage of materials and equipment) on AUTHORITY owned premises shall be confined to areas authorized or approved by AUTHORITY. CONTRACTOR shall hold AUTHORITY and its officers and agents free and harmless from liability of any nature occasioned by CONTRACTOR's operations.

B. Temporary building (storage sheds, shops, offices, etc.) may be erected by CONTRACTOR with the written consent of AUTHORITY, and shall be built with labor and materials furnished by CONTRACTOR without expense to AUTHORITY. Such temporary buildings and utilities shall remain the property of CONTRACTOR and shall be removed by CONTRACTOR at its expense upon the completion of the work. With the written consent of AUTHORITY, such buildings and utilities may be abandoned and need not be removed.

C. CONTRACTOR shall, under regulations prescribed by AUTHORITY, use only established roadways or construct and use such temporary roadways as may be authorized by AUTHORITY. Where materials are transported in the prosecution of work, vehicles shall not be loaded beyond the loading capacity recommended by the manufacturer of the vehicle or prescribed by any federal, state or local law or regulation. When it is necessary to cross curbing or sidewalks, protection against damage shall be provided by CONTRACTOR and any damaged roads, curbing or sidewalks shall be repaired by, or at the expense of, CONTRACTOR.

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ARTICLE 56. BUY AMERICA

A. If this Agreement exceeds $150,000, CONTRACTOR shall comply with the "Buy America" requirements of 49 U.S.C. Section 5323 and the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) Sections 1041(a) and 1048(a) and the regulations adopted pursuant thereto. In conformance with the law and regulations, all manufacturing processes for steel and iron materials furnished for incorporation into the work on this Project shall occur in the United States; with the exception that pig iron and processed, pellitized and reduced iron ore manufactured outside of the United States may be used in domestic manufacturing process for such steel and iron materials. The application of coatings, such as epoxy coating, galvanizing, painting, and other coating that protects or enhances the value of steel or iron materials shall be considered a manufacturing process subject to the "Buy America" requirements.

B. A Certificate of Compliance, conforming to the provisions of this Article shall be furnished for steel and iron materials. The certificates, in addition to certifying that the materials comply with the specifications, shall specifically certify that all manufacturing processes for the materials occurred in the United States, except for the exceptions listed herein.

C. The requirements imposed by law and regulations do not prevent a minimal use of foreign steel and iron materials of the total combined cost of the materials used does not exceed one-tenth of one percent (0.1 percent) of the total contract cost or $2,500, whichever is greater. CONTRACTOR shall furnish AUTHORITY acceptable documentation of the quantity and value of the foreign steel and iron prior to incorporating the materials in the work.

D. CONTRACTOR shall ensure all subcontractors comply with these requirements.

ARTICLE 57. PROTECTION OF VEGETATION, UTILITIES, IMPROVEMENTS

A. CONTRACTOR shall preserve and protect all existing vegetation such as trees, shrubs and grass on or adjacent to the site of work which is not to be removed and which does not unreasonably interfere with the construction work. Care will be taken in removing trees authorized for removal to avoid damage to vegetation to remain in place. Any limbs or branches of trees broken during such operations

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or by the careless operation of equipment, or by workmen, shall be trimmed with a clean cut and painted with an approved tree pruning compound as directed by AUTHORITY.

B. CONTRACTOR shall protect from damage all existing improvements or utilities at or near the site of the work, the location of which is made known to it, and will repair or restore any damage to such facilities resulting from failure to comply with the requirements of this Agreement or the failure to exercise reasonable care in the performance of the work. If CONTRACTOR fails or refuses to repair any such damage promptly, AUTHORITY may have the necessary work performed and charge the cost to CONTRACTOR.

ARTICLE 58. CLEANING UP

A. CONTRACTOR shall at all times keep the construction area, including storage areas used by it, free from accumulations of waste material or rubbish, and prior to completion of the work remove any rubbish from AUTHORITY owned premises and all tools, scaffolding, equipment and materials not the property of AUTHORITY. Upon completion of the construction, CONTRACTOR shall leave the work and premises in a clean, neat and workmanlike condition satisfactory to AUTHORITY.

B. After completion of all work on the project, and before making application for acceptance of the work, CONTRACTOR shall clean the construction site, including all areas under the control of AUTHORITY, that have been used by CONTRACTOR in connection with the work on the project and remove all debris, surplus material and equipment, and all temporary construction or facilities of whatever nature, unless otherwise approved by AUTHORITY. Final acceptance of the work by AUTHORITY will be withheld until CONTRACTOR has satisfactorily complied with the foregoing requirements for final cleanup of the project site.

C. Full compensation for conforming to the provisions in this Article, not otherwise provided for, shall be considered as included in price of this Agreement and no additional compensation will be allowed therefore.

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ARTICLE 59. USE AND POSSESSION TO COMPLETION

AUTHORITY shall have the right to take possession of or use any completed or partially completed part of the work. Prior to such possession or use, AUTHORITY shall furnish CONTRACTOR an itemized list of work remaining to be performed or corrected on such portions of the project as are to be possessed or used by AUTHORITY, provided that failure to list any item of work shall not relieve CONTRACTOR of responsibility for compliance with the terms of this Agreement. Such possession or use shall not be deemed an acceptance of any work under this Agreement. While AUTHORITY has such possession or use, CONTRACTOR shall be relieved of the responsibility for the loss or damage to the work resulting from AUTHORITY's possession or use. If such prior possession or use by AUTHORITY delays the progress of the work or causes additional expense to CONTRACTOR, an equitable adjustment in the Agreement price or the time of completion will be made and the Agreement shall be modified in writing accordingly.

ARTICLE 60. PROHIBITED INTERESTS

A. CONTRACTOR covenants that, for the term of this Agreement, no director, officer or employee of AUTHORITY, during his/her tenure in office or for one (1) year thereafter, shall have any interest, direct or indirect, in this Agreement or the proceeds thereof.

B. No member of or delegates to the Congress of the United States shall have any interest, direct or indirect, in this Agreement or the benefits thereof.

ARTICLE 61. CONTRACTOR PURCHASED EQUIPMENT

A. If during the course of this Agreement, additional equipment is required, which will be paid for by AUTHORITY, CONTRACTOR must request prior written authorization from AUTHORITY's project manager before making any purchase. As part of this purchase request, CONTRACTOR shall provide a justification for the necessity of the equipment or supply and submit copies of three (3) competitive quotations. If competitive quotations are not obtained, CONTRACTOR must provide the justification for the sole source.

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B. CONTRACTOR shall maintain an inventory record for each piece of equipment purchased that will be paid for by AUTHORITY. The inventory record shall include the date acquired, total cost, serial number, model identification, and any other information or description necessary to identify said equipment or supply. A copy of the inventory record shall be submitted to AUTHORITY upon request.

C. At the expiration or termination of this Agreement, CONTRACTOR may keep the equipment and credit AUTHORITY in an amount equal to its fair market value. Fair market value shall be determined, at CONTRACTOR's expense, on the basis of an independent appraisal. CONTRACTOR may sell the equipment at the best price obtainable and credit AUTHORITY in an amount equal to the sales price. If the equipment is to be sold, then the terms and conditions of the sale must be approved in advance by AUTHORITY's project manager.

D. Any subcontractor agreement entered into as a result of this Agreement shall contain all provisions of this clause.

ARTICLE 62. DEBARMENT AND SUSPENSION GUIDELINES

CONTRACTOR shall not do business with a subcontractor or other participant who is debarred, suspended or otherwise disqualified. CONTRACTOR shall comply with 2 CFR Part 180, as adopted and supplemented by 2 CFR Part 1200. CONTRACTOR shall include the requirements in any lower tier covered transaction it enters into.

ARTICLE 63. HEALTH AND SAFETY SPECIFICATIONS

CONTRACTOR shall comply with all requirements set forth in Exhibit H, Level 3 Safety Specifications.

ARTICLE 64. LOBBYING

CONTRACTOR shall comply with the lobbying requirements of 31 U.S.C. Section 1352 and the applicable regulations under 49 CFR Parts 19 and 20. If this Agreement exceeds $100,000, CONTRACTOR shall file both the "Certification of Restrictions on Lobbying" and the "Disclosure of Lobbying Activities." CONTRACTOR shall also require each subcontractor to certify to CONTRACTOR that subcontractor will not and has not used Federal appropriated funds to pay any person or organization

for influencing or attempting to influence an officer or employee of any agency, a member of Congress, officer or employee of Congress, or an employee of a member of Congress in connection with obtaining any Federal contract, grant or any other award covered by 31 U.S.C. Section 1352. CONTRACTOR shall also require any subcontractor to disclose to CONTRACTOR the name of any registrant under the Lobbying Disclosure Act of 1995 who has made lobbying contacts on its behalf with non-Federal funds with respect to that Federal contract, grant or award covered by 31 U.S.C. Section 1352.

ARTICLE 65. TRANSPORTATION OF EQUIPMENT, MATERIALS OR COMMODITIES BY OCEAN VESSEL

A. CONTRACTOR shall utilize privately owned United States-flag commercial vessels to ship at least 50% of the gross tonnage (computed separately for dry bulk carriers, dry cargo liners and tankers) involved, whenever shipping any equipment, materials or commodities pursuant to this section, to the extent such vessels are available at fair and reasonable rates for United States-flag commercial vessels.

B. CONTRACTOR shall furnish within twenty (20) working days following the date of loading for shipments originating within the United States, or within thirty (30) working days following the date of loading for shipping originating outside the United States, a legible copy of a rated, "on-board" commercial ocean bill-of lading in English for each shipment of cargo described in paragraph A of this Article to AUTHORITY (through the prime CONTRACTOR in the case of subcontractor bills-of-lading) and to the Division of National Cargo, Office of Market Development, Maritime Administration, Washington, DC 20590, marked with appropriate identification of the project.

ARTICLE 66. FLY AMERICA REQUIREMENTS

A. CONTRACTOR agrees to comply with 49 U.S.C. 40118 (the "Fly America" Act) in accordance with the General Services Administration's regulations at 41 CFR Part 301-10, which provide that recipients and subrecipient of Federal funds and their contractors are required to use U.S. Flag air carriers for U.S. Government-financed international air travel and transportation of their personal effects or property, to the extent such service is available, unless travel by foreign air carrier is a matter of necessity, as defined by the Fly America Act. CONTRACTOR shall submit, if a foreign air carrier was used, an

appropriate certification or memorandum adequately explaining why service by a U.S. flag air carrier was not available or why it was necessary to use a foreign air carrier and shall, in any event, provide a certificate of compliance with the Fly America requirements. CONTRACTOR agrees to include the requirements of this section in all subcontracts that may involve international air transportation.

ARTICLE 67. FORCE MAJEURE

Either party shall be excused from performing its obligations under this Agreement during the time and to the extent that it is prevented from performing by an unforeseeable cause beyond its control, including but not limited to: any incidence of fire, flood; acts of God; commandeering of material, products, plants or facilities by the federal, state or local government; national fuel shortage; or a material act or omission by the other party; when satisfactory evidence of such cause is presented to the other party, and provided further that such nonperformance is unforeseeable, beyond the control and is not due to the fault or negligence of the party not performing.

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This Agreement shall be made effective upon execution by both parties.

IN WITNESS WHEREOF, the parties hereto have caused this Agreement No. C-7-2024 to be executed on the date first above written.

CONTRACTOR

By _____

License No:

ORANGE COUNTY TRANSPORTATION AUTHORITY

By _____
Darrell Johnson
Chief Executive Officer

APPROVED AS TO FORM:

By _____
James M. Donich
General Counsel

APPROVED:

By _____
James G. Beil, P.E.
Executive Director Capital Programs

Date _____

DISADVANTAGED BUSINESS ENTERPRISE (DBE) CONTRACT PROVISIONS FEDERALLY FUNDED CONTRACTS WITH DBE GOALS

I. DBE Participation

It is the Consultant's responsibility to be fully informed regarding the requirements of 49 CFR, Part 26 and the Orange County Transportation Authority's (Authority's) DBE program developed pursuant to these regulations. Particular attention is directed to the following:

A. A DBE must be a small business firm defined pursuant to 13 CFR 121 and be certified through the California Unified Certification Program (CUCP).

B. A certified DBE may participate as a prime consultant, subconsultant, joint venture partner, as a vendor of material or supplies, or as a trucking company.

C. A DBE must perform a commercially useful function pursuant to 49 CFR 26.55 that is, a DBE firm must be responsible for the execution of a distinct element of the work and must carry out its responsibility by actually performing, managing and supervising the work.

D. Consultant must not claim DBE participation as attained until the amount to be claimed is paid and fully adheres to DBE crediting provisions.

If the Consultant has committed to utilize DBE(s) in the performance of this DOT-assisted contract, the Consultant's submitted **"**DBE Participation Commitment Form**"** will be utilized to monitor Consultant's DBE commitments, unless otherwise directed and/or approved by the Authority prior to the Consultant effectuating any changes to its DBE participation commitment(s) *(Refer to Subsection H: "Performance of DBE Subconsultants")*.

Consultant must complete and submit all required DBE documentation to effectively capture all DBE utilization on the Authority's DOT-assisted contracts whether achieved race neutrally or race consciously. Even if a Consultant has not committed to utilize DBE(s) in the performance of this contract, the Consultant must execute and submit all required DBE forms and other related documentation as specified under this contract or as otherwise requested by the Authority. No changes to the Consultant's DBE Commitment must be made until proper protocols for review and approval of the Authority are rendered in writing.

To ensure full compliance with the requirements of 49 CFR, Part 26 and the Authority's DBE Program, the Consultant must:

A. Take appropriate actions to ensure that it will continue to meet the DBE Commitment at the minimal level committed to at award or will satisfy the good faith efforts to meet the DBE Commitment, when change orders or other contract modifications alter the

dollar amount of the contract or the distribution of work. The Consultant must apply and report its DBE goal commitments against the total Contract Value, including any contract change orders and/or amendments.

II. DBE Policy and Applicability

In accordance with federal financial assistance agreements with the U.S. Department of Transportation (U.S. DOT), the Authority has adopted a Disadvantaged Business Enterprise (DBE) Policy and Program, in conformance with Title 49 CFR, Part 26, "Participation by Disadvantaged Business Enterprises in Department of Transportation Programs".

The project is subject to these stipulated regulations and the Authority's DBE program. In order to ensure that the Authority achieves its overall DBE Program goals and objectives, the Authority encourages the participation of DBEs as defined in 49 CFR, Part 26 in the performance of contracts financed in whole or in part with U.S. DOT funds. Pursuant to the intent of these Regulations, it is also the policy of the Authority to:

Fulfill the spirit and intent of the Federal DBE Program regulations published under U.S. DOT Title 49 CFR, Part 26, by ensuring that DBEs have equitable access to participate in all of Authority's DOT-assisted contracting opportunities.

A. Ensure that DBEs can fairly compete for and perform on all DOT-assisted contracts and subcontracts.

B. Ensure non-discrimination in the award and administration of Authority's DOT-assisted contracts.

C. Create a level playing field on which DBEs can compete fairly for DOT-assisted contracts.

D. Ensure that only firms that fully meet 49 CFR, Part 26 eligibility standards are permitted to participate as DBEs.

E. Help remove barriers to the participation of DBEs in DOT-assisted contracts.

F. Assist in the development of firms that can compete successfully in the marketplace outside the DBE Program.

G. Consultant must not discriminate on the basis of race, color, national origin, or sex in the award and performance of subconsultant.

Any terms used in this section that are defined in 49 CFR, Part 26, or elsewhere in the Regulations, must have the meaning set forth in the Regulations. In the event of any conflicts or

inconsistencies between the Regulations and the Authority's DBE Program with respect to DOT-assisted contracts, the Regulations must prevail.

III. Authority's DBE Policy Implementation Directives

Pursuant to the provisions associated with federal regulation 49 CFR, Part 26, the Disadvantaged Business Enterprise (DBE) program exists to ensure participation, equitable competition, and assistance to participants in the USDOT DBE program. Accordingly, based on the Authority's analysis of its past utilization data, coupled with its examination of similar Agencies' Disparity Study and recent Goal Methodology findings the Authority has implemented the reinstatement of the DBE program utilizing both race-conscious and race-neutral means across the board as all protected groups participation have been affected using strictly race neutral means on its FTA-assisted contracts.

The Authority reinstates the use of contract goals and good faith efforts. Meeting the contract-specific goal by committing to utilize DBEs or documenting a bona fide good faith effort to do so, is a condition of award. Additionally, contract-specific goals are now specifically targeted at DBEs (*DBEs owned and controlled by Black Americans, Hispanic Americans, Asian-Pacific Americans, Native Americans, Asian-Pacific Americans, Sub-Continent Asian Americans, and Women*). In the event of a substitution, a DBE must be substituted with another DBE or documented adequate good faith efforts to do so must be made, in order to meet the contract goal and DBE contract requirements.

A. Definitions

The following definitions apply to the terms used in these provisions:

1. ***"Disadvantaged Business Enterprise (DBE)"*** means a small business concern: (a) which is at least 51 percent owned by one or more socially and economically disadvantaged individuals or, in the case of any publicly-owned business, at least 51 percent of the stock of which is owned by one or more socially and economically disadvantaged individuals; and (b) whose management and daily business operations are controlled by one or more of the socially and economically disadvantaged individuals who own it.

2. ***"Small Business Concern"*** means a small business as defined pursuant to Section 3 of the Small Business Act and relevant regulations promulgated pursuant thereto, except that a small business concern must not include any concern or group of concerns controlled by the same socially and economically disadvantaged individual or individuals which has annual average gross receipts in excess of $19.57 million over the previous three fiscal years.

3. ***"Socially and Economically Disadvantaged Individuals"*** means those individuals who are citizens of the United States (or lawfully admitted permanent residents) and

who are Black Americans, Hispanic Americans, Native Americans, Asian-Pacific Americans, or Asian-Indian Americans, women and any other minorities or individuals found to be disadvantaged by the Small Business Administration pursuant to Section 8(a) of the Small Business Act, or by the Authority pursuant to 49 CFR part 26.65. Members of the following groups are presumed to be socially and economically disadvantaged:

a) "Black Americans," which includes persons having origins in any of the Black racial groups of Africa;
b) "Hispanic Americans," which includes persons of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish or Portuguese culture or origin, regardless of race;
c) "Native Americans," which includes persons who are American Indians, Eskimos, Aleuts, or Native Hawaiians;
d) "Asian-Pacific Americans," which includes persons whose origins are from Japan, China, Taiwan, Korea, Vietnam, Laos, Cambodia, the Philippines, Samoa, Guam, the U.S. Trust Territories of the Pacific, and the Northern Marianas;
e) "Asian-Indian Americans," which includes persons whose origins are from India, Pakistan, and Bangladesh; and
f) Women, regardless of ethnicity or race.

4. ***"Owned and Controlled"*** means a business: (a) which is at least 51 percent owned by one or more "Socially and Economically Disadvantaged Individuals" or, in the case of a publicly-owned business, at least 51 percent of the stock of which is owned by one or more "Socially and Economically Disadvantaged Individuals"; and (b) whose management and daily business operations are controlled by one or more such individuals.

5. ***"Manufacturer"*** means a firm that operates or maintains a factory or establishment that produces on the premises the materials or supplies obtained by the Consultant.

6. ***"Regular Dealer"*** means a firm that owns, operates or maintains a store, warehouse, or other establishment in which the materials or supplies required for the performance of the contract are bought, kept in stock, and regularly sold to the public in the usual course of business. The firm must engage in, as its principal business, and in its own name, the purchase and sale of the product in question. A regular dealer in such bulk items as steel, cement, gravel, stone and petroleum products need not keep such products in stock if it owns or operates distribution equipment.

7. ***"Fraud"*** includes a firm that does not meet the eligibility criteria of being a certified DBE and that attempts to participate in a DOT-assisted program as a DBE on the basis of false, fraudulent, or deceitful statements or representations or under

circumstances indicating a serious lack of business integrity or honesty. The Authority may take enforcement action under 49 CFR, Part 31, Program Fraud and Civil Remedies, against any participant in the DBE program whose conduct is subject to such action under 49 CFR, Part 31. The Authority may refer the case to the Department of Justice, for prosecution under 18 U.S.C. 1001 or other applicable provisions of law, any person who makes a false or fraudulent statement in connection with participation of a DBE in any DOT-assisted program or otherwise violates applicable Federal statutes.

8. ***"Other Socially and Economically Disadvantaged Individuals"*** means those individuals who are citizens of the United States (or lawfully admitted permanent residents) and who, on a case-by-case basis, are determined by Small Business Administration or a recognized California Unified Certification Program Certifying Agency to meet the social and economic disadvantage criteria described below.

B. "Social Disadvantage"

1. The individual's social disadvantage must stem from his/her color, national origin, gender, physical handicap, long-term residence in an environment isolated from the mainstream of American society, or other similar cause beyond the individual's control.

2. The individual must demonstrate that he/she has personally suffered social disadvantage.

3. The individual's social disadvantage must be rooted in treatment, which he/she has experienced in American society, not in other countries.

4. The individual's social disadvantage must be chronic, longstanding and substantial, not fleeting or insignificant.

5. The individual's social disadvantage must have negatively affected his/her entry into and/or advancement in the business world.

6. A determination of social disadvantage must be made before proceeding to make a determination of economic disadvantage.

C. "Economic Disadvantage"

1. The individual's ability to compete in the free enterprise system has been impaired due to diminished capital and credit opportunities, as compared to others in the same line of business and competitive market area that are not socially disadvantaged.

2. The following criteria will be considered when determining the degree of diminished

credit and capital opportunities of a person claiming social and economic disadvantage:

With respect to the individual:

- availability of financing bonding capability
- availability of outside equity capital
- available markets

With respect to the individual and the business concern:

- personal and business assets
- personal and business net worth
- personal and business income and profits

IV. Submission of DBE Information and Ongoing Reporting Requirements (Post-Award)

If there is a DBE goal on the contract, Consultant must complete and submit the following DBE exhibits (forms) consistent with Consultant DBE Goal Commitment within the specified timelines. Even if no DBE participation will be reported, the Consultant must execute and return the form:

A. "Monthly DBE Subconsultant Commitment and Attainment Report Summary and Payment Verification " (Form 103)

The purpose of this form is to ensure Consultant DBE commitments are attained, properly reported and credited in accordance with DBE crediting provisions based on the capacity the DBE performs the scope of work/service. This form further serves to collect DBE utilization data required under 49 CFR, Part 26.

The Consultant is required to complete and submit a Form 103 to the Authority by the 10th of each month until completion of the contract. The Consultant must submit its first Form 103 following the first month of contract activity. Upon completion of the contract, the Consultant must complete and submit a "Final: Monthly DBE Subconsultant Commitment and Attainment Report Summary and Payment Verification" (Form 103) to facilitate reporting and capturing actual DBE attainments at conclusion of the contract.

The Form 103 must include the following information:

1. General Contract Information – Including Contract Number and Name, Prime Consultant and the following:

    a) Original Contract Amount
    b) Running Total of Change Order Amount
    c) Current Contract Amount
    a) Amount Paid to Consultant during Month
    b) Amount Paid to Consultant from Inception to Date

c) DBE Contract Goal
d) Total Dollar Amount of DBE Commitment
e) DBE Commitment as Percentage of Current Contract Amount

2. Listed and/Proposed Consultant/Subconsultant Information – For All DBE participation being claimed either Race Neutrally or Race Consciously, regardless of tier:

   a) DBE Firm Name, Address, Phone Number, DBE Type of Operation, Certification Type and Certification Number.

   b) DBE Firm Contract Value Information:
      A. Original contract amount, running total of change order amount, Current contract amount, Amount paid to Consultant during month and Amount paid to Consultant to date.

3. Consultant Assurance of Full Compliance with Prompt Payment Provisions

   Consultant to sign the prompt payment assurance statement of compliance contained within the Form 103. Consultant is to further maintain and submit at the request of Authority a detailed running tally of related invoices submitted by DBE(s) and Non DBE(s), including dates of invoice submission, dates accepted and corresponding dates and amount of payments made. The Payment and Retention Reporting tally must also include:

   DBE(s) and Non DBE(s) Invoice Number, Invoice Amount, Invoice Date, Prime Consultant's Invoice Number that incorporated the corresponding DBE and Non DBE invoice(s) for billing purposes, Date of Invoice submission to Authority, Date and amount Authority paid on Prime Consultant's Invoice. The report must also reflect a breakout of retention withheld (including retention as specified in subcontract agreement(s) and disputed invoice retention) and retention payments made, check number and date paid to DBE and Non DBE.

   Consultant is advised not to report the participation of DBE(s) toward the Consultant's DBE attainment until the amount being claimed has been paid to the DBE. Verification of payments and/or a signed Verification of Payment by the applicable DBE or Non DBE must be submitted with Form 103 to authenticate reported payments.

4. DBE Subcontract Agreements

   The Consultant must submit to the Authority copies of executed subcontracts and/or purchase orders (PO) for all DBE firms participating on the contract within ten working days of award. The Consultant must immediately notify the Authority in writing of any

problems it may have in obtaining the subcontract agreements from listed DBE firms within the specified time.

5. "Monthly DBE Trucking Verification" Form

   Prior to the 10th of each month, the Consultant must submit documentation on the "Monthly DBE Trucking Verification" Form to the Authority showing the amount paid to DBE trucking companies. The Consultant must also obtain and submit documentation to the Authority showing the amount paid by DBE trucking companies to all firms, including owner-operators, for the leasing of trucks. If the DBE leases trucks from a non-DBE, the Contactor may count only the fee or commission the DBE receives as a result of the lease arrangement.

   The Consultant must also obtain and submit documentation to the Authority showing the truck number, owner's name, California Highway Patrol CA number, and if applicable, the DBE certification number of the owner of the truck for all trucks used during that month.

6. “Final Report-Utilization of Disadvantaged Business Enterprises (DBE), First Tier Subconsultants"

   Upon completion of the contract, a summary of these records must be prepared on the: "Final Report-Utilization of Disadvantaged Business Enterprises (DBE), First Tier Subconsultants" and certified correct by the Consultant or the Consultant's authorized representative, and must be furnished to the Engineer. The form must be furnished to the Authority within 90 days from the date of contract acceptance. The amount of $10,000 will be withheld from payment until a satisfactory form is submitted.

7. “Disadvantaged Business Enterprises (DBE) Certification Status Change”

   If a DBE Sub is decertified during the life of the project, the decertified Subconsultant must notify the Consultant in writing with the date of decertification. If a Subconsultant becomes a certified DBE during the life of the project, the Subconsultant must notify the Consultant in writing with the date of certification (Attach DBE certification/Decertification letter). The Consultant must furnish the written documentation to the AUTHORITY.

   Upon completion of the contract, the "Disadvantaged Business Enterprises (DBE) Certification Status Change" must be signed and certified correct by the Consultant indicating the DBEs' existing certification status. If there are no changes, please indicate “No Changes”. The certified form must be furnished to the Authority within 90 days from the date of contract acceptance.

V. DBE Eligibility and Commercially Useful Function Standards

A DBE must be certified at the time of Proposal submission:

1. A certified DBE must be a small business concern as defined pursuant to Section 3 of the U.S. Small Business Act and relevant regulations promulgated pursuant thereto.

2. A DBE may participate as a Prime Consultant, Subconsultant, joint venture partner with a Prime or Subconsultant, vendor of material or supplies, or as a trucking company.

3. A DBE joint venture partner must be responsible for specific contract items of work, or clearly defined portions thereof. Responsibility means actually performing, managing and supervising the work with its own forces. The DBE joint venture partner must share in the capital contribution, control, management, risks and profits of the joint venture commensurate with its ownership interest.

4. At time of proposal submission, DBEs must be certified by the California Unified Certification Program (CUCP). Listings of DBEs certified by the CUCP are available from the following sources:

A. The CUCP web site, which can be accessed at http://www.californiaucp.com; or the Caltrans "Civil Rights" web site at http://www.dot.ca.gov/hq/bep.

1. A DBE must perform a commercially useful function in accordance with 49 CFR 26.55 (i.e., must be responsible for the execution of a distinct element of the work and must carry out its responsibility by actually performing, managing and supervising the work). A DBE should perform at least thirty percent (30%) of the total cost of its contract with its own workforce to presume it is performing a commercially useful function.

VI. DBE Crediting Provisions

A. When a DBE is proposed to participate in the contract, either as a Prime Consultant or Subconsultant, at any tier, only the value of the work proposed to be performed by the DBE with its own forces may be counted towards DBE participation. If the Consultant is a DBE joint venture participant, only the DBE proportionate interest in the joint venture must be counted.

1. If a DBE intends to subcontract part of the work of its subcontract to a lower-tier Subconsultant, the value of the subcontracted work may be counted toward DBE participation only if the Subconsultant is a certified DBE and actually performs the work with their own forces. Services subcontracted to a Non-DBE firm may not be

credited toward the Prime Consultant's DBE attainment.

2. Consultant is to calculate and credit participation by eligible DBE vendors of equipment, materials, and suppliers toward DBE attainment, as follows:

    a) Sixty percent (60%) of expenditure(s) for equipment, materials and supplies required under the Contract, obtained from a regular dealer; or
    b) One hundred percent (100%) of expenditure(s) for equipment, materials and supplies required under the Contract, obtained from a DBE manufacturer.

3. The following types of fees or commissions paid to DBE Subconsultants, Brokers, and Packagers may be credited toward the prime Consultant's DBE attainment, provided that the fee or commission is reasonable, and not excessive, as compared with fees or commissions customarily allowed for similar work, including:

    a) Fees and commissions charged for providing bona fide professional or technical services, or procurement of essential personnel, facilities, equipment, materials, or supplies required in the performance of the Contract;
    b) Fees charged for delivery of material and supplies (excluding the cost of materials or supplies themselves) when the licensed hauler, trucker, or delivery service is not also the manufacturer of, or a regular dealer in, the material and supplies;
    c) Fees and commissions charged for providing any insurance specifically required in the performance of the Contract.

4. Consultant may count the participation of DBE trucking companies toward DBE attainment, as follows:

    a) The DBE must be responsible for the management and supervision of the entire trucking operation for which it is responsible on a particular contract.
    b) The DBE must itself own and operate at least one fully licensed, insured, and operational truck used on the contract.
    c) The DBE receives credit for the total value of the transportation services it provides on the contract using trucks it owns, insures, and operates using drivers it employs.
    d) The DBE may lease trucks from another DBE firm, including an owner-operator who is certified as a DBE. The DBE who leases trucks from another DBE receives credit for the total value of the transportation services the lessee DBE provides on the contract.
    e) The DBE may also lease trucks from a non-DBE firm, including an owner-operator. The DBE who leases trucks from a non-DBE is entitled to credit only for the fee or commission it receives as a result of the lease

arrangement. The DBE does not receive credit for the total value of the transportation services provided by the lessee, since these services are not provided by a DBE.

For purposes of this paragraph, a lease must indicate that the DBE has exclusive use of and control over the truck. This does not preclude the leased truck from working for others during the term of the lease with the consent of the DBE, so long as the lease gives the DBE absolute priority for use of the leased truck. Leased trucks must display the name and identification number of the DBE.

5. If the Consultant listed a non-certified 1st tier Subconsultant to perform work on this contract, and the non-certified Subconsultant subcontracts a part of its work or purchases materials and/or supplies from a lower tier DBE certified Subconsultant or Vendor, the value of work performed by the lower tier DBE firm's own forces can be counted toward DBE participation on the contract. If a DBE Consultant performs the installation of purchased materials and supplies they are eligible for full credit of the cost of the materials.

VII. Performance of DBE Subconsultants

DBEs must perform work or supply materials as listed in the "DBE Participation Commitment Form" specified under "*DBE Proposal Submission Requirements"* of these special provisions. Do not terminate a DBE listed Subconsultant for convenience and perform the work with your own forces or obtain materials from other sources without prior written authorization from the AUTHORITY.

The AUTHORITY grants authorization to use other forces or sources of materials for requests that show any of the following justifications (written approval from the AUTHORITY must be obtained prior to effectuating a substitution):

A. Listed DBE fails or refuses to execute a written contract based on plans and specifications for the project.

B. You stipulate a bond is a condition of executing the subcontract and the listed DBE fails to meet your bond requirements.

C. Work requires a Consultants' license and listed DBE does not have a valid license under Consultants License Law.

D. Listed DBE fails or refuses to perform the work or furnish the listed materials.

E. Listed DBE's work is unsatisfactory and not in compliance with the contract.

F. Listed DBE delays or disrupts the progress of the work.

G. Listed DBE becomes bankrupt or insolvent.

If a listed DBE Subconsultant is terminated, you must make good faith efforts to find another DBE Subconsultant to substitute for the original DBE. The substitute DBE must perform at least the same amount of work as the original DBE under the contract to the extent needed to meet the DBE goal.

The substitute DBE must be certified as a DBE at the time of request for substitution. The AUTHORITY does not pay for work or material unless it is performed or supplied by the listed DBE, unless the DBE is terminated in accordance with this section.

VIII. Additional DBE Subconsultants

In the event Consultant identifies additional DBE Subconsultants or suppliers not previously identified by Consultant for DBE participation under the contract, Consultant must notify the Authority by submitting "Request for Additional DBE Firm" to enable Consultant to capture all DBE participation. Consultant must also submit, for each DBE identified after contract execution, a written confirmation from the DBE acknowledging that it is participating in the contract for a specified value, including the corresponding scope of work (a subcontract agreement can serve in lieu of the written confirmation).

IX. DBE "Frauds" and "Fronts"

Only legitimate DBEs are eligible to participate as DBEs in the Authority's federally -assisted contracts. Proposers are cautioned against knowingly and willfully using "fronts." The use of "fronts" and "pass through" subcontracts to non-disadvantaged firms constitute criminal violations. Further, any indication of fraud, waste, abuse or mismanagement of Federal funds should be immediately reported to the Office of Inspector General, U.S. Department of Transportation at the toll-free hotline: (800) 424-9071; or to the following: 245 Murray Drive, Building 410, Washington, DC 20223; Telephone: (202) 406-570.

X. Consultant's Assurance Clause Regarding Non-Discrimination

In compliance with State and Federal anti-discrimination laws, the Consultant must affirm that they will not exclude or discriminate on the basis of race, color, national origin, or sex in consideration of contract award opportunities. Further, the Consultant must affirm that they will consider, and utilize Subconsultants and vendors, in a manner consistent with non-discrimination objectives.

XI. Prompt Payment Clause

Upon receipt of payment by Authority, Consultant agrees to promptly pay each Subconsultant for the satisfactory work performed under this Agreement, no later than seven

(7) calendar days. Consultant agrees further to return retainage payments to each Subconsultant within thirty (30) calendar days after the Subconsultant's work is satisfactorily completed. Authority reserves the right to request the appropriate documentation from Consultant showing payment has been made to the Subconsultants. Any delay or postponement of payment from the above referenced time frames may occur only for good cause following written approval by Authority.

In accordance with 49 CFR part 26.29 "Prompt Payment Provisions" (DBE Final Rule) the Authority will elect to utilize the following method to comply with the prompt payment of retainage requirement:

Hold retainage from the Consultant and provide for prompt and regular incremental acceptances of portions of the Consultant, pay retainage to prime Consultants based on these acceptances, and require a contract clause obligating the Consultant to pay all retainage owed to the Subconsultants for satisfactory completion of the accepted work within thirty (30) days after payment to the Consultant.

Failure to comply with this provision or delay in payment without prior written approval from Authority will constitute noncompliance, which may result in appropriate administrative sanctions, including, but not limited to a withhold of two (2%) percent of the invoice amount due per month for every month that payment is not made.

These prompt payment provisions must be incorporated in all subcontract agreements issued by Consultant under this Agreement. Each subcontract must require the Subconsultant to make payments to sub-Subconsultants and suppliers in a similar manner.

XII. Administrative Remedies and Enforcement

Consultant must fully comply with the DBE contract requirements, including the Authority's DBE Program and Title 49 CFR, Part 26 "Participation of Disadvantaged Businesses in Department of Transportation Financial Assistance Programs" and ensure that all Subconsultants regardless of tier are also fully compliant. Consultant's failure to comply constitutes a material breach of contract, wherein the Authority will impose all available administrative sanctions including payment withholdings, necessary to effectuate full compliance. In instances of identified non-compliance, a Cure Notice will be issued to the Consultant identifying the DBE non-compliance matter(s) and specifying the required course of action for remedy.

The Consultant must be given ten (10) working days from the date of the Cure Notice to remedy or to (1) File a written appeal accompanied with supporting documentation and/or (2) Request a hearing with the Authority to reconsider the Authority's DBE determination. Failure to respond within the ten (10) working day period must constitute a waiver of the Consultant's right to appeal. If the Consultant files an appeal, the Authority, must issue a written determination and/or set a hearing date within ten (10) working days of receipt of the

written appeal, as applicable. A final Determination will be issued within ten (10) working days after the hearing, as applicable.

If, after review of the Consultant's appeal, the Authority decides to uphold the decision to impose DBE administrative remedies on the Consultant, the written determination must state the specific remedy(s) to be imposed.

Failure to comply with the Cure Notice and/or to remedy the identified DBE non-compliance matter(s) is a material breach of contract and is subject to administrative remedies, including, withholding at minimum of two (2%) percent of the invoice amount due per month for every month that the identified non-compliance matter(s) is not remedied. Upon satisfactory compliance the Authority will release all withholdings.

In addition to administrative remedies defined in this section, the Authority is not precluded from invoking other contractual and/or legal remedies available under federal, state or local laws.

SECTION VII: GENERAL PROVISIONS - EXHIBIT A

SECTION VII: GENERAL PROVISIONS

A. COST BREAKDOWN

Within 15 calendar days after "Notice to Proceed," the Contractor shall, upon request by the Authority, submit a cost breakdown of the lump sum Bid entered on the Bid Form for all construction work. This cost breakdown will form the basis for progress payments in accordance with these Specifications and shall show all of the major categories and subcategories of work and equipment requested by the Authority. Additionally, all cost shall be segregated between off-site and on-site costs. Mobilization costs shall not exceed 10% of total construction costs. Bonds and insurance costs will be identified as a separate line item. Such cost breakdown shall not be required if the Authority, at its sole discretion, elects to pay the Contractor in lump sum within thirty (30) calendar days of receipt of proper invoice following the Contractor's satisfactory completion and the Authority's acceptance of all work.

B. PROGRESS PAYMENTS

1. The Authority, no later than the 25th day of each month, shall prepare a progress payment estimate based on the estimated percentage of completion of each Bid Item and on the Contractor's actually incurred allowable expenses on such Bid Items. The Authority will issue the progress payment, in the amount it deems appropriate, by approximately the 15th day of the following month.

2. For purposes of calculating the progress payments, Authority will use the cost breakdown submitted by the Contractor for each Bid Item at the start of this Agreement. In no event will the Authority make a progress payment that, when added to the prior progress payments, amounts to a sum more than the Contractor's actual aggregate incurred expenses, adjusted to include Contractor's overhead and profit as allocated to such incurred expenses.

3. The Authority will pay only 95% of each progress payment amount as determined above, retaining 5% as part security for the fulfillment of this Agreement by the Contractor.

4. The amount retained in accordance with paragraph B.3., hereinabove from the progress payments will be paid in full to the Contractor as part of the final payment upon Contractor's full completion of this Agreement, except that ½ of 1% of this Agreement's total price shall be retained for one (1) year beyond the date of the Notice of Completion filed for this Agreement as partial security for fulfillment of the warranty obligations by the Contractor under this Agreement.

5. No progress payments will be made for materials not installed.

6. Progress payments made by Authority in no way shall be deemed or construed as acceptance by the Authority of work or waiver by the Authority of any rights

hereunder.

7. The Contractor shall pay subcontractors, promptly upon receipt of each Authority progress payment; the respective amounts allowed the Contractor on account of the work performed by subcontractors, to the extent of each such subcontractor's interest therein. Such payments to subcontractors shall be based on estimates made pursuant to this Agreement. Any diversion by the Contractor of payments received for prosecution of a contract, or failure to reasonably account for the application or use of such payments, constitutes ground for termination of the Contractor's control over the work and for taking over the work, in addition to disciplinary action by the Contractor's State License Board. The subcontractor shall notify, in writing, the Contractor's State License Board and the Authority of any payment less than the amount or percentage approved for the class or item of work as set forth in this Agreement.

8. In addition to other amounts properly withheld under this Agreement, the v shall withhold all legally required sums for, but not necessarily limited to, stop notices, labor and tax liens, etc.

C. FINAL INSPECTION AND ACCEPTANCE

Promptly after Substantial Completion has occurred, Contractor shall perform all Punch List Work, if any, which was deferred for purposes of Project Completion, and shall satisfy all of its other contractual obligations under the contract documents.

When the Contractor determines that the work is fully completed, including satisfactory completion of all inspections, tests, and required documentation, Punch List and clean-up items, Contractor shall give the Authority a written request for Final Acceptance within ten (10) days thereafter, specifying that the work is completed and the date on which it was completed.

Within thirty (30) days after receipt of the request for Final Acceptance from Contractor, Authority will make a final inspection of the work and will either:

1. Reject the request for Final Acceptance, specifying the defective or uncompleted work; or

2. Issue a written Final Acceptance and record Notice of Completion with County Recorder.

Substantial Completion is defined herein as; In the opinion of the Authority, that Work or portion thereof that is sufficiently complete and in accordance with the Contract, that it can be utilized by the Authority for the purpose for which it was intended. A determination of Substantial Completion does not waive, but may not require the prior completion of minor items, which do not impair the Authority's ability to safely occupy and utilize the Work for its intended purpose.

D. CLAIMS

Contractor is required to submit a written claim within ten (10) days after the event or occurrence first giving rise to the potential claim, or in the event of a denial of a request for change by the Authority. All claims shall include a detailed factual statement; including names, dates and specific events that took place. In addition, all claims shall include supporting documents in support of the claim, a detailed analysis of a request for a time extension, if applicable, and a detailed breakdown of a request for additional compensation. A revised construction schedule shall also be included identifying the impact of the delays, including proposals to minimize any of the impacts.

Authority shall respond in writing to a claim within forty-five (45) days of receipt of claim. Within thirty (30) days of receipt of claim, Authority, if necessary, may request additional documentation in support of said claim. If additional documentation is requested, Authority shall respond in writing to the claim within fifteen (15) days after receipt of additional documentation.

Claims filed by the Contractor shall be in sufficient detail to enable the Authority to ascertain the basis and amount of said claims. The Authority will consider and determine the Contractor's claims, and it will be the responsibility of the Contractor to furnish within a reasonable time such further information and details as may be required by the Authority to determine the facts or contentions involved in its claims. Failure to submit such information and details will be sufficient cause for denying the claim.

Claims submitted by the Contractor shall be accompanied by a notarized certificate containing the language listed below. Failure to submit the notarized certificate will be cause for denying the claim.

Certificate

Under the penalty of law for perjury or falsification with specific reference to the California False Claims Act, Government Code Section 12650 et. Seq., the undersigned,

_____
(Name)

_____
(Title)

_____
(Company)

herby certifies that the claim for the additional compensation and time, if any, made herein for the work on this Contract is a true statement of the actual cost incurred and time sough, and is fully documented and supported under the Contract between the parties

Dated: _____

Signature: _____

Subscribed and sworn before this _____ day of _____, 20 _____ .

_____
Notary Public

My Commission Expires: _____

E. FINAL PAYMENT

1. After the filing of the Notice of Completion, the Authority will make a proposed final estimate, in writing, of the total amount payable to the Contractor, including therein an itemization of said amount, segregated as to contract item quantities, extra work and any other basis for payment, and shall also show therein all deductions made or to be made for prior payments and amounts to be kept or retained under the provisions of the contract. All prior estimates and payments shall be subject to correction in the proposed final estimate. Within 15 days after proposed final estimate has been submitted, Contractor shall submit to the Authority written approval of proposed final estimate and/or a written statement of all claims of the contract. No claim will be considered that was not included in written statement of claims, nor will any claim be allowed unless the Contractor has previously complied with the notice and protest requirements.

2. On the Contractor's approval, or if he files no claim within stated period,

Authority will issue a final written estimate, in accordance with the proposed final estimate submitted to the Contractor; and 35 days after the date of filing the Notice of Completion Authority will pay the entire sum found to be due. Such final estimate and payment thereon shall be conclusive and binding against the Contractor on all questions relating to the amount of work done and the compensation payable therefore, except as otherwise provided.

3. If the Contractor within said period of 15 days files claims, Authority will issue a semi-final estimate in lieu of the final estimate submitted to the Contractor; and 35 days after the date of filing of the Notice of Completion, the Authority will pay the sum found to be due. Such semi-final estimate and payment thereon shall be conclusive and binding against the Contractor on all questions relating to the amount of work done and the compensation payable therefore, except insofar as affected by the claims filed within the time and in the manner required hereunder and except as otherwise provided.

4. Upon final determination of any outstanding claims, the Authority shall then make and issue a final estimate in writing and within 30 days thereafter, the Authority will pay the entire sum, if any, found due. Such final estimate shall be conclusive and binding against the Contractor on all questions relating to the amount of work done and the compensation payable therefore, except as otherwise provided.

F. EXTRA WORK AND CHANGES

1. New and unforeseen work, which in the judgment of the Authority is found necessary or desirable for the satisfactory completion of the work, will be classified as extra work, as well as work specifically designated as such in the plans or specifications. The Contractor shall do such extra work and furnish material and equipment therefore as directed by the Engineer in writing by a change order. No extra work will be paid for or allowed unless the same was done upon written change order of the Engineer and after all legal requirements have been complied with. The Contractor agrees that he will accept as full compensation for extra work, so ordered, an amount to be determined by one of the following methods:

    a. A price mutually agreed upon in writing by the Engineer and Contractor (hereafter Agreed Price).

    b. Force Account as hereafter provided.

2. It is mutually agreed that on the agreed price, the Contractor and subcontractor(s) shall add not more than a total markup of 20% to be divided between the Contractor and subcontractor(s) as full compensation for all other expenses including overhead, profit, bond, superintendence, insurance and small tools.

3. When extra work is to be paid for on a force account basis, compensation will be determined as follows:

   a. Materials

      A sum equal to the actual cost to the Contractor of the materials furnished by him, as shown by paid receipts, plus not more than fifteen percent (15%). Only installed materials shall be paid for.

   b. Labor

      1. The actual wages paid as shown on the certified copies of Contractor's payroll, for all labor directly engaged in the work and including the cost of any compensation insurance paid for by the Contractor, subsistence and travel allowance aid to such workmen as required by collective bargaining agreements plus not more than twenty percent (20%).

      2. To the actual wages as described in 1 above will be added a labor surcharge of not more than seventeen percent (17%), and shall constitute full compensation for all other payments, including payments imposed by State and Federal laws.

   c. Equipment

      1. Equipment will be paid for as a rental charge whether owned by the Contractor or not, and said rental rates prevailing in the area for comparable equipment will be paid. To the direct costs of "Equipment Rental" will be added a not more than fifteen percent (15%) markup.

      2. All extra work at Force Account shall be adjusted daily upon report sheets prepared by the Engineer, furnished to the Contractor and signed by both parties. Said daily reports shall thereafter be considered the true record of all extra work done. The decision of the Engineer as to whether extra work has in fact been performed shall be conclusive and binding upon both parties to the contract.

4. A contract change order approved by Authority may be issued to the Contractor at any time. Should the Contractor disagree with any terms or conditions set forth in the contract change order, the Contractor shall submit a written protest to the Authority within 15 days after the receipt of the contract change order. The protest shall state the points of disagreement and, if possible, the contract specification references, quantities and costs involved. If a written protest is not submitted within the above period, payment will be made as set forth in the approved contract change order and such payment shall constitute full compensation for all work included therein or required thereby. Such unprotested approved contract change orders will be considered as executed

contract change orders.

5. Contractor shall promptly notify the Authority in writing when it receives direction, instruction, interpretation or determination from any source other than the Authority or its designated representatives that may lead to or cause change in the work. Such written notification shall be give to the Authority before the Contractor acts on said direction, instruction, interpretation or determination.

G. EXTENDED FIELD OFFICE OVERHEAD COSTS

1. Within thirty (30) days after receipt of the Notice to Proceed, the Contractor shall submit a written statement to the Authority detailing its field office overhead costs which are time related. The Authority will review this cost submittal and reach a written agreement with the Contractor on a daily field office overhead cost rate which shall be issued as an agreed upon Change Order. The daily rate agreed to in this Change Order will be applicable throughout the duration of the Contract. No field office costs will be paid until such agreement is reached between the Authority and the Contractor and the Change Order concerning this daily rate is executed by both parties.

2. The individual cost components of the daily field office overhead rate shall represent costs which increase as a direct result of any time extension caused solely and exclusively by an act of the Authority. This listing may include such cost items as on-site project management, supervision, engineering and clerical salaries; on-site office utilities and rent; on-site company vehicles and their operating expenses; and site maintenance and security expenses. Field office overhead costs which are unaffected by increased time shall not be allowable costs in calculating the daily field office overhead rate. These non-time related costs include, but are not limited to, acquisition and installation of stationary equipment; temporary construction facilities; utilities and office furnishings (unless such items are rented or leased); the preparation of the site including clearing, grubbing, grading and fencing; mobilization and demobilization costs; and the costs of permits, bonds and insurance coverage for the project.

3. The individual wage cost components used to calculate the daily field office overhead rate shall be supported by actual employee payroll records, not salary ranges or estimates. Hourly rates for management, supervisory, engineering and clerical employees shall be based upon 2,080 works hours per year and shall not include allowances for holidays, vacation or sick time.

4. The daily field office overhead rate shall be multiplied by the number of days the Contract is delayed or extended by Change Order and shall be added to the agreed upon Change Order cost. The days of delay shall be those caused solely by action of the Authority and documented by a time impact analysis prepared and submitted by the Contractor. In the event of a deductive Change Order is issued which reduces time under the Contract, the daily field office overhead rate shall be added to the deductive amount. No allowance for overhead costs and no profit allowance shall be added to the extended field office overhead cost.

H. ACCELERATION

1. Authority reserves the right to accelerate the work of the Contract at any time during its performance. In the event that the Authority directs acceleration, such directive will be given to the Contractor in writing. The Contractor shall keep cost and other Project records related to the acceleration directive separately from normal Project cost records and shall provide a written record of acceleration costs to the Authority on a daily basis.

2. In the event that the Contractor believes that some action or inaction on the part of the Authority constitutes an acceleration directive, the Contractor shall immediately notify the Authority in writing that the Contractor considers the actions or inactions an acceleration directive. This written notification shall detail the circumstances of the acceleration directive. The Contractor shall not accelerate their work efforts until the Authority responds to the written notification. If acceleration is then directed or required by the Authority, all cost records referred to in section (1) shall be maintained by the Contractor and provided to the Authority on a daily basis.

3. In order to recover additional costs due to acceleration, the Contractor must document that additional expenses were incurred and paid by the Contractor. Labor costs recoverable will only be overtime or shift premium costs or the cost of additional laborers brought to the site to accomplish the accelerated work effort. Equipment costs recoverable will only be the cost of added equipment mobilized to the site to accomplish the accelerated work effort.

I. VALUE ENGINEERING

Authority encourages the Contractor to submit Value Engineering Proposals (VEP's) whenever it identifies areas and/or instances in which improvements can be made, in order to avail the Authority of potential cost savings. Contractor and the Authority will share any savings in the manner described below.

A VEP applies to a Contractor developed and documented VEP that:

1. Requires a change to the contract.

2. Reduces the total contract price without impairing essential functions or characteristics of the work.

3. Results in an estimated total net savings to the Authority equal to or greater than $1,000.

At a minimum, a VEP should include the following information:

1. A description of the existing contract requirements that are involved in the proposed change.

2. A description of the proposed change, and all specifications and/or plans necessary for the complete evaluation of the proposed change. Include a discussion of the differences between existing requirements and the proposed change, together with advantages and disadvantages of each changed item. All relevant back up documentation needs to be included to support proposed changes.

3. Cost estimate for existing contract requirements correlated to the Contractors lump sum breakdown and the proposed changes in those requirements, including costs of development and implementation by the Contractor.

Contractor shall submit the VEP to the Authority. At its sole discretion, Authority may accept, in whole or in part and by change order, any VEP submitted pursuant to this section. Until a change order is issued on a VEP, Contractor shall remain obligated to perform in accordance with the contract. The decision of the Authority as to the rejection or acceptance of a VEP shall be at the sole discretion of the Authority.

If a VEP, submitted by the Contractor pursuant to this section is accepted by the Authority, the total contract price shall be adjusted based upon a sharing of the net savings by the Contractor and the Authority (50% Authority, 50% Contactor). Contractor's profit shall not be reduced by application of the VEP.

Net savings are defined as gross savings less the Contractor's costs and less the Authority's costs.

1. Contractors cost means reasonable costs incurred by the Contractor in preparing the VEP and making the change.

2. Authority's costs means reasonable costs incurred by the Authority for evaluating and implementing the VEP.

3. Contractor is not entitled to share in either concurrent, collateral or future contract savings. Collateral savings are those measurable net reductions in the Authority's costs of operation that result from the VEP. Concurrent savings cover the reductions in the cost of performance of other contracts.

Contractor shall include appropriate VEP provisions in all subcontracts greater than $25,000.

J. STOP NOTICES

The Authority, at its sole discretion, may, at any time, retain out of any amounts due the Contractor, sums sufficient to cover claims filed pursuant to Section 9358 et. seq. of the California Civil Code.

K. ORDER OF WORK

Contractor shall perform work hereunder at such places, and in such order or precedence, as may be determined necessary by the Engineer to expedite completion of the required work.

L. LABOR PROVISIONS

1. Prevailing Wages

   Contractor shall comply with all applicable requirements of Division 2, Part 7, Chapter 1 of the Labor Code and all applicable federal requirements respecting prevailing wages. If there is a difference between the minimum wage rates predetermined by the Secretary of Labor and the wage rates determined by the Director of the Department of Industrial Relations (DIR) for similar classifications of labor, the Contractor and subcontractors shall not pay less than the higher wage rate. The DIR will not accept lower state wage rates not specifically included in the Federal minimum wage determination.

2. Minimum Wages

   a. All mechanics and laborers employed or working upon the site of the work will be paid unconditionally, and not less often than once a week and without subsequent deduction or rebate on any account, the full amounts due at time of payment computed at wage rates not less than those specified in the General Wage Determinations referenced in this section regardless of any contractual relationship which may be alleged to exist between the Contractor and such laborers and mechanics; and the wage determination decision shall be posted by the Contractor at the site of the work in a prominent place where it can be easily seen by the workers. For the purpose of this clause, contributions made or cost reasonably anticipated under the Labor Code of the State of California on behalf of laborers or mechanics are considered wages paid by such Laborers or mechanics. Also for the purpose of this clause, regular contributions made or costs incurred for more than a weekly period under plans, funds or programs, but covering the particular weekly period, are deemed to be constructively made or incurred during such weekly period.

b. Authority shall require that any class of laborers or mechanics, including apprentices and trainees, which is not listed in the General Wage Determinations and which is to be employed under this Contract, shall be classified conformably to such wage determinations. In the event the Authority does not concur in the Contractor's proposed classification or reclassification of a particular class of laborers and mechanics (including apprentices and trainees) to be used, the question, accompanied by the recommendation of the Authority, shall be referred to the State Director of Industrial Relations for determination.

c. Authority shall require, whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly wage and the Contractor is obligated to pay a cash equivalent of such a fringe benefit, an hourly cash equivalent thereof to be established. In the event the interested parties cannot agree upon cash equivalent of the fringe benefit, the questions, accompanied by the recommendation of the Authority, shall be referred to the State Director of Industrial Relations for determination.

d. All disputes concerning the payment of wages or the classification of workers under this Agreement shall be promptly reported to the Authority.

3. Deductions

Authority may deduct from each progress payment and the Final Payment the following:

a. Any Authority or third party claims or losses for which Contractor is responsible hereunder or any Liquidated Damages which have accrued as of the date of the application for payment;

b. If a notice to stop payment is filed with Authority, due to the Contractor’s failure to pay for labor or materials used in the work, money due for such labor or materials, plus the 25% prescribed by law, will be withheld from payment to the Contractor. In accordance with Section 9358 of the Civil Code, Authority may accept a bond by a corporate surety in lieu of withholding payment;

c. Any sums expended by or owing to Authority as a result of Contractor’s failure to maintain the as-built drawings;

d. Any sums expended by Authority in performing any of the Contractor’s obligations under the Contract which Contractor has failed to perform; and

e. Any other sums which Authority is entitled to recover from Contractor under the terms of the Contract.

The failure by Authority to deduct any of these sums from a progress payment shall not constitute a waiver of Authority‘s right to such sums.

All amounts owing by Contractor to Authority under the Contract shall earn interest from the date on which such amount is owing at the lesser of (i) 10% per annum or (ii) the maximum rate allowable under applicable Governmental Rules.

4. Payrolls and Basic Records

a. Payrolls and basic records relating thereto will be maintained during the course of the work and preserved for a period of three (3) years thereafter for all laborers and mechanics working at the site of the work. Such records will contain the name, address and social security number of each such worker, the correct classification, rates of pay, daily and weekly number of hours worked, deductions made and actual wages paid.

b. Contractor will submit weekly a copy of all payrolls to the Authority as required in these "Labor Provisions." The copy shall be accompanied by a statement signed by the employer or its agent indicating that the payrolls are correct and complete, that the wage rates contained therein are not less than those determined by the State Director of Industrial Relations and that the classifications as set forth for each laborer or mechanic conform to the work performed. A submission of the "Weekly Statement of Compliance," which is required under this Contract, shall satisfy this requirement. The prime Contractor shall be responsible for the submission of copies of payrolls of all subcontractors. The Contractor will make the records required under the labor standard clauses of the contract available for the inspection by authorized representatives of the Authority, and will permit such representatives to interview employees during working hours on the job.

5. Apprentices and Trainees

a. Apprentices: Apprentices will be permitted to work at less than the predetermined rate for the work they perform when they are employed and individually registered in a bona fide apprenticeship program as defined in section 1777.5 of the Labor Code of the State of California. The allowable ratio of apprentices to journeymen in any craft classification shall not be greater than the ratio permitted to the Contractor as to his entire work force under the registered program. Any employee listed on a payroll at an apprentice wage rate who is not registered or otherwise employed as stated above, shall be paid the wage rate determined by the State Director

of Industrial Relations for the classification of work he actually performed. The Contractor or subcontractor will be required to furnish to the Authority or the State Director of Industrial Relations written evidence of the registration of his program and apprentices as well as the appropriate ratios and wage rates (expressed in percentages of the journeyman's rate contained in the applicable wage determination).

b. Trainees: Except as provided in 29 CFR Section 5.15, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to or individually registered in a program which has received prior approval, evidenced by formal certification, by the U.S. Department of Labor, Employment and Training Administration, Bureau of Apprenticeship and Training. The ratio of trainees to journeymen shall not be greater than that permitted under the plan approved by the Bureau of Apprenticeship and Training. Every trainee must be paid at not less than the rate specified in the approved program for his level of progress. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Bureau of Apprenticeship and Training shall be paid not less than the wage rate determined by the Secretary of Labor for the classification of work he actually performed. The Contractor or subcontractor will be required to furnish the contracting officer or a representative of the Wage-Hour Division of the U.S. Department of Labor written evidence of the certification of his program, the registration of the trainees, and the ratios and wage rates prescribed in that program. In the event the Bureau of Apprenticeship and Training withdraws approval of a training program, the Contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

c. Equal Employment Opportunity: The utilization of apprentices and journeymen under this part shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, 29 CFR Part 30, and 41 CFR Part 60.

6. Compliance With Copeland Regulations (29 CFR Part 3)

The Contractor shall comply with the Copeland “Anti-Kickback” Act (18 U.S.C. 874 and 40 U.S.C. 276c). The Contractor shall also comply with the Copeland Regulations (29 CFR Part 3) of the Secretary or Labor which are herein incorporated by reference.

7. Contract Termination; Debarment

A breach of item 1 through 6 may be grounds for termination of the contract,

and for debarment as provided in 29 CFR Section 5.6.

8. Overtime Requirements

No Contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any laborer or mechanic in any work week in which he is employed on such work to work in excess of 8 hours a day or 40 hours in such work week unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of 8 hours a day or 40 hours in such work week.

9. Violation; Liability for Unpaid Wages

Pursuant to section 1775 of the Labor Code of the State of California, in the event that any workman employed on this public works project is paid less than the amount specified in the General Prevailing Wage Determinations or less than is required, relative to overtime, the Contractor and any subcontractor responsible therefore shall be liable to the affected workman for the unpaid wages. In addition, such Contractor and subcontractor shall be liable to the State of California or the Authority for liquidated damages. Such liquidated damages shall be computed with respect to each individual workman found to be underpaid and shall be in the amount of $50 per calendar day that a workman was underpaid.

10. Withholding for Liquidated Damages

The Authority may withhold or cause to be withheld, from any monies payable on account of work performed by the Contractor or subcontractor, such sums as may administratively be determined to be necessary to satisfy any liabilities of such Contractor or subcontractor for liquidated damages as provided in this section.

11. Final Labor Summary

The Contractor and each subcontractor shall furnish to the Authority, upon the completion of the contract, a summary of all employment, indicating for the completed project, the total hours worked and the total amount earned.

12. Final Certificate

Upon completion of the contract, the Contractor shall submit to the Authority, with the voucher for a final payment for any work performed under the contract, a concerning wages and classifications for laborers and mechanics, including apprentices and trainees employed on the project, in the following form:

The undersigned, Contractor on

_____
(Contract No.)

hereby certifies that all laborers, mechanics, apprentices and trainees employed by the Contractor or by a subcontractor performing work under the contract on the project have been paid wages at rates not less than those required by the contract provisions, and that the work performed by each such laborer, mechanic, apprentice or trainee conformed to the classifications set forth in the contract or training program provisions applicable to the wage rate paid.

_____
Signature and Title

13. Notice to the Authority of Labor Dispute

Whenever the Contractor has knowledge that any actual or potential labor dispute is delaying or threatens to delay the timely performance of this contract, the Contractor shall immediately give notice thereof, including all relevant information with respect thereto, to the Authority.

14. Disputes Clause

a. All disputes concerning the payment of prevailing wage rates or classifications shall be promptly reported to the Authority for its referral to DOT for decision or, at the option of the Authority, DOT referral to the Secretary of Labor. The decision of DOT or the Secretary of Labor, as the case may be, shall be final.

b. All questions relating to the application or interpretation of the Copeland Act, the Contract Work Hours Standards Act, the Davis-Bacon Act, or Section 13 of the Act shall be sent to the Federal Transit Administration (FTA) for referral to the Secretary of Labor for ruling or interpretation, and such ruling or interpretation shall be final.

15. Convict Labor

In connection with the performance of work under this Contract, the Contractor agrees not to employ any person-undergoing sentence of

imprisonment at hard labor. This does not include convicts who are on parole or probation.

16. Insertion in Subcontracts

The Contractor shall set forth in item 1 through 15 of this Section so that all of the provisions of this section will be inserted in all construction subcontracts of any tier, and such other clauses as the Government may by appropriate instructions require.

17. Certified Payrolls

a. The Authority shall obtain from the Contractor and each subcontractor a certified copy of each weekly payroll within seven (7) days after the regular payroll date. Following a review by the Authority for compliance with State and Federal labor laws, the payroll copy shall be retained at the project site for later review by FTA.

b. Contractor may use the Department of Labor Form WH-347, "Optional Payroll Form," which provides for all the necessary payroll information and certifications.

c. If, on or before the 20th of the month, the Contractor has not submitted satisfactory payrolls covering its work and the work of all subcontractors for all payroll periods ending on or before the 6th of that month, such payrolls will be considered to be delinquent. Regardless of the number of delinquent payrolls, an amount equal to 10% (but not less than $1,000 or more than $10,000) shall be deducted from the estimate. Deductions will be made separately for each estimate period in which a new delinquency appears and will be continued until payrolls have been submitted.

d. Contractors employing apprentices or trainees under approved programs shall include a notation on the first weekly certified payrolls submitted to the Authority that their employment is pursuant to an approved program and shall identify the program.

M. TIME EXTENSION/DELAYS

a. Contractor may be granted an extension of time for any portion of a delay in completion of the work due to acts of God, the public enemy, wars, civil unrest, fires, quarantine restrictions, or weather more severe than normal, providing that (1) the aforesaid causes were not foreseeable and did not result from an act or omission by the Contractor, (2) Contractor has taken reasonable precautions to prevent further delays owing to such causes, and (3) Contractor notifies Authority in writing of the cause(s) for the delay within

ten (10) days from the beginning of any such delay. No claims for additional compensation or damages for the foregoing delays shall be allowed to the Contractor, and the extension of time provided for herein shall be the sole remedy of the Contractor on account of any such delays.

b. An extension of time will not be granted for a delay described in the above paragraph(s) caused by a shortage of materials, except if materials are furnished by Authority, unless the Contractor supplies the Authority with documented proof that every effort to obtain the materials from all known sources that (a) such materials could have been obtained only at exorbitant prices or (b) the prices were entirely inconsistent with current rates, taking into account the quantities; and (c) such facts could not have been known or anticipated at the time the Notice To Proceed was issued. Contractor shall also submit proof, that the inability to obtain such materials when originally planned, did in fact, cause a delay in completion of the work that could not be compensated for by revising the sequence of its operations. Only the physical shortage of material will be considered as a basis for an extension of time.

c. An extension of time for weather more severe than normal shall be granted only to the extent the work is actually delayed as determined by the Authority. Normal is defined as the monthly average of the temperature and rainfall wherein the work was performed for the prior 20 years before the execution of the contract.

d. In the event Contractor is actually and necessarily delayed by an act or omission on the part of the Authority, as determined by the Authority, the Contractor shall notify the Authority in writing within five (5) days from the beginning of any such delay. The time for completion of the work may be extended at the sole discretion of the Authority.

e. Within 30 days after the last day of delay, Contractor shall provide Authority with detailed information concerning the circumstances of the delay, the number of days actually delayed, and the measures taken to minimize or prevent the delay. Failure to submit information shall be sufficient reason to deny the claim. Authority shall ascertain the facts and the extent of the delay; and provide the Contractor its written findings, which will be final and conclusive. Except for the additional compensation for herein and except as provided in Public Contract Code Section 7102, Contractor shall have no claim for damages or compensation for any delay or hindrance.

f. No extension of time will be granted for any Authority caused delay or delay as defined in which (a) the performance of work would have been concurrently delayed by Contractor induced causes, including but not limited to an act or omission of the Contractor, or (b) remedies are included or excluded by any other contract provision. Only the actual delay necessarily resulting from the causes specified in this Article shall be

grounds for extension of time. Should the Contractor be delayed at any time for any period by two or more of the causes specified in this article, Contractor shall only be entitled to one time extension for the entire delay.

g. Any time extension granted to Contractor shall not release the Contractor or surety from its obligations. Work shall continue and be carried on in accordance with the contract provisions, unless formally suspended or terminated by the Authority.

N. NONDISCRIMINATION

During the performance of this Contract, the Contractor agrees as follows:

1. The Contractor will not discriminate against any employee or applicant for employment because of race, creed, color or national origin. The Contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, religion, color, sex or national origin. Such action shall include, but not be limited to employment; upgrading; demotion; transfer; recruitment or recruitment advertising; layoff; termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The Contractor agrees to post, in conspicuous places available to the employees and applicants for employment, notices to be provided setting forth the provisions of this nondiscrimination clause.

2. The Contractor will, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, state that all qualified applicants will receive consideration for employment without regard to race, religion, color, sex or national origin.

3. The Contractor will send to each labor union or representative of workers with which it has a collective bargaining agreement or other contract or understanding, a notice to be provided advising the said labor union or workers' representatives of the Contractor's commitments under this Section, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

4. The Contractor will comply with all provisions of Executive Order 11246 of September 24, 1965, and of the rules, regulations and relevant orders of the Secretary of Labor. The Contractor will furnish all information and reports required by Executive Order 11246 of September 24, 1965, and by rules, regulations and orders of the Secretary of Labor, or pursuant thereto, and will permit access to his books, records and accounts by the administering agency and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations and orders.

5. In the event of the Contractor's noncompliance with the nondiscrimination

clauses of this Contract or with any of the said rules, regulations or orders, this Contract may be canceled, terminated or suspended in whole or in part, and the Contractor may be declared ineligible for further Government contracts or Federally assisted construction contracts in accordance with procedures authorized in Executive Order 11246 of September 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order 11246 of September 24, 1965, or by rule, regulation or order, of the Secretary of Labor, or as otherwise provided by law.

6. The Contractor will include the provisions of this Paragraph ("Nondiscrimination") in every subcontract or purchase order entered into under this Agreement unless exempted by rules, regulations or orders of the Secretary of Labor issued pursuant to Section 204 of Executive Order 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. The Contractor will take such action with respect to any subcontract or purchase order as the administering agency may direct as a means of enforcing such provisions, including sanctions for noncompliance provided, however, that in the event a Contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the administering agency, the Contractor may request the United States to enter into such litigation to protect the interests of the United States.

7. No person employed on the work covered by this Agreement shall be discharged or in any way discriminated against because he has filed any complaints or instituted or caused to be instituted any proceeding or has testified or is about to testify in any proceeding under or relating to the labor standards applicable hereunder to his employer.

O. TITLE VI OF THE CIVIL RIGHTS ACT OF 1964

Contractor agrees to comply with and ensure compliance by all subcontractors with all requirements of Title VI of the Civil Rights Act of 1964, as amended, 42 U.S.C. section 2000d; 49 U.S.C. section 5332 and Department of Transportation Regulations, “Nondiscrimination in Federally-Assisted Programs of the Department of Transportation-Effectuation of Title VI of the Civil Rights Act,” 49 CFR Part 21.

P. AFFIRMATIVE ACTION

Contractors and subcontractors holding a value of work of $10,000 or more must submit a Monthly Employment Utilization Report (Form 257) to the Authority Engineer by the 5th of each month or sanctions shall be applied for late submittal, non-submittal and incomplete forms returned to the Contractor and resubmitted after the due date.

The reporting period shall be for each calendar month.

The report shall include the information requested for each Contractor's aggregate work force (for all workers on all projects within Orange County) and not just for workers on this project.

If the form is not received by the 5th of the month, a deduction of 10% (with a minimum of $1,000 and a maximum of $10,000) will be withheld from the monthly estimate at the option of the Authority.

The Contractor shall designate an Equal Employment Officer for the project and notify the Authority in writing whom that person is prior to beginning of work. All workers shall also be informed who the EEO Officer is.

Q. STANDARD FEDERAL EQUAL EMPLOYMENT OPPORTUNITY CONSTRUCTION CONTRACT SPECIFICATIONS (EXECUTIVE ORDER 11246)

1. As used in these specifications:

   a. "Covered area" means the geographical area described in the solicitation from which this Contract resulted;

   b. "Director" means Director, Office of Federal Contract Compliance Programs, United States Department of Labor, or any person to whom the Director delegates Authority;

   c. "Employer identification number" means the Federal Social Security number used on the Employer's Quarterly Federal Tax Return, U.S. Treasury Department Form 941;

   d. "Minority" includes persons who are citizens or lawful permanent residents of the United States and are one of the following:

      1) Black (all persons having origins in any of the Black African racial groups not of Hispanic origin);

      2) Hispanic (all persons of Mexican, Puerto Rican, Cuban, Central or South American, Portuguese American or other Spanish culture or origin, regardless of race);

      3) Asian and Pacific Islanders (all persons having origins in any of the original peoples of the Far East, Southeast Asia, the Indian subcontinent or the Pacific Islands);

      4) American Indians and Alaskan Native (all persons having origins in any of the original peoples of North America and maintaining identifiable tribal affiliations through membership and participation or community identification);

      5) Women regardless of ethnicity.

2. In order for the nonworking training hours of apprentices to be counted in meeting the goals, such apprentices must be employed by the Contractor during the apprenticeship period, and the Contractor must have made a commitment to employ the apprentices at the completion of their training, subject to the availability of employment opportunities. Trainees must be trained pursuant to training programs approved by the U.S. Department of Labor.

3. The Contractor shall take specific affirmative actions to ensure equal employment opportunity. The evaluation of the Contractor's compliance with these specifications shall be based upon its effort to achieve maximum results from its actions. The Contractor shall document these efforts fully, and shall implement affirmative action steps at least as extensive as the following:

    a. Ensure and maintain a working environment free of harassment, intimidation and coercion at all sites, and in all facilities at which the Contractor's employees are assigned to work. The Contractor, where possible, will assign two or more women to each construction project. The Contractor shall specifically ensure that all foremen, superintendents and other on-site supervisory personnel are aware of and carry out the Contractor's obligation to maintain such a working environment, with specific attention to minority or female individuals working at such sites or in such facilities.

    b. Establish and maintain a current list of disadvantaged and female recruitment sources, provide written notification to minority and female recruitment sources and to community organizations when the Contractor or its unions have employment opportunities available, and maintain a record of the organization's responses.

    c. Maintain a current file of the names, addresses and telephone numbers of each minority and female off-the-street applicant and disadvantaged or female referral from a union, a recruitment source or community organization and of what action was taken with respect to each such individual. If such individual was sent to the union hiring hall for referral and was not referred back to the Contractor by the union or, if referred, not employed by the Contractor, this shall be documented in the file with the reason therefore, along with whatever additional actions the Contractor may have taken.

    d. Provide immediate written notification to the Director when the union or unions with which the Contractor has a collective bargaining agreement has not referred to the Contractor a disadvantaged person or woman sent by the Contractor, or when the Contractor has other information that the union referral process has impeded the Contractor's efforts to meet its obligations.

e. Develop on-the-site-training opportunities and/or participate in training programs for the area which expressly include minority and women, including upgrading programs and apprenticeship and trainee programs relevant to the Contractor's employment needs, especially those programs funded or approved by the Department of Labor. The Contractor shall provide notice of these programs to the sources compiled under 3.b. above.

f. Disseminate the Contractor's EEO policy by providing notice of the policy to unions and training programs and requesting their cooperation in assisting the Contractor in meeting its EEO obligations; by including it in any policy manual and collective bargaining agreement; by publicizing it in the company newspaper, annual report, etc.; by specific review of the policy with all management personnel and with all minority and female employees at least once a year; and by posting the company EEO policy on bulletin boards accessible to all employees at each location where construction work is performed.

g. Review, at least annually, the company's EEO policy and affirmative action obligations under these specifications with all employees having any responsibility for hiring, assignment, layoff, termination or other employment decisions including specific review of these items with on-site supervisory personnel such as Superintendents, General Foreman, etc., prior to the initiation of construction work at any job site. A written record shall be made and maintained identifying the time and place of these meetings, persons attending, subject matter discussed and disposition of the subject matter.

h. Disseminate the Contractor's EEO policy externally by including it in any advertising in the news media, specifically including minority and female news media, and providing written notification to and discussing the Contractor's EEO policy with other Contractors and subcontractors with whom the Contractor does or anticipates doing business.

i. Direct its recruitment efforts, both oral and written, to minority, female and community organizations, to schools with minority and female students and to minority and female recruitment and training organizations serving the Contractors' recruitment area and employment needs. Not later than one month prior to the date of the acceptance of applications for apprenticeship or other training by any recruitment source, the Contractor shall send written notification to organizations such as the above, describing the opening, screening, procedures and tests to be used in the selection process.

j. Encourage present minority and female employees to recruit other minority persons and women and, where reasonable, provide after school, summer and vacation employment to minority and female youth both on the site and in other areas of Contractor's work force.

k. Validate all tests and other selection requirements where there is an obligation to do so under 41 C.F.R., Part 60-3.

l. Conduct, at least annually, an inventory and evaluation of all minority and female personnel for promotional opportunities, and encourage these employees to seek or to prepare for, through appropriate training, etc., such opportunities.

m. Ensure that seniority practices, job classifications, working assignments and other personnel practices, do not have a discriminatory effect by continually monitoring all personnel and employment related activities to ensure that the EEO policy and the Contractor's obligations under these specifications are being carried out.

n. Ensure that all facilities and company activities are non-segregated except that separate or single-user toilet and necessary changing facilities shall be provided to assure privacy between the sexes.

o. Document and maintain a record of all solicitations or offers for subcontracts from disadvantaged and female construction Contractors and suppliers, including circulation of solicitations, to disadvantaged and female Contractor associations and other business associations.

p. Conduct a review, at least annually, of all supervisors' adherence to and performance under the Contractor's EEO policies and affirmative action obligations.

4. Contractors are encouraged to participate in voluntary associations, which assist in fulfilling one or more of their affirmative action obligations (3. (a) through (p)). The efforts of a Contractor association, joint Contractor-union, Contractor-community, or other similar group of which the Contractor is a member and participant, may be asserted as fulfilling any one or more of its obligations under 3. (a) through (p) of these specifications provided that the Contractor actively participates in the group, makes every effort to assure that the group has a positive impact on the employment of minorities and women in the industry, ensures that the concrete benefits of the program are reflected in the Contractor's minority and female work force participation, make a good faith effort to meet its individual goals and timetables, and can provide access to documentation which demonstrates the effectiveness of actions taken on behalf of the Contractor. The obligation to comply, however, is the

Contractor's failure if such a group to fulfill an obligation, shall not be a defense for the Contractor's noncompliance.

5. A single goal for minorities and a separate single goal for women have been established. The Contractor, however, is required to provide equal employment opportunity and to take affirmative action for all minority groups, male and female, and all women, both minority and nonminority. Consequently, the Contractor may be in violation of the Executive Order if a particular group is employed in a substantially disparate manner (for example, even though the Contractor has achieved its goals for women generally, the Contractor may be in violation of the Executive Order 11246 if a specific minority group of women is underutilized.)

6. The Contractor shall not use the goals and timetables or affirmative action standards to discriminate against any person because of race, color, religion, sex or national origin.

7. The Contractor shall not enter into any subcontract with a person or firm debarred from Government contracts pursuant to Executive Order 11246.

8. The Contractor shall carry out such sanctions and penalties for violation of these specifications and of the Equal Opportunity Clause, including suspension, termination and cancellation of existing subcontracts as may be imposed or ordered pursuant to Executive Order 11246, as amended, and its implementing regulations by the Office of Federal Contract Compliance Programs. Any Contractor who fails to carry out such sanctions and penalties shall be in violation of these specifications and Executive Order 11246, as amended.

9. The Contractor, in fulfilling its obligations under these specifications, shall implement specific affirmative action steps, at least as extensive as those standards prescribed in item 7 of these specifications, so as to achieve maximum results from its efforts to ensure equal employment opportunity. If the Contractor fails to comply with the requirements of the Executive Order, the implementing regulations, or these specifications, the Director shall proceed in accordance with 41 C.F.R. Section 60-4.8.

10. The Contractor shall designate a responsible official to monitor all employment related activity to ensure that the company EEO policy is being carried out, to submit reports relating to the provisions hereof as may be required by the Government and to keep records. Records shall at least include for each employee the name, address, telephone numbers, construction trade, union affiliation, if any, employee identification number when assigned, social security number, race, sex, status (e.g., mechanic, apprentice, trainee, helper or laborer), dates of changes in status, hours worked per week in the indicated trade, rate of pay, and locations at which the work was performed. Records shall be maintained in an easily understandable and retrievable form; however, to

the degree of existing records satisfy this requirement; Contractor shall not be required to maintain separate records.

11. Nothing herein provided shall be construed as a limitation upon the application of other laws which establish different standards of compliance or upon the application of requirements for the hiring of local or other area residents (e.g., those under the Public Works Employment Act of 1977 and the Community Development Block Grant Program).

R. CONFLICT OF INTEREST

All Contractors responding to this Invitation For Bids must avoid organizational conflicts of interest which would restrict full and open competition in this procurement. An organizational conflict of interest means that due to other activities, relationships or contracts, a Contractor is unable, or potentially unable to render impartial assistance or advice to the Authority; a Contractor's objectivity in performing the work identified in the specifications is or might be otherwise impaired; or a Contractor has an unfair competitive advantage. Contractor is obligated to fully disclose to the Authority in writing any conflict of interest issues as soon as they are known. All disclosures must be disclosed at the time of bid submittal.

S. CODE OF CONDUCT

Contractor agrees to comply with the Authority's Code of Conduct as it related to Third-Party contracts, which is hereby referenced and by this reference is incorporated herein. Contractor agrees to include these requirements in all of it's subcontracts.

T. GOVERNMENT INSPECTIONS

The Authority or Federal Government representatives shall have access to the construction site and shall have the right to inspect all project works.

U. LICENSING, PERMITS AND INSPECTION COSTS

1. The Contractor warrants that it has all necessary licenses and permits required by the laws of the United States, State of California, the County of Orange, the Local Jurisdictions, and all other appropriate governmental agencies, and agrees to maintains these licenses and permits in effect for the duration of the Agreement. Further, Contractor warrants that its employees, agents, and Contractors and subcontractors shall conduct themselves in compliance with such laws and licensure requirements including, without limitation, compliance with laws applicable to nondiscrimination, sexual harassment and ethical behavior throughout the duration of this Agreement. Contractor further warrants that it shall not retain or employ an unlicensed subcontractor to perform work on this Project. Contractor shall notify the Authority immediately and in writing of its employees', agents', Contractors' or subcontractors'

inability to obtain or maintain, irrespective of the pendency of any appeal, any such licenses, permits, approvals, certificates, waivers, and exemptions. Such inability shall be cause for termination of this Agreement.

2. Contractor shall procure all permits and licenses; pay all charges, assessments and fees, as may be required by the ordinances and regulations of the public agencies having jurisdiction over the areas in which the work is located, and shall comply with all the terms and conditions thereof and with all lawful orders and regulations of each such public agency relating to construction operations under the jurisdiction of such agency.

V. HAZARDOUS SUBSTANCES

1. CAL-OSHA Requirements

   All flammable, corrosive, toxic, or reactive materials being bid must have a complete CAL-OSHA Material Safety Data Sheet accompanying the submitted bid.

2. South Coast Air Quality Management District (SCAQMD)

   All materials (paints, coatings, inks, solvents, and adhesives) shall comply with the volatile organic compounds (VOC) content requirements of the applicable SCAQMD rules.

3. Notice of Hazardous Substances

   Title 8, California Code of Regulations, Section 5194 (e) (c), states that the employer must inform any Contractor employers with employees working in the employer's workplace of the hazardous substances to which their employees may be exposed while performing their work. In compliance with this requirement, the Authority hereby gives notice to all bidders that the following general categories of hazardous substances are present on the Authority's premises:

   - Adhesives, sealant, patching, and coating products
   - Antifreezes, coolants
   - Cleaners, detergents
   - Paints, thinners, solvents
   - Pesticides, Petroleum products (diesel and unleaded fuel, oil products)
   - Printing, photocopying materials
   - Propane Welding materials/compressed gases (e.g., acetylene, oxygen, nitrogen)

   More specific information may be obtained from the Authority's Safety and Benefits office at (714) 560-5854, and from Material Safety Data Sheets for individual products.

4. Hazardous Waste Labels

   Containers containing hazardous substances must be labeled with the following information:

   - Identity of hazardous substance-chemical name, not manufacturer or trade name;
   - Appropriate health warning relative to health and physical hazard; and

   - Name and address of manufacturer or other responsible party.

All containers containing hazardous substances may be rejected unless containers are properly labeled. Containers of 55 gallons or larger must have either weather resistant labels or the information should be painted directly on the containers.

W. CHANGES IN LAWS AND REGULATIONS

CONTRACTOR shall at all times comply with all applicable state and local regulations, policies, procedures and directives, including without limitation those listed directly or by reference in this Agreement. CONTRACTOR's failure to so comply shall constitute a material breach of contract.

X. MEDIA AND THE PUBLIC

Contractor shall immediately refer all inquires from the news media or other public sources to the Authority's Project Manager, or designated representative, relating to this project.

Y. COORDINATION AND ACCESS

Authority may undertake or award other contracts for additional work at the project site. Contractor is responsible for coordinating its work with the work of other Contractors as appropriate. The Contractor acknowledges that they do not have any exclusive access to the site or other work areas Authority may require that certain facilities and areas be used concurrently by the Contractors and others. Contractor shall cooperate fully with Authority Contractors/consultants that may be performing work in the construction area.

Z. UTILITIES RELATED DELAYS

If, due to interruptions caused by the undocumented utilities, Contractor sustains loss which could not have been avoided by the judicious handling of forces, equipment and plant, there shall be paid to the Contractor that amount that the Authority may find to be a fair and reasonable compensation for the part of the Contractor's actual loss, that, in the opinion of Authority was unavoidable, determined as follow: Compensation for idle time of equipment will be determined in the same manner as determinations are made for equipment used in the performance of extra work paid for on a force account basis, as provided in Section F. Extra Work and Changes, Item 3,c. Equipment with the following exceptions:

1. The utility related delay factor for each classification of equipment shown in the Department of Transportation publication entitled Labor Surcharge And Equipment Rental Rates will be applied to that equipment rental rate.

2. The time for which the compensation will be paid will be the actual normal working time during which the delay condition exists, but in no case will exceed 8 hours in any one day.

3. The days for which compensation will be paid will be the calendar days, excluding Saturdays, Sundays and legal holidays, during the existence of the delay, except that when the rented equipment can be returned or used elsewhere on the project, then no payment will be made for utilities related delays.

Actual loss shall be understood to include no items of expense other than idle time of equipment and necessary payments for idle time of workers, and cost of extra moving of equipment. Compensation for idle time of equipment will be determined as provided in this Section and compensation for idle time of workers will be determined as provided in Section F. Extra Work and Changes, Item 3, b. "Labor," and no markup will be added in either case for overhead and profit. The cost of extra moving of equipment will be paid for as extra work and changes as provided in Section F of General Provisions.

If performance of the Contractor's work is delayed as the result of the Utilities Related Delays, an extension of time determined pursuant to the provisions in Article 18. Termination for Default – Damages for Delay – Time Extensions will be granted.

AA. UTILITIES AND SUBSURFACE STRUCTURES

Contractor shall protect from damage utility and other subsurface structures that are to remain in place, be installed, relocated or otherwise rearranged (as used herein, rearranged includes installation, relocation, alteration or removal).

The right is reserved to the Authority, or their authorized agents, to enter upon the site for the purpose of making those changes that are necessary for the rearrangement of their facilities or for making necessary connections or repairs to their properties. Contractor shall cooperate with forces engaged in this work and shall conduct operations in such a manner as to avoid any unnecessary delay or hindrance to the work being performed by the other forces. Wherever necessary, the work of Contractor shall be coordinated with the rearrangement of utility or other non-highway facilities, and Contractor shall make arrangements with the owner of those facilities for the coordination of the work.

Attention is directed to the possible existence of underground main or trunk line facilities not indicated on the plans or in the special provisions and to the possibility that underground main or trunk lines may be in a location different from that which is indicated on the plans or in the special provisions. Contractor shall ascertain

the exact location of underground main or trunk lines whose presence is indicated on the plans or in the special provisions, the location of their service laterals or other appurtenances, and of existing service lateral or appurtenances of any other underground facilities which can be inferred from the presence of visible facilities such as buildings, meters and junction boxes prior to doing work that may damage any of the facilities or interfere with their service.

If Contractor cannot locate an underground facility whose presence is indicated on the plans or in the special provisions, the Contractor shall so notify the Authority in writing. If the facility for which the notice is given is in a substantially different location from that indicated on the plans or in the special provisions, the additional cost of locating the facility will be paid for as extra work as provided in Section F.

If Contractor discovers underground main, trunk lines or other structures and utilities not indicated on the plans or in the special provisions, Contractor shall immediately give the Authority and the Utility Company written notification of the existence of those facilities. Such facilities shall be located and protected from damage as directed by the Authority, and the cost of that work will be paid for as extra work as provided in Section F. Contractor shall, if directed by the Authority repair any damage which may occur to the main or trunk lines. The cost of that repair work, not due to the failure of the Contractor to exercise reasonable care, will be paid for as extra work as provided in Section F. Damage due to Contractor's failure to exercise reasonable care shall be repaired at the Contractor's cost and expense.

Where it is determined by the Authority that the rearrangement of an underground facility is essential in order to accommodate the project work and the plans and specifications do not provide that the facility is to be rearranged, AuthorityY will provide for the rearrangement of the facility by other forces or the rearrangement shall be performed by Contractor and will be paid for as extra work as provided in Section F.

When ordered by the Authority in writing, Contractor shall rearrange any utility or other subsurface structures necessary to be rearranged as a part of the project work and that work will be paid for as extra work as provided in Section F.

Should Contractor desire to have any rearrangement made in any utility facility, or other improvement, for the Contractor's convenience in order to facilitate the Contractor's construction operations, which rearrangement is in addition to, or different from, the rearrangements indicated on the plans or in the special provisions, the Contractor shall make whatever arrangements are necessary with the owners of the utility or other subsurface structure for the rearrangement and bear all expenses in connection therewith.

Contractor shall immediately notify the Authority of any delays to the Contractor's operations as a direct result of underground utilities or other structures which were not indicated on the plans or in the special provisions or were located in a position substantially different from that indicated on the plans or in the special provisions,

(other than delays in connection with rearrangements made to facilitate the Contractor's construction operations or delays due to a strike or labor dispute). These delays will be considered utilities related delays within the meaning of Section Z. Utilities Related Delays and compensation for the delay will be determined in conformance with the provisions in Section M. Contractor shall be entitled to no other compensation for that delay.

BB. LOCATION OF UNDERGROUND FACILITIES (OFFSITE WORK ONLY)

Contractor is required to obtain digging permits prior to start of excavation by contacting the appropriate permitting agencies 15 calendar days in advance. For the Offsite work scan the construction site with electromagnetic or sonic equipment, and mark the surface of the ground where existing underground utilities are discovered. Verify the elevations of existing piping, utilities, and any type of underground obstruction not indicated or specified to be removed but indicated or discovered during scanning in locations to be traversed by piping, ducts, and other work to be installed. Verify elevations before installing new work closer than nearest manhole or other structure at which an adjustment in grade can be made. Perform potholing to confirm location of all the utilities along the construction alignment prior to start of the construction. The Contractor is responsible for all costs associated with these investigations including the cost of equipment, labor and materials required for any confined space entry.

CC. UNFORESEEN HAZARDOUS OR REGULATED MATERIALS

All known hazardous or regulated materials are indicated in the contract documents. If material that is not indicated in the contract documents is encountered that may be dangerous to human health upon disturbance during construction operations, stop that portion of work and notify Authority immediately. Intent is to identify materials such as PCB, lead paint, mercury, petroleum products, and friable and non-friable asbestos. Within 14 calendar days, the Authority will determine if the material is hazardous. If the material is not hazardous or poses no danger, the Authority will direct Contractor to proceed without change. If the material is hazardous and handling of the material is necessary to accomplish the work, Authority will contract with a qualified environmental remediation/hazardous materials removal Contractor for such remediation or removal as may be necessary. The remediation or removal will be performed in compliance with applicable State, Federal, and local environmental laws and regulations.

Contractor shall immediately notify the Authority of any delays to the Contractor's operations as a direct result of Unforeseen Hazardous and Regulated Materials These delays will be considered utilities related delays within the meaning of Section Z. Utilities Related Delays and compensation for the delay will be determined in conformance with the provisions in Section M. Contractor shall be entitled to no other compensation for that delay.

SECTION VIII: PROJECT SPECIFICATIONS - EXHIBIT B

IFB NO. 7-2047

Construction of the Right of Way Slope Stabilization Project

Project Specifications

Volume 1 of 2

END OF SPECIFICATIONS TABLE OF CONTENTS

SECTION 01 11 13

WORK COVERED BY THE CONTRACT DOCUMENTS

PART 1 - GENERAL

1.1 SUMMARY

This Section summarizes requirements and provisions for the Contractor's execution of the Work for LOSSAN ROW Slope Stabilization project under this Contract.

The OCTA, in cooperation with the Cities of Irvine, Lake Forest, Mission Viejo, and San Juan Capistrano intend to repair specific areas of existing erosion along the rail corridor between the Irvine Metrolink Station and Stonehill Drive in San Juan Capistrano.
Scope of work includes but not limited to:

A. Compliance with SCRRA requirements as outlined in the Reference Documents.

B. Placement of rip-rap slope protection within existing erosional ditches.

C. Placement of geosynthetic slope protection along existing erosional slopes.

D. Placement of rip-rap slope protection along existing erosional slopes.

E. Construction of local drainage improvements including gunite channels, pre-cast reinforced concrete boxes, subdrain, and energy dissipation devices.

F. Construction of soldier pile wall to provide railway worker safety.

G. Re-grading of existing erosional slopes.

H. Construction of gravity block retaining wall.

I. All other labor, materials and equipment as shown and referred to in the contract documents.

1.2 DESCRIPTION

The general intent of the Contract, Specifications, Plans, and all other Contract Documents and provisions thereof is that the Contractor shall:

A. Coordinate with, obtain Right-of-Entry Agreement, and comply with the SCRRA requirements for work within the railroad right-of-way as required and as outlined in the Reference Documents.

B. Furnish all tools, qualified labor, materials, equipment, qualified superintendence and all services, other incidentals, assurances and guarantees, assumptions of risk, and responsibility for the performance of the Work as set forth in the Contract Documents unless otherwise specifically provided.

C. Begin Work promptly and proceed expeditiously and continuously without cessation or shutdown of Work unless otherwise specifically approved in writing by the Authority, or directed by the Contract.

D. Perform, complete, and make ready for its intended purpose, within the times specified, including additional times provided for certain conditions, the Work or parts thereof covered by the Contract, all in accordance with plans, Specifications, and any addendum thereto and such direction or instructions as the Authority may give to supplement the plans and Specifications. The Contractor shall retain sole responsibility and expense for Quality Control of their Work products.

E. Contractor shall submit a construction staging plan which would ensure no impact to the existing passenger parking lot and the railroad operation. The Contractor's staging plan shall illustrate the number of days needed for a railroad flagman.

F. Contractor shall be responsible for day-to-day coordination during construction to ensure that a flagger is present when needed.

1.3 INTENT OF PLANS AND SPECIFICATIONS

A. The intent of the Plans and Specifications is to prescribe the details for the construction and completion of the Work that the Contractor undertakes to perform in accordance with the terms of the Contract. Where the Plans or Specifications describe portions of the Work in general terms, but not complete detail, it is understood that only commonly accepted industry practice is to prevail. Unless otherwise specified, the Contractor shall furnish all labor, materials, tools, equipment, and incidentals, and perform all the Work involved in executing the Contract in a satisfactory and workmanlike manner.

B. The Authority will determine whether the Work has been completed in accordance with the Contract, Plans, Specifications and reference Specifications. The Authority will decide all questions that may arise as to the quality or acceptability of materials furnished and Work performed, and regarding the interpretation of the Plans, Specifications, and reference Specifications.

C. Plans, Standard Specifications, and Project Specific Specifications are essential parts of the Contract, and a requirement indicated in one is binding as though indicated in all. They are intended to be cooperative and to describe and provide for the complete Work.

D. The organization of the Specifications into divisions, sections, parts, and paragraphs, and the arrangement of the Plans, shall not control the Contractor in dividing the Work among Subcontractors or in establishing the extent of Work to be performed by any trade. Study and compare the Contract Documents and immediately report to the Authority any error, inconsistency, or omission that may be discovered. The Contractor shall be liable to the Authority for any damage resulting from any such unreported errors, inconsistencies, or omissions in the Contract Documents.

E. The Authority shall not be responsible for and shall not have control or charge over the acts or omissions of the Contractor, Subcontractors, or any of their agents or employees, or any other persons performing any of the Work.

1.4 COORDINATION

A. Reference Material: Reference Specifications or Standards referred to in the plans, Standard Specifications shall be the most recent version in effect as of the bid due date of this Contract. Where referenced standards refer to the "Specifications," this shall mean these Supplemental Specifications, the Contract Drawings, and the Project Specific Specifications of this Contract. Where Specification Sections are stated but not included within these supplemental specifications, this shall refer to the SCRRA Standard Specifications. Where referenced standards refer to the "special provisions or conditions," this shall mean the Contract Drawings or the Specifications of this Contract. The Contractor is responsible for obtaining all reference material at its own expense, and for making itself familiar with the requirements therein.

B. Coordinate with SCRRA: Refer to Reference Documents portion of the specifications for additional information regarding flagging requirements and right of entry information.

The estimated cost for one (1) Employee-In-Charge (EIC) is $1,500 for an eight (8) hour basic day plus two hours of overtime (10 hours total). The estimated cost for each EIC includes vacation allowance, paid holidays, railroad and unemployment insurance, public liability and property damage insurance, health and welfare benefits, transportation, meals, lodging, and supervision. However, the rate for an EIC in effect at the time of performance of the work by the Contractor hereunder will be used to calculate the actual costs of the services of an EIC pursuant to this paragraph. Billing will be on an actual cost basis.

General Contractor to provide $235,600 deposit as allowance in bid. The Authority will provide and pay for the actual cost of railroad flagging.

C. All work within the railroad right-of-way shall comply with the SCRRA requirements in accordance with the reference documents. These documents include:

1. SCRRA Right-of-Way Encroachment Process
2. General Safety Regulations for Third Party Construction and Utility Workers on SCRRA Property
3. SCRRA FORM No. 5 "Indemnification and Assumption of Liability Agreement"
4. SCRRA FORM No. 6 "Temporary Right-of-Entry Agreement"
5. SCRRA Schedule of Fees
6. SCRRA FORM No. 37 "Rules and Requirements for Construction on SCRRA Property"
7. Site Specific Work Plan (SSWP)
8. SCRRA Excavation Support Guidelines

9. Train Traffic Density Exhibit

D. Construction Interfacing and Coordination: Layout, Phasing, and sequencing of Work shall be solely the Contractor's responsibility. Contractor shall bring together the various parts, components, systems and assemblies as required for the correct interfacing and integration of all elements of Work. Contractor shall coordinate Work to correctly and accurately connect abutting, adjoining, overlapping and related elements, including utilities, for a complete operational system to the satisfaction of the Authority, agencies, and companies.

E. Superintendence of Work: Contractor shall appoint a field superintendent and a project manager, who shall directly and full time supervise and coordinate all Work required by the Drawings and Specifications.

F. Subcontractors, Trades and Materials Suppliers: Contractor shall require all subcontractors, trades, crafts, and suppliers to coordinate their portions of Work with the Superintendent to prevent scheduling, sequencing, dimensional and other conflicts and omissions.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

PART 4 – MEASUREMENT AND PAYMENT

Employee-In-Charge (EIC), railroad safety and/or railroad flagging to be paid by the Authority with bid allowance per Section 1.4.B and no separate measurement or payment will be made to the Contractor for Work of this Section.

END OF SECTION

SECTION 01 14 16
COORDINATION WITH SCRRA

PART 1 – GENERAL

1.1 SUMMARY

This Section outlines the requirements for coordination with the Authority and related railroads for Work performed on the railroad right-of-way.

1.2 RELATED REQUIREMENTS

A. Section 01 11 16, Work by SCRRA

B. Section 01 14 00, Work Restrictions

C. Section 01 35 15, Maintenance and Protection of Railroad Traffic

D. Section 01 35 23, SCRRA Site Safety Requirements

1.3 REGULATIONS FOR WORKING WITHIN RAILROAD RIGHT-OF-WAY (ROW)

A. Upon award of this Contract Work, the most current edition of each of the following publications shall apply to the Contractor's work. The Contractor shall comply with all requirements from the railroad operators, CPUC, FRA and all other governing entities. These requirements may include the following:

SCRRA Safety and General Rules for All Employees

SCRRA Roadway Worker Protection Regulations, Section 214.3 of the SCRRA On-Track Safety Manual

SCRRA Bridge Worker Safety

SCRRA Track Maintenance, Right-of-Way and Structures Engineering Instructions

SCRRA Engineering Standards

SCRRA Regulation Governing Contractors and Others Working on SCRRA Property

SCRRA General Code of Operating Rules for Maintenance of Way

SCRRA Current Timetable

SCRRA Current Schedule of Trains

SCRRA Form 37, Rules and Requirements for Construction on SCRRA Property

SCRRA Excavation Support Guidelines

AMTRAK Current Schedule of Trains

CPUC General Orders 26D and 118

FRA Track Safety Standards: Title 49 CFR 213

FRA Roadway Worker Standards: Title 49 CFR 214.

B. In addition, the Contractor shall comply with the most current edition of the *AREMA Manual for Railway Engineering* for standards of construction not fully explained by the above regulations or these Specifications. Possible conflicts between publications identified in this Section shall be brought to the attention of the Authority, who will make a determination as to the direction that the Contractor should follow.

C. In the event additional Work is being performed by others, on or adjacent to the Worksite for this Contract, the Contractor shall coordinate the Work with other activities in order to avoid conflicts.

1.4 COORDINATION

A. All Work within or adjacent to the Authority's Right-of-Way shall, at a minimum, meet the above regulations and be coordinated through the Authority. The Contractor shall cooperate and coordinate the Work as necessary in the most efficient manner for the execution and completion of the Work. If there is a conflict between SCRRA and other railroad's Rules and Regulations, the Contractor shall follow the Authority's direction as to which set of rules shall prevail. The Contractor shall coordinate its work so it does not interfere or otherwise delay the work performed by SCRRA's forces.

B. Track will be used both for passenger and freight operations. The Authority dispatches all train traffic. The Contractor's Work shall be scheduled to provide minimal interference with all train traffic; in particular, Work will not be permitted to delay any trains. Requirements for slow orders through Work zones are contained elsewhere in these Specifications.

C. The Contractor activities shall not delay any trains except as approved in advance by the Authority.

D. The Contractor should participate in the jobsite visit prior to submittal of bids to assess the level of train activity. Some schedule variations should be anticipated during the Project due to normal growth and train schedule refinement by the Authority and other operators.

E. Authority EIC will obtain track Authority directly from the Authority dispatcher. The Contractor shall not coordinate with the Authority dispatcher.

F. Signal cutover work, if any, will be performed by the Contractor.

G. The Contractor's work shall be coordinated with the Authority in accordance with Section 01 14 00, Work Restrictions, which establishes procedures and lead times required for Authority provided labor, including EIC.

H. The Contractor must make arrangements to remove all on-track equipment from the Main Track in order to pass trains as specified in Section 01 14 00, Work Restrictions. The Contractor may not assume that its equipment can be placed or stored in spur tracks or sidings unless approved in advance by the Authority.

1.5 GENERAL REQUIREMENTS

A. The Contractor shall obtain permission in writing from the Authority for movement of equipment on track or across tracks at locations other than public crossings. Such permission may not necessarily be granted. If it is granted, the Contractor shall comply with any condition required such as, but not limited to, the bridging of rail and protection of ballast section. Damages to the track structure will be repaired at the Contractor's sole expense.

B. The mainline tracks, within the limits of Work, are under direct control of the Authority Dispatcher. No track shall be fouled without authorization and presence of an Authority EIC on the scene.

1. For all Work with the potential to foul the track, the Contractor shall allow sufficient time in his work schedule for the EIC to clear trains. Up to 15 minutes may be required for the EIC to clear each train, during which time the Contractor must not foul the track. Such time required to clear scheduled trains shall not be an acceptable reason for submitting contract change requests or delay claims to SCRRA.

2. Scheduled trains may be up to 15 minutes behind schedule, and such tardiness will not be an acceptable reason for submitting contract change requests or delay claims to SCRRA.

1.6 WORK AFFECTING THE EXISTING COMMUNICATIONS AND SIGNAL SYSTEMS

A. Track within the Work limits will be in use for high-speed freight and passenger train operations throughout the construction period. Train movements are governed by signal systems and the Contractor shall take no action which would:

1. Directly or indirectly result in an unsafe condition (e.g., false clearing of a signal, failure to detect train occupancy or an open switch point, unauthorized unlocking of a switch, failure to activate a highway grade crossing warning system, or any degradation of signaling system).

2. Cause delay to any train (e.g., display of a signal aspect less permissive than track conditions allow, obstruction of right-of-way).

3. Cause an improper activation or deactivation of a highway grade crossing warning system.

4. Be contrary to directions given by the Authority or the Authority Dispatcher.

B. Existing overhead and buried communications and signaling cables and track wires are located at various locations along and across the Right-of-Way. The Contractor shall take all steps necessary to protect active cabling from damage during the Work. Specific utilities associated with the Work of this Contract are detailed in the Plans and Specifications. The minimum precautions to be taken by the Contractor to protect communications and signaling cables are as follows:

1. All personnel working in the vicinity of communications and signaling equipment and cabling shall be instructed by the Authority in proper procedures for working around such equipment. Any Contractor personnel found not to be taking proper precautions will be barred from the Work site.

2. At least 14 days before performing any excavation Work, the Contractor shall contact the Authority to schedule a signal department mark-out. The Contractor shall call the SCRRA's "Call Before You Dig" number prior to commencing work at (909) 859-4100 or (909) 859-4112 during normal business hours. In case of emergencies involving SCRRA signal or communication facilities, the Contractor shall call (888) 446-9721. The exact location of communications and signaling cables shall be determined by a careful examination of site and hand potholing. The Contractor may utilize a search coil to determine the general vicinity of buried cabling. All such aforementioned locating activities shall be performed in the presence of the Authority.

3. It is the responsibility of the Contractor to make arrangements directly with utility companies involving the protection, encasement, reinforcement, relocation, replacement, removing or abandonment in place of non-railroad facilities affected by the Project. SCRRA has no obligation to supply additional SCRRA right-of-way for non-railroad facilities affected by this Project, nor does SCRRA have any obligation to permit non railroad facilities to be abandoned in place or relocated on SCRRA's right-of-way. Any facility or utility that crosses SCRRA right-of-way must be covered under an agreement or license obtained through SCRRA including, without limitation, any relocation of an existing facility or utility.

4. SCRRA will, if required, rearrange its communications and signal lines, grade crossing warning devices, train signals, tracks and facilities that are in use and maintained by SCRRA forces in connection with its operation. This work by the SCRRA will be done by its own forces or by contractors under a continuing contract and is not a part of the work under the Contract for the construction of the Project. The Contractor must allow sufficient time in its schedule to permit SCRRA to issue the necessary task orders to its contractors order material, and perform any necessary work.

5. All communications and signaling cables proximate to the Work shall be physically located by means of potholing with hand tools. Excavation by hand tools shall be done by skimming soil in small increments, rather than by digging straight down with the point of a shovel. All such locating activities shall be performed in the presence of the Authority.

C. Excavation by machinery will be allowed only where the preceding precautions have been taken, as approved by the Authority, to ensure that existing cabling is not at risk of being damaged.

D. Where the placement of existing cabling interferes with placement of track work, or where cabling is at risk of damage from track work, the Contractor shall request such cabling be relocated or protected by Authority forces.

E. The relocation of cables may require delays of up to 72 hours after the Authority has been notified of conflicts. Such delays will not be grounds for the Contractor submitting a claim for extension of the Contract Time. The Contractor shall coordinate its work so it does not interfere or otherwise delay the work performed by SCRRA's forces.

F. The relocation of active cable will be performed by Authority forces.

PART 2 – PRODUCTS (Not used)

PART 3 – EXECUTION (Not used)

PART 4 – MEASUREMENT AND PAYMENT

Work of this Section is considered incidental to Work under other payment items and no separate measurement or payment will be made to the Contractor for Work of this Section.

END OF SECTION

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SECTION 01 14 19
COORDINATION WITH UTILITIES

PART 1 - GENERAL

1.1 SUMMARY

This Section outlines requirements and provisions regarding the Contractor responsibility for coordination with all utility companies to ensure that all utilities are clearly marked, protected for the duration of the construction activities or relocated. The exhibit to this Specification Section entitled Project Utility Responsibilities when included in the Project Specific Specifications shall identify each of the utilities affected by the Work.

1.2 RELATED REQUIREMENTS

A. Section 01 33 00, Submittal Procedures

1.3 SUBMITTALS

A. Where required by the Contract Documents, the Contractor shall prepare Shop Drawings showing existing utility information and the installation of any utility protection facilities or features to be established on the site prior to initiating construction, maintained for the duration of construction and removed upon completion of construction. This submittal information to the local utility and to the Authority shall identify all necessary Work to adjust, move, or relocate existing utility structures, utility poles, lines, services, or other utility appurtenances located in or affected by construction.

B. The Contractor shall coordinate with all Utilities and authorities having jurisdiction over these facilities and shall remove and relocate existing utilities and equipment whenever an existing installation interferes with new construction. Carefully examine each location and make arrangements in advance with the Authority to ensure that construction has a minimum impact on the daily operations of the Authority.

C. Where required by a utility owner or an authority having jurisdiction over an underground facility, within 15 calendar days of the effective date of the Limited Notice to Proceed, the Contractor shall submit a "Potholing Plan" consisting of a plan, schedule, and sequencing to identify and investigate by vacuum potholing all underground utilities and facilities. The Authority will review and comment on the plan within 10 calendar days of receipt.

D. The relocated utilities shall be specifically identified in the record documents. The types of material and methods of relocation and reconnection of utilities shall match the existing unless otherwise noted.

E. The Contractor shall furnish the Authority copies of all utility required permits or approvals obtained prior to starting Work at or adjacent to the utility facilities.

PART 2 – PRODUCTS (Not used)

PART 3 – EXECUTION

3.1 GENERAL

Prior to the start of Construction, the Contractor shall engage an underground utility detection company to detect and locate all existing underground utilities within the Work. All underground utility information, including the approximate depth, shall be clearly marked on surface and existing pavement for reference. The information shall also be recorded in the Project files. Also before commencing work, the Contractor shall notify Dig Alert at 811 or 1-800-422-4133, 72 hours in advance of excavation and advise the Authority of Dig Alert Identification number two working days before excavation begins. Before commencing work, the Contractor shall also notify utility companies which have underground facilities within the limits of the Work, but which do not participate in Dig Alert, in accordance with each utility's notification requirements, and have them locate and mark the facilities within the area of excavation. The Contractor shall keep marking current in accordance with the requirements of Dig Alert and the other utility companies.

SCRRA is not a member of Underground Service Alert (DigAlert) and SCRRA signal and communication lines must be located by contacting the SCRRA Signal Department. Refer to Section 01 14 16, Coordination with SCRA for additional details.

3.2 POTHOLING FOR SUBSURFACE UTILITIES AND FACILITIES

Where required by a utility owner or an authority having jurisdiction over an underground facility, within 30 calendar days of the effective date of the Limited NTP and after Authority's approval of the Contractor's "Potholing Plan", the Contractor shall mobilize not fewer than two (2) separate potholing crews. These two or more potholing crews will work on a continuous basis to identify, locate and verify the location of underground utilities at all project locations. It is the Contractor's responsibility to submit the Potholing Plan and obtain the Authority's approval within this time period.

Potholing and subsurface utilities and facilities verification work shall be completed at least 30 days in advance of any excavation work within the limits of any construction. The intent of performing potholing and field verification of underground utilities well in advance of any relocation, protection or modification of utilities is to preclude any delays or disruption arising from utility relocation and allow for redesign and reissuance of plans and related Contract Documents. Accordingly, any failure on the Contractor's part to perform the potholing and field verification of utilities within the time frames listed above shall be sufficient cause to reject any claims by the Contractor for delays associated with utility relocations.

3.3 CONTRACTOR FIELD WORK REQUIREMENTS

A. The Contractor shall provide personnel, equipment, temporary facilities, construction materials, tools, and supplies at the Work site at the time they are scheduled to be required for general utility location and protection requirements subject to the following requirements:

1. The Contractor shall pothole and physically locate all utilities under Traffic/Pedestrian gate footing or within 2 feet of Traffic/Pedestrian gate footing.
2. The Contractor shall notify the Gas Utility when excavating within 5 feet of any natural gas pipeline and schedule Utility personnel if required. The Contractor to hand-dig within 5 feet of any natural pipeline.
3. The Contractor shall notify pipeline owner when excavating within 5 feet of any oil pipeline and schedule standby personnel if required. The Contractor to hand-dig within 5 feet of any oil pipeline.
4. The Contractor shall notify the Utility providing electrical service when excavating within 5 feet of any energized electric facilities and schedule utility personnel as required. The Contractor to hand-dig within 5 feet of any energized electric facilities.
5. The Contractor shall hand-dig within 3 feet of any telephone, cable television or fiber optic facilities.
6. The Contractor shall pothole all utilities under or within 2 feet of a Traffic/Pedestrian gate to confirm depth and lateral location.
7. Contractor is to comply with all requirements by Utility which may be more stringent than described herein.

B. Utilities and pipelines, unless otherwise indicated, shall be in operation during the construction work. The safe and proper handling of the utilities and pipelines is the responsibility of the Contractor. The Contractor shall be liable for any injuries, line breakage, damage to the line and damage to property. In addition, Contractor shall be responsible for and shall reimburse Authority or owner of the utility, or pipeline for all damages during construction and for any product (gas, oil or service) lost there from. Precautions must be taken to contain any possible oil spills. Any spillage of gas or oils shall be contained and if the material is not contained and causes damages or gets into natural drainage courses, the Contractor shall be solely responsible. Failure to respond within a reasonable time frame (herein defined as a maximum of four hours or sooner for emergencies as determined by the Authority or the Utility) will constitute cause for Authority to restore such utility damages and to deduct all costs of restoration from the next Progress Payment to the Contractor.

C. At Limited NTP or the project kick-off meeting, the Authority shall provide contact numbers for all entities to be contacted in case of emergency including signal and grade crossing problems and signal and communications cable locations. This will include the Authority Chief Dispatcher and the Metrolink Sheriff's Dispatcher. The Contractor shall ensure that Work Site personnel have immediate access to these contact numbers.

PART 4 - MEASUREMENT AND PAYMENT

Work of this Section is considered incidental to Work under other payment items and no separate measurement or payment will be made to the Contractor for Work of this Section.

END OF SECTION

EXHIBIT

PROJECT UTILITY RESPONSIBILITIES

UTILITY RELOCATIONS/REARRANGEMENT

REFERENCE SPECIFICATION SECTION: _____

CONTACTS AND RESPONSIBILITIES

Name of Utility:

Contact Person:

Address:

Phone:

Email:

	PERFORMANCE RESPONSIBILITY	PAYMENT RESPONSIBLITY
Design done by:	_____	_____
Construction by:	_____	_____
Inspection by:	_____	_____

☐ Yes ☐ No Third Party Coordination and paid by: SCRRA

NOTES:

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SECTION 01 22 05

MEASUREMENT AND PAYMENT

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Procedures for preparation and presentation of Applications for Payment.

B. Procedures for preparation of Schedule of Values (Breakdown of Costs).

1.2 RELATED DOCUMENTS AND SECTIONS

A. Section 01 23 05 - Contract Modification Procedures

B. Section 01 77 19 - Project Closeout

1.3 PREPARATION OF APPLICATIONS FOR PAYMENT

A. Preparation of Applications for Payment: Comply with requirements in the General Provisions and specific directions of the Engineer.

B. Payment Application Forms: Use forms as directed by the Engineer and provided by the Authority, and cost breakdown as submitted by the contractor. Mobilization cost not to exceed 10%.

C. Payment for "mobilization" shall be made in percentages as follows (less retainage):

Contract Amount Completed	Payment for Mobilization
5%	50%
10%	75%
20%	95%
50%	100%

D. Progress payments shall be made monthly, based on Contractor's Schedule of Values (Breakdown of Costs) and monthly update of Contractor Schedule. Submit request for progress payment by the 5th of the following month for all work done the previous month. Payment request must follow the Schedule of Values previously submitted by the Contractor. Sign progress payment request. Submit other documentation such as certified payroll, monthly labor utilization form, and waivers as required by contract.

E. Percentage of completed items will be paid. Payment for amount of work completed in current progress payment period shall be sum of activity cost multiplied by percentage of work completed for each activity in progress minus previous payments, less retainage.

F. Materials on site but not installed in construction should not be included in Progress Payment, and will not be paid by Orange County Transportation Authority (OCTA).

G. No payment shall be made for materials or equipment which do not have accepted submittals. If material or equipment is not identified, it is responsibility of Contractor to submit necessary cost adjustments to Contract Schedule. Incorporation of such revisions to computerized version of Contract Schedule and payments on such requests are at discretion and acceptance of the Owner.

H. Final Payment: Prepare Application for Final Payment in compliance with requirements in the General Provisions, as directed by the Engineer and as specified in Section 01 77 19 - Project Closeout.

1.4 SCHEDULE OF VALUES (Breakdown of Costs)

A. Submit to the OCTA's Representative a Schedule of Values (Breakdown of Costs) allocated to the various portions of the Work, within seven days after award of Contract.

B. Upon request of the OCTA's Representative, support the values with data which will substantiate their correctness.

C. The Schedule of Values shall be used only as the basis for the Contractor's Applications for Progress Payment.

D. Related Requirements in Conditions of the Contract.

E. Type schedule on 8-1/2 inch x 11-inch white paper; Contractor's standard forms and automated printout will be considered for approval by the OCTA's Project Engineer upon Contractor's request. Identify schedule with:

1. Title of Project and Location

2. Project Number

3. Name and Address of Contractor

4. Contract designation

5. Date of submission

F. Schedule shall list the installed value of the component parts of the Work in sufficient detail to serve as a basis for computing values as itemized in the Breakdown of Costs for progress payments during construction.

G. Follow the table of contents of the Project Technical Specifications as the format for listing component items. Identify each item with the number and title of the respective major section of the specifications. For each major line item, list sub-values of major products or operations under the item.

H. Provide a line item to identify each of the following:

1. Bonds

2. Insurance premiums

3. Field supervision

I. Each item shall include a directly proportional amount of Contractor's overhead and profit, which will not be paid separately. The sum of all values listed in the schedule shall equal the total contract Sum.

1.5 MOBILIZATION

A. Mobilization shall include, but not limited to, the following:

1. Movement of personnel, tools, equipment, materials, supplies, and incidentals to the PROJECT site and all preparatory work, including installation of PROJECT sign.

2. Establishment of all necessary facilities, including acquisition of easements for the CONTRACTOR's convenience.

3. Obtaining permits necessary for the execution of the WORK.

4. Providing required bonds and proof of insurance.

5. Upon completion of the WORK, CONTRACTOR shall remove tools, equipment, and unused materials and supplies from the PROJECT site and restore all disturbed areas outside the PROJECT area to their pre-construction condition.

B. AUTHORITY has the right to reject construction tools, equipment, materials, and supplies which are, in AUTHORITY's opinion, unsafe, improver, or inadequate.

1. CONTRACTOR shall bring rejected construction tools, equipment, materials, and supplies to an acceptable condition as approved by AUTHORITY or remove from the PROJECT site.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

PART 4 – MEASUREMENT & PAYMENT

4.1 MEASUREMENT & PAYMENT

A. Mobilization shall be measured and paid per Section 1.3.B of this specification section and in accordance with the Contract Documents will be paid for at the Contract Unit Price, as listed on the Schedule of Quantities and Prices. This price shall include all items per Section 1.5.A of this specification section.

END OF SECTION

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SECTION 01 23 05

CONTRACT MODIFICATION PROCEDURES

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Administrative requirements for changes in the Work.

B. Documentation of changes in Contract Sum and Contract Time.

C. Change procedures.

D. Construction Change Directives.

E. Change Orders.

F. Reconciliation of Change Orders.

1.2 RELATED DOCUMENTS AND SECTIONS

A. General Provisions: Governing requirements for changes in the Work, in Contract Sum and Contract Time.

B. Section 01 22 05 - Measurement and Payment: Applications for payment.

C. Section 01 60 00 - Product Requirements: Submittals, Product options, substitutions, omissions and mis-descriptions.

D. Section 01 77 19 - Project Closeout: Project record documents.

1.3 ADMINISTRATIVE REQUIREMENTS FOR CHANGES IN THE WORK

A. Responsible Person for Contractor: Submit name of the individual authorized to receive construction change documents, and who is responsible for informing others in Contractor's employ or subcontractors of changes in the Work.

B. Change Order Forms: Forms shall be as required by the Authority and will be provided by the Project Engineer.

1.4 DOCUMENTATION OF CHANGES IN AGREEMENT PRICE AND TIME

A. Documentation of Changes in Contract Sum and Contract Time: Provide full information required for evaluation of proposed changes and to substantiate costs of changes in the Work.

1. Maintain detailed records of Work completed on time and material basis.

2. Document each quotation for a change in Contract Sum and Contract Time, with sufficient data to allow evaluation of the quotation.

3. Provide details of cost of all material used for change in work. Provide detail of labor hours expended in change of work, and wage rate or worker. Provide total of hours equipment was used in the work, and hourly rate of the equipment.

B. Additional Data: Upon request by the Engineer, provide additional data to support computations:

1. Overhead and profit (20% includes all superintendence, taxes, insurance, bonds, overhead and profit, etc.). 20% to be divided between Contractor and sub-contractor equally.

2. Justification for change in Contract Time, if claimed.

3. Credit for deletions from Contract, similarly documented.

1.5 CHANGE PROCEDURES

A. Change Procedures, General: The following describe administrative procedures to be followed in complying with provisions of the Conditions of the Contract for changes in the Work.

B. The Engineer's Supplemental Instructions: Minor changes in the Work, not involving an adjustment in either the Contract Sum or Contract Time, as authorized by the Conditions of the Contract. The Contractor shall take prompt action on such instructions.

C. Authority-Initiated Changes: The Authority may initiate a change by the Engineer issuing a Bulletin/Proposal Request which includes a detailed description of a proposed change with supplementary or revised Drawings and Specifications.

1. Such Bulletin/Proposal Request may include an estimate of additions or deductions in Contract Sum or Contract Time for executing the change and may include stipulations regarding overtime work and the period of time the requested response from the Contractor shall be considered valid.

2. Contractor shall prepare and submit a response to the Bulletin/Proposal Request within 7 days.

1.6 CONSTRUCTION CHANGE DIRECTIVES

A. Construction Change Directives: In accordance with provisions of the Conditions of the Contract, the Authority may direct the Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order, by the Engineer issuing a Construction Change Directive, signed by the Authority and the Engineer.

1. The Construction Change Directive will describe changes in the Work, and will designate the method of determining if any, change is due in the Contract Sum or Contract Time.

2. Contractor shall promptly execute the change in the Work.

B. Changes Based on Stipulated Sum or Time: Construction Change Directive shall be based on stipulated adjustment in Contract Sum and Contract Time as mutually-acceptable to the Authority and Contractor and the change shall be performed immediately. A Change Order for this amount shall be executed at the earliest convenience of all parties. Contractor shall provide a cost estimate based on Section 1.4 of this section.

C. Changes Based on Time and Material Costs: If directed for changes for which amounts are not defined or are disputed, a Construction Change Directive will be issued by the Authority and Contractor shall execute the Work, keeping accurate records of time, both labor and calendar days, and cost of materials.

1. Contractor shall prepare and submit an itemized account and supporting data after completion of changed Work, within the time limits indicated in the Conditions of the Contract.

2. Contractor shall provide full information as required and requested for the Authority and Engineer to evaluate and substantiate costs for changes in the Work.

3. When the Authority and Contractor determine mutually-acceptable amounts for changes in Contract Sum and Contract Time, a Change Order shall be executed for these amounts based on contractor’s cost estimate prepared per Section 1.4 of this section.

D. Cost and Time Resolution: If amounts for changes in Agreement price and Agreement time cannot be agreed upon by the Authority and Contractor, amounts shall be resolved in accordance with requirements of the Conditions of the Contract for resolution of disputes.

1.7 CHANGE ORDERS

A. Change Orders, General:

1. In accordance with provisions of the Conditions of the Contract, the Engineer and Authority will review Contractor's response to a Bulletin/Proposal Request or a Construction Change Directive and determine with the Contractor the acceptable amount, if any, of the change in Contract Sum and Contract Time.

2. When agreement is reached on the change in Contract Time and Sum, the Engineer will prepare a Change Order, with supplementary documents (Contractor’s cost estimate) as necessary to describe the change and the associated costs and schedule impacts.

3. The Authority and Contractor will sign the Change Order indicating acceptance and approval of the change.

4. Provide three original sets of each Change Order cost estimate with complete supplementary information as necessary.

1.8 RECONCILIATION OF CHANGE ORDERS

A. Schedule of Values: Promptly revise the Schedule of Values and Application for Payment forms to record each authorized Change Order as a separate line item and adjustment to the Contract Sum.

B. Schedules: Promptly revise Contractor Schedules to reflect changes in Contract Time, revising sub-schedules to adjust time for other items of Work as may be affected by the change. Submit revised schedules at the next Application for Payment following approval and acceptance of the Change Order.

C. Change in work due to request for information, or any other reason shall not be reason for claims of delays by the contractor. Contractor shall allow the Consultant seven (7) days to respond to request for information, and additional fourteen (14) days to the Authority to make necessary changes to resolve changes in work and change orders. Allow Authority 30 days for final Change Order approval.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

SECTION 01 31 00

PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes: Requirements applicable to the Contractor's management of the Project and coordination, including the following:

1. Project coordination
2. Preconstruction Conference
3. Site Mobilization Conference
4. Project Meetings
5. Construction Progress Meetings
6. Project Site Administration

1.2 PROJECT COORDINATION

A. Contractor shall coordinate the Work with all related work being done by the Owner and all other contractors operating in the area. This coordination shall include reasonable adjustments of schedule in order to allow other contractors or Owner to do their work.

B. Contractor shall carefully examine all Drawings relating to the Work with actual conditions so that all Work will be accommodated in the spaces provided. General arrangement and location of elements of various systems is shown on the Drawings or specified. Space conflicts and interferences shall be resolved before any work is installed.

C. Contractor shall utilize the Contract Documents, submittals, and layout drawings of the various trades to check and coordinate the work so that no interferences or conflicts between trades will occur. This checking and coordination shall be performed and completed before construction is commenced in each affected area.

D. Coordinate work to assure efficient and orderly sequence of installation of construction elements. Make provisions for accommodating items installed by Owner or under separate contracts.

E. Verify characteristics of interrelated operating equipment are compatible; coordinate work having interdependent responsibilities for installing, connection to, and placing such equipment in service.

1.3 PRE-CONSTRUCTION CONFERENCE

A. Pre-construction Conference: The Authority will administer the pre-construction meeting after execution of the Agreement, if not already executed, and exchange of preliminary submittals and other data. Contractor shall submit schedule, submittals, safety plan and cost break-down for review of Consultant.

B. Schedule: Project Engineer will schedule Pre-construction conference within 7 days after issue of Notice to Proceed.

C. Location: Pre-construction conference will be held at the office of the Orange County Transportation Authority, 600 S. Main Street, Orange, CA 92868, unless otherwise directed.

1.4 SITE MOBILIZATION CONFERENCE

A. Mobilization shall include the moving onto the site of all the Contractor's plant and equipment, for furnishing and erecting plants, temporary buildings, and other construction facilities; all as required for the proper performance and completion of the work; bonds, appropriate insurance certificates, fees and permits, cost breakdown, and progress schedule.

B. Site Mobilization Conference: The Authority will administer a site mobilization conference for clarification of responsibilities of the Authority, Engineer, Facility Maintenance, and the Contractor of use of site, and procedures of mobilization

C. Schedule: Site mobilization conference shall occur once Safety Plan is approved by the Construction Manager and OCTA, unless otherwise directed.

D. Location: At Project site, unless otherwise directed.

E. Agenda: Site Mobilization Conference shall cover the following topics as a minimum.

1. Special Project Procedures: Procedures for alteration work, and to maintain existing operations of the rail.

2. Subcontractors List: Distribute and discuss list of subcontractors and suppliers.

3. Construction Schedule: Distribute and discuss initial construction schedule and critical work sequencing of major elements of Work, including work under separate contracts by serving utility agencies and companies and Authority. Schedule has to be approved by the Authority.

4. Project Communication Procedures: Review requirements and administrative procedures for written and oral communications.

5. Contract Modification Procedures: Review requirements and administrative procedures for Change Orders, Construction Change Directives, the Engineer's supplemental instructions and Contractor's Requests for Information.

6. Coordination: Review requirements for Contractor's coordination of Work; review sequence and schedule for work being performed for Authority under separate contracts.

7. Submittals Administration: Review administrative procedures for shop drawings, product data and samples submittals and review of preliminary submittals schedule.

8. Project Record Documents: Review requirements and procedures for project record drawings and specifications.

9. Construction Facilities and Temporary Utilities: Contractor will designate storage, staging, and parking areas, review temporary utility provisions; and present to Authority for approval.

10. Materials and Equipment: Review substitution requirements; review schedule for major material purchases and deliveries. If material deliveries are made to site from factory, Contractor shall be present to receive them.

11. Site Access by the Authority and Engineer: Review requirements and administrative procedures Contractor may wish to institute for identification and reporting purposes.

12. Testing and Inspection: Review tests and inspections to be performed by the following.

    a. Independent testing and inspection agency.

    b. Manufacturers and installers.

    c. Serving utilities and public agencies.

    d. Authorities having jurisdiction.

13. Permits and Fees: Review Contract requirements and review schedule and process for obtaining permits and licenses and paying fees.

1.5 PROJECT MEETINGS

A. Contractor or Contractor's duly appointed representative shall attend project meetings at regular intervals as set by the Owner.

1. Attendance shall be limited to the Contractor and his immediate subordinates, Owner, and representatives of the Engineer and Consultants, as requested.

2. Contractor, or Contractor's duly appointed representative, shall keep minutes of the meetings with copies sent to all attendees.

3. Meetings shall be held in quarters agreed to by Owner and Contractor.

1.6 CONSTRUCTION PROGRESS MEETINGS

A. Progress meetings shall be periodically scheduled throughout progress of the Work. Frequency shall be as determined necessary for progress of Work, and may be called by any Party.

1.7 PROJECT SITE ADMINISTRATION

A. Condition of Work in Place: Inspect and take responsibility for previously prepared or installed work of other contractors before applying subsequent materials or finishes. If work is in an unsatisfactory condition, notify the Owner. Do not proceed until the defective work has been corrected.

B. Work Areas: Contractor shall confine Contractor's operations within the property lines of the project site. The Owner will coordinate use of property areas with Contractor to ascertain that Contractor's needs are fulfilled to fullest extent possible within project constraints. Contractor shall be responsible for obtaining any agreements including SCRRA right of entry required for use of property outside the property lines of the project site.

C. Site Layout: Contractor shall submit layout plan showing proposed location of offices, employee parking, material storage, shop facilities, and other major work areas to Owner for acceptance prior to site mobilization.

D. Site Access: Contractor shall make site available to Owners' and operations personnel and inspectors at all times. Contractor shall anticipate that Owner's personnel will visit site on frequent, irregular basis to observe progress of Work.

E. Emergency Vehicles: Maintain clear access for emergency vehicles at all times.

F. Trash: No open burning or trash dumping on the site will be allowed.

G. Damage Documentation: Contractor shall document through photographs or videotape the condition of all existing structures, surface hardscape, and sitework adjacent to the parking structure site prior to any demolition work on the Project

site. Documentation shall provide basis for any damage occurring during the construction duration.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

PART 4 - MEASUREMENT AND PAYMENT

Work of this Section is considered incidental to Work under other payment items and no separate measurement or payment will be made to the Contractor for Work of this Section.

END OF SECTION

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SECTION 01 32 05

CONTRACTOR SCHEDULES AND REPORTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes: Provide Contractor schedules and reports as specified and as required for completion of Project and as approved by Owner.

1. The Owner will use updated version of Contractor Schedule in evaluating progress of work and determining progress payments to be made to Contractor.

B. Related Sections:

1. Section 01 11 13 - Work Covered by the Contract Documents.

2. Section 01 33 00 - Submittal Procedures.

1.2 CONTRACTOR SCHEDULES

A. At the Preconstruction meeting, the Contractor shall prepare and submit to the Engineer for approval a schedule of work. This Preliminary schedule shall indicate the number of days the Contractor anticipates working on each phase. Schedule shall be in sufficient detail and shall be Contractor's plan of construction for completing contract work.

B. The dates of all key phases of the Plan shall appear clearly on the schedule. The schedule shall be comprehensive, showing planned sequences of operations, the dates for commencement and completion of all salient features of the work, activities at the site of the work, procurement, and construction. Include sequence of early operations and procurement activities for all materials and equipment provided under this contract. Show details of activities of each stage which show the plan to complete each stage within time specified.

C. Overall time of completion and time of completion for each milestone shall adhere to times in General Conditions unless an earlier (advanced) time of completion is requested by Contractor and agreed to by the Owner. Any such agreement shall be formalized by a change order.

D. Activity for "mobilization" will be allowed which includes preparatory work and operations, including, but not limited to those necessary for movement of personnel, equipment, supplies and incidentals to Project site, for establishment of all offices, buildings and other facilities necessary for Work of Project, and for all other work and operations which must be performed or costs incurred prior to beginning work on various items on Project site.

E. Failure of Contractor Schedule to include any element of Work or any inaccuracy in Contractor Schedule will not relieve Contractor from responsibility for accomplishing all Work in accordance with Contract.

F. Activities dependent on submittal acceptance or material delivery shall not be scheduled to start earlier than expected acceptance or delivery dates.

G. Resources required (manpower and major equipment) to perform each activity shall be identified.

H. Float or Slack Time is amount of time between earliest start date and late start date or between earliest finish date and latest finish date of activities of Contractor Schedule. No time extensions or delay costs shall be allowed for delays caused by the Owner, on paths of activities containing float time, providing such delay does not exceed float time, per latest updated version of approved Contractor Schedule.

I. Allow at least thirty calendar days for developing punch list, completion of punch list item, and final cleanup for the work or any designated portion thereof.

J. Cost load each activity on the schedule.

1. Include all labor, material and equipment costs.

2. Include overhead and profit.

3. Material costs shall be the actual invoice value without any markup.

4. The sum of all activities shall equal the contract value.

K. Each activity shall be coded to correlate with the Schedule of Values (Breakdown of Costs).

L. Each activity shall be assigned a responsibility code corresponding to subcontractor responsible for performing work so that schedule activity lists and cost subtotals can be generated for each division of work.

M. The Contractor shall submit 5 copies of each schedule and revised schedule furnished.

1.3 FORMAT OF SCHEDULE

A. The schedule shall be of the bar chart, Critical Path Method (CPM), or time scale precedence types, at the Contractor's option. The critical path method type schedule shall be in the form of a network diagram and activity listing. The precedence type schedule shall be in the form of a network diagram, activity listing and input listing.

B. Preliminary Contractor Schedule shall include the first three months of contract work and a Breakdown of Costs.

C. No activity on schedule shall have duration of longer than fifteen calendar days, with exception of fabrication and procurement activities, unless otherwise approved by Owner.

D. Activity durations shall be total number of actual calendar days required to perform that activity including consideration of weather impact on completion of activity.

1.4 APPROVALS

A. Preliminary Contractor Schedule shall be submitted to the Owner for review and approval.

B. Approved Schedule of Values (Breakdown of Costs) shall be used as the basis for monthly progress payments prior to approval of the Contractor Schedule.

C. The schedule and each revision thereof shall be subject to approval by the Authority for conformity with the requirements of this article.

D. The Owner will review Contractor Schedule for conformance with requirements of Contract, Supplementary Conditions and this Section. The Contractor shall assist in reviewing and evaluating each schedule furnished.

1. Within ten calendar days after receipt, Owner will approve Contractor Schedule or will return it with comments.

2. If Contractor Schedule is not returned approved, Contractor shall revise schedule to incorporate comments and resubmit schedule for approval within 7 working days after its receipt.

3. Approval of Contractor Schedule will not relieve Contractor of responsibility for accomplishing Work in accordance with Contract.

1.5 CONTRACT SCHEDULE REVISIONS

A. The Contractor shall promptly advise the Engineer of any occurrence requiring substantial revision of the schedule and shall furnish a revised schedule within 7 days of such occurrence.

B. If sequence of construction differs significantly as determined by Owner from Approved Contract Schedule, Contractor shall submit within ten calendar days a revised schedule to Owner for approval.

C. When Proposed Change Order is issued which has potential to impact specified completion date, a schedule adjustment shall be prepared by Contractor to reflect impact of such changes.

1. After schedule adjustment has been approved and Contractor ordered to proceed with Proposed Change Order, it shall be incorporated into Contract Schedule.

2. Time extensions will be considered only to extent there is insufficient remaining float to accommodate these changes.

D. No additional cost beyond that provided in General Conditions will be allowed for incorporation of approved Proposed Change Orders into Contract Schedule.

1.6 MONTHLY UPDATES

A. Contractor shall submit to Owner each month, along with submission of updated computer report required by this Section, an up-to-date status report of Work which shall include:

1. Contractor's estimated percentage complete for each activity not yet complete.

2. Actual start/finish dates for activities as appropriate.

3. Identification of processing errors, if any, on previous update reports.

4. Revisions, if any, to assumed activity durations including revisions for weather impact for any activities due to effect of previous update on schedule.

5. Identification of activities which are affected by proposed Change Orders issued during update period.

6. Resolution of conflict between actual work progress and schedule logic.

a. When out of sequence activities develop in Contract Schedule because of actual construction progress, Contractor shall submit revision to schedule logic to conform to current status and direction.

B. Owner will review updated information and meet with Contractor each month at site to determine status of Work.

1.7 COMPUTER REPORTS

A. Contractor shall provide each of the following reports monthly:

1. Four copies of updated computer generated printed reports per month for Contract Schedule and each monthly update as detailed below.

2. Graphic Submittals shall include one reproducible and three prints.

3. Computer CD with schedule data files in a form that can be uploaded for use with Owner's software.

B. Provide Schedule Logic Report listing activities, their early/late and actual start and finish dates, duration, float and logic relationship of activities sorted by early start.

C. Provide Cost Report listing each activity and its associated cost, percentage of work accomplished, earned value to date, previous payments and amounts earned for update period.

D. Provide Bar Chart showing status of activities.

E. Provide Narrative Report with updated progress analysis, which shall include description of problem areas, current and anticipated delaying factors and their impact, an explanation of corrective action taken and any proposed revisions for recovery.

F. Provide Network Plots presenting time scaled network diagram showing activities and their relationships.

G. Provide Monthly Earnings Schedule Report - based on dollar estimate per month and expressed as a percentage of total cost for early start and late finish.

1.8 RECOVERY PLAN

A. If Contractor is behind schedule by more than ten calendar days for any stage of Work, based on updated Contract Schedule after incorporating all approved time extensions, Contractor shall submit to Owner within ten calendar days of notification of such delay, a "Recovery Plan."

B. Recovery Plan shall be based on proposed revisions to Contract Schedule for next sixty calendar day period and shall show how Contractor intends to bring work back on schedule.

1. Recovery plan shall also include written description of measures Contractor intends to take without additional cost to Owner to regain schedule compliance.

C. Should Contractor fail to submit and execute such a recovery plan, Owner shall have option to direct Contractor to employ any or all measures that Owner may deem fit to regain schedule compliance without additional cost to the Owner.

D. Recovery plan submitted by Contractor, upon acceptance by the Owner, shall be incorporated into Contract Schedule during next update.

E. Contractor shall be required to submit recovery plan for each update that indicates Work progress is more than ten calendar days behind schedule.

F. Should Contractor dispute determination of the Owner regarding status on Contract delay, such dispute shall not relieve Contractor of responsibility to comply with requirements of this Section and other related Sections until dispute is resolved per Contract terms.

1.9 ADDITIONAL REPORTS

A. Owner may request, from month-to-month, any two of the following additional computer generated reports:

1. Total float from least to most.

2. Activities by early start.

3. Activities by late start.

4. Activities grouped by subcontractors or selected trades.

5. Activities with scheduled early start dates in a given time frame (i.e. 30 or 60 day outlook).

6. Manpower report.

1.10 SHORT INTERVAL SCHEDULES

A. Short Interval Scheduling (SIS) shall be used throughout on-site construction activity.

B. Interval shall be three-week projection and shall include week submitted and two weeks thereafter.

C. Schedule shall contain sufficient detail to evaluate daily milestones and manpower/equipment loading and shall identify/tie into monthly updated Approved Contract Schedule.

D. Short Interval Schedule shall be approved by Owner.

E. Ten (10) copies of Short Interval schedule shall be submitted weekly as directed by Owner.

F. Weekly meeting will be scheduled by Owner to review and discuss Short Interval Schedules.

1.11 DAILY ACTIVITY REPORT

A. Contractor shall submit 5 copies of Daily Activity Report to Owner for each workday including weekends and holidays, when worked.

B. Contractor may use own report provided it contains same information included in standard form furnished by Owner.

1.12 DEFAULT

A. Failure of Contractor to substantially comply with requirements of this Section shall constitute reason that Contractor is failing to prosecute Work with such diligence as will ensure its completion within Contract times and shall be considered grounds for termination or other remedy pursuant to terms of this Contract.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

PART 4 - MEASUREMENT AND PAYMENT

Work of this Section is considered incidental to Work under other payment items and no separate measurement or payment will be made to the Contractor for Work of this Section.

END OF SECTION

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SECTION 01 33 00

SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes: Procedures and administrative requirements for submittals for review by the Engineer. Make submittals in strict accordance with provisions of this Section and with requirements of the General Conditions:

1. Definitions.
2. Submittal Procedures.
3. Contractor Schedule.
4. Submittal Schedule.
5. Breakdown of Costs.
6. Action Submittals.
7. Informational Submittals.
8. Operation and Maintenance Submittals
9. Delegated Design Submittals
10. Quality Control Submittals
11. Contractor Review
12. Engineer Action

B. Related Specification Sections of the following:

1. Section 01 11 13 – Work Covered by the Contract Documents.
2. Section 01 22 05 – Measurement and Payment.
3. Section 01 23 05 – Contract Modification Procedures
4. Section 01 31 00 – Project Management and Coordination
5. Section 01 32 05 - Contractor Schedules and Reports.
6. Section 01 33 00 – Submittal Procedures
7. Section 01 40 00 – Quality Control

8. Section 01 60 00 - Product Requirements.

9. Section 01 77 19 – Project Closeout.

10. Individual Submittals Required: Pertinent Specification Sections.

1.3 DEFINITIONS

A. Action Submittals: Written and graphic information that requires Engineer's responsive action.

B. Informational Submittals: Written information that does not require Engineer's responsive action. Submittals may be rejected for not complying with requirements.

C. Shop Drawings: Drawings, diagrams, schedules and illustrations, with related notes, especially prepared for the Work of the Contract, to illustrate a portion of the Work.

D. Product Data: Standard published information ("catalog cuts") and specially prepared Data for the Work of the Contract, including standard illustrations, schedules, brochures, diagrams, performance charts, instructions and other information to illustrate a portion of the Work.

E. Samples: Physical examples that demonstrate the materials, finishes, features, workmanship and other characteristics of a portion of the Work. Accepted samples shall serve as quality basis for evaluating the Work.

F. Other Submittals: Concrete and Asphalt Concrete Mix Design, Technical data, test reports, calculations, surveys, certifications, special warranties and guarantees, operation and maintenance data, extra stock and other submitted information and products shall not be considered to be Contract Documents but shall be information from Contractor to the Engineer to illustrate a portion of the Work for confirmation of understanding of design intent.

1.4 SUBMITTAL PROCEDURES

A. Submittals shall be made in accordance with requirements specified herein. Submittals shall be a communication aid between Contractor and the Engineer by which interpretation of Contract Documents requirements may be c o n f i r m e d in advance of construction. Reviews by the Engineer and the Engineer's consultants shall be only for general conformance with the design concept of the Project and general compliance with the information given in the Drawings and Specifications.

B. Schedule submissions to provide adequate time for Engineer's review and considering lead time needs of manufacturers, suppliers, and others. Make submittals at time of pre-construction meeting to allow shipping, handling and review by the Engineer and the Engineer's consultants. Allow three weeks for Consultant to review and approve submittals.

Make submissions within following number of days after notification at start of work.

1. Items needed in initial stages of Work or requiring long lead-time for ordering: 15 calendar days.

2. Electrical, mechanical and equipment items other than those covered by B above: 15 calendar days.

3. All other items: 45 calendar days.

C. Identify each submittal with the following (where applicable):

1. Project title, location, Authority's Project number.

2. Date and revision dates.

3. Names of Contractor, subcontractor and supplier or manufacturer.

4. Identification of product or material.

5. Relation to adjacent structure or material.

6. Field dimensions, clearly identified as such.

7. Blank space for Engineers' stamp.

8. Contractor's stamp, initialed or signed, certifying to review of submittal, verification of field measurements and compliance with Contract Documents.

9. Submittals shall be accompanied by letter of transmittal addressed to Engineer, to parties as identified in letter of instruction to be issued to Contractor at start of project. Letter of transmittal shall be on form provided by Owner or Engineer, or on Contractor's form if it contains the same information.

10. Number each submittal by the Specification Section number followed by a number indicating sequential submittal for that Section.

11. Submittals not adequately identified will be returned to Contractor for correction and resubmittal.

12. Re-submittals shall use same number as original submittal, followed by a letter indicating sequential re-submittal.

13. Identify each element on submittal by reference to Drawing sheet number, detail, schedule, number, assembly or equipment number, Specifications article and paragraph, and other pertinent information to clearly correlate submittal with Contract Drawings.

D. Transmit all submittals through the Project Engineer, unless otherwise directed. Engineer will review submittals for conformance with Contract Documents. Acceptance by Engineer covers only such conformance. Effort will be made by Engineer to discover errors, but responsibility for accuracy and correction and resubmittal shall be the Contractor's.

E. Unless otherwise specifically permitted by the Engineer, make all submittals in groups containing all associated items. The Engineer may reject partial submittals as incomplete or hold them until related submittals are made.

F. Unsolicited submittals will be returned un-reviewed.

G. Each portion of Work requiring submittals shall not be commenced until submittal has been accepted by Engineer. All such portions of Work shall be in accordance with accepted submittals.

H. Contractor shall not be relieved of responsibility for deviation from requirements of Contract Documents by approval of submittal unless Contractor has specifically informed the Engineer in writing of such deviation at time of submittal and the Engineer has given written approval to specific deviation. Review actions by the Engineer and the Engineer's consultants shall not relieve the Contractor from compliance with requirements of the Drawings and Specifications. Changes shall only be authorized by separate written Change Order or Construction Change Authorization, in accordance with the Conditions of the Contract and Specifications.

I. Provide copies as follows; or greater quantity where so specified in individual Specification Section.

1. Contractor Schedule: 3 copies

2. Breakdown of Costs: 5 copies

3. Certification: 3 copies

4. Shop Drawings: Reproducible transparencies - one transparency of each original drawing, and four (4) opaque prints of each transparency.

5. Product Data/Material Lists: 5 copies

6. Samples: As specifically indicated in pertinent Specification Section.

7. Alternatives: 6 copies of all required related data and information.

8. Record Submittals: When record submittals are specified, submit three copies or sets only. Record submittals will not be reviewed but will be retained for historical and maintenance purposes.

PART 2 - PRODUCTS

2.1 CONTRACTOR SCHEDULE

A. Prepare and submit Contractor schedule of operations as required by Section 01 32 05. Relate schedule to entire Project. Indicate dates for submission of required submittals.

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2.2 SUBMITTAL SCHEDULE

A. Prepare Submittal Schedule in a format comparable to and coordinated with Contractor Schedule.

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B. Content: List all items specified to be submitted, indicating submittal number (see instructions above), submittal type (i.e., product data, shop drawings, samples, quality control reports, maintenance and operation data, etc.,), scheduled date of submittal and date review should be complete in order to maintain construction on schedule.

C. Submit initial Submittal Schedule at time of pre-construction meeting. After review and return by Engineer, resubmit Submittal Schedule within 7 days.

2.3 BREAKDOWN OF COSTS

A. Submit breakdown of costs on a form furnished by the Owner. Refer to Section 01 32 05 – Contractor Schedules and Reports, for additional cost breakdown requirements.

2.4 ACTION SUBMITTALS

A. Product Data Submittals

1. Proposed Product List: Submit complete list of major products proposed for use, with name of manufacturer, trade name, and model number for each product.

2. Copies: Submit 5 copies, minimum, of original catalog pages or dry-process copies only, with applicable data highlighted and cross-referenced to Drawings and Specifications requirements.

3. Modifications to Standard Product Data: Modify manufacturer's standard catalog data to indicate precise conditions of the Project. Comply with requirements as for shop drawings. Provide space for review action stamps and, if required by authorities having jurisdiction, license seal of the Engineer and Engineer's responsible design consultant, if applicable.

4. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.

   a. If information must be specially prepared for submittal because standard printed data are not suitable for use, submit as Shop Drawings, not as Product Data.

   b. Mark each copy of each submittal to show which products and options are applicable.

   c. Manufacturer's Standard Schematic Drawings:

      1. Modify drawings to delete information which is not applicable to Project.

      2. Supplement standard information to provide additional information applicable to Project.

   d. Manufacturer's catalog sheets, brochures, diagrams, schedules, performance charts, illustrations and other standard descriptive data. Include the following information, as applicable:

      1. Dimensions and clearances.

      2. Manufacturer's written recommendations.

      3. Manufacturer's product specifications.

      4. Manufacturer's installation instructions.

      5. Manufacturer's catalog cuts.

      6. Wiring diagrams showing factory-installed wiring.

      7. Printed performance curves.

      8. Operational range diagrams.

      9. Mill reports.

      10. Calculations when applicable.

      11. Standard product operation and maintenance manuals.

      12. Compliance with specified referenced standards.

      13. Testing by recognized testing agency.

      14. Application of testing agency labels and seals.

15. Notation of coordination requirements.

e. Submit Product Data before or concurrent with Samples.

f. Number of Copies: Submit five (5) copies, unless otherwise indicated.

B. Shop Drawings Submittals

Copies: Prepare shop drawings on minimum sheet size of 17-inches by 22-inches, or smaller, a multiple of 8-1/2 inches by 11-inches. Submit one reproducible and one print, typically, except as noted in product Specifications Sections.

1. Preparation: Shop drawings shall be original drawings prepared for submittal review, fabrication and execution of Work. Direct copies and modified reproductions of Contract Drawings will not be accepted for review. Provide space for review action stamps and, if required by authorities having jurisdiction, license seal of the Engineer and Engineer's responsible design consultant, if applicable.

2. Coordination: Show all field dimensions and relationships to adjacent or critical features of Work.

3. Shop Drawings: Prepare Project-specific information, drawn accurately to scale.

4. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data, unless submittal of Engineer's CAD Drawings are otherwise permitted.

a. Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:

1. Dimensions.

2. Identification of products.

3. Fabrication and installation drawings.

4. Roughing-in and setting diagrams.

5. Wiring diagrams showing field-installed wiring, including power, signal, and control wiring.

6. Shop work manufacturing instructions.

7. Templates and patterns.

8. Schedules.

9. Design calculations.

10. Compliance with specified standards.

11. Notation of coordination requirements.

12. Notation of dimensions established by field measurement.

13. Relationship to adjoining construction clearly indicated.

14. Seal and signature of professional engineer if specified.

b. Wiring Diagrams: Differentiate between manufacturer-installed and field-installed wiring.

c. Sheet Size: Except for templates, patterns, and similar full-size drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches but no larger than 30 by 40 inches.

d. Number of Copies: One transparency and four (4) opaque reproductions of each submittal. The transparency will be returned to Contractor for his reproduction and use. Owner will make and use prints for its own use.

e. Variations: If shop drawings show variations from Contract requirements because of standard shop practice or other reason, make specific mention of such variations in letter of transmittal, as well as on drawings, in order that (if acceptable) suitable action may be taken for proper adjustment of Contract. Unless specific changes have been noted and accepted, no deviations from Contract Documents will be permitted.

C. Samples Submittals

1. Quantity: Submit minimum of three samples of each of color, texture and pattern. Submit one item only of actual assembly or product. Unless otherwise noted, full-size and complete samples will be returned and may be incorporated into field mock-ups and the Work

.

2. Samples: The Engineer will review and select material for Project only after all materials are received, so that materials may be properly coordinated.

3. Copies: Submit actual samples. Photographic or printed reproductions will not be accepted.

4. Samples: Samples include physical examples which illustrate materials, equipment or workmanship, and which establish standards by which completed work is judged. Submit Samples for review of kind, color, pattern, and texture for a check of these characteristics with other

elements and for a comparison of these characteristics between submittal and actual component as delivered and installed.

a. Transmit Samples that contain multiple, related components such as accessories together in one submittal package.

b. Identification: Attach label on unexposed side of Samples that includes the following:

1. Generic description of Sample.

2. Product name and name of manufacturer.

3. Sample source.

4. Number and title of appropriate Specification Section.

c. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.

1. Samples that may be incorporated into the Work are indicated in individual Specification Sections. Such Samples must be in an undamaged condition at time of use.

2. Samples not incorporated into the Work, or otherwise designated as Owner's property, are the property of Contractor.

d. Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available.

1. Number of Samples: Submit one full set of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Engineer will return submittal with options selected.

e. Samples for Verification: Submit full-size units or Samples of size indicated, prepared from same material to be used for the Work, cured and finished in manner specified, and physically identical with material or product proposed for use, and that show full range of color and texture variations expected. Where size of samples is not specified, office samples shall be of sufficient size and quantity to clearly illustrate functional characteristics of product or material, with integrally related parts and attachment devices.

1. Number of Samples: Submit four sets of Samples, unless otherwise specified in individual specification Section. Engineer will retain one Sample set and return the others.

2. Submit a single Sample where assembly details, workmanship, fabrication techniques, connections, operation, and other similar characteristics are to be demonstrated.

3. If variation in color, pattern, texture, or other characteristic is inherent in material or product represented by a Sample, submit at least three sets of paired units that show approximate limits of variations.

f. Mockups:

a. Erect at project site at location acceptable to Owner unless otherwise approved.

b. Construct each sample or mockup complete, including work of all trades required in finished work.

c. Coordinate submittal of different categories for interfacing work.

d. Include identification on each sample, giving full information.

2.5 INFORMATIONAL SUBMITTALS

A. General: Prepare and submit Informational Submittals required by other Specification Sections.

1. Number of Copies: Submit two copies of each submittal, unless otherwise indicated. Engineer will not return copies.

2. Certificates and Certifications: Provide a notarized statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity.

3. Test and Inspection Reports: Comply with requirements specified in Section 01 46 00 - Testing Laboratory Services, and individual specifications sections.

B. Coordination Drawings: Comply with requirements specified in Section 01 31 00 - Project Management and Coordination.

C. Contractor's Construction Schedule: Comply with requirements specified in Section 01 32 05 – Contractor Schedules and Reports.

D. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, names and addresses of engineers and owners, and other information specified.

E. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements in the Contract Documents. Submit record of Welding Procedure Specification (WPS) and Procedure Qualification Record (PQR) on AWS forms. Include names of firms and personnel certified.

F. Manufacturer Certificates: Prepare written statements on manufacturer's letterhead certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.

G. Installer Certificates: Prepare written statements on manufacturer's letterhead certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.

H. Product or Material Certificates: Prepare written statements on manufacturer's letterhead certifying that product or material complies with requirements in the Contract Documents.

I. Material Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements in the Contract Documents.

J. Product Test Reports: Prepare written reports indicating current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.

K. Research/Evaluation Reports: Prepare written evidence, from a model code organization acceptable to Authorities Having Jurisdiction, that product complies with building code in effect for Project. Include the following information:

1. Name of evaluation organization.

2. Date of evaluation.

3. Time period when report is in effect.

4. Product and manufacturers' names.

5. Description of product.

6. Test procedures and results.

7. Limitations of use.

L. Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed, for compliance with requirements in the Contract Documents.

2.5 OPERATION AND MAINTENANCE DATA SUBMITTALS

A. Operation and Maintenance Data Submittals: See requirements specified in Section 01 78 23- Operation and Maintenance Data. Include operation and maintenance data submittals in Submittals Schedule specified above. Provide space for review action stamps and, if required by governing authorities having jurisdiction, license seal of Engineer and Engineer's design consultant, if applicable.

B. Maintenance Data: Prepare written and graphic instructions and procedures for operation and normal maintenance of products and equipment. Comply with requirements specified in Division 1 and individual specifications sections.

C. Design Data: Prepare written and graphic information, including, but not limited to, performance and design criteria, list of applicable codes and regulations, and calculations. Include list of assumptions and other performance and d e s i g n criteria and a summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations.

D. Manufacturer's Instructions: Prepare written or published information that documents manufacturer's recommendations, guidelines, and procedures for installing or operating a product or equipment. Include name of product and name, address, and telephone number of manufacturer. Include the following, as applicable:

1. Preparation of substrates.

2. Required substrate tolerances.

3. Sequence of installation or erection.

4. Required installation tolerances.

5. Required adjustments.

6. Recommendations for cleaning and protection.

E. Manufacturer's Field Reports: Prepare written information documenting factory-authorized service representative's tests and inspections. Include the following, as applicable:

1. Name, address, and telephone number of factory-authorized service representative making report.

2. Statement on condition of substrates and their acceptability for installation of product.

3. Statement that products at Project site comply with requirements.

4. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.

5. Results of operational and other tests and a statement of whether observed performance complies with requirements.

6. Statement whether conditions, products, and installation will affect warranty.

7. Other required items indicated in individual Specification Sections.

2.7 NOT USED

2.8 QUALITY CONTROL SUBMITTALS

A. Quality Control Submittals, General: Technical data, test reports, calculations, surveys, and certifications based on field tests and inspections by independent testing and inspection agency and Inspector of Record. Quality control submittals shall not be considered Contract Documents.

B. Copies: Submit 5 copies, minimum, of reports of quality control reports, on dry-process xerographic copies only.

C. Administrative Requirements for Submittals: Submittals shall be made by Contractor in accordance with requirements specified herein and in individual Sections.

1. Indicate clearly on each submittal the specified or referenced values or results obtained for each quality control activity and the values obtained are satisfactory.

2. Contractor shall note clearly and sign each submittal certifying that reported quality control activity results "Conforms" or "Does Not Conform".

3. Transmit all submittals to the OCTA Project Engineer unless otherwise directed.

D. Changes and Deviations: Identify all deviations from requirements of Drawings and Specifications. Changes in the Work shall not be authorized by submittals review actions. No review action, implicit or explicit, shall be interpreted to authorized changes in the Work. Changes shall only be authorized by separate written Change Order or Construction Change Directive, in accordance with the Conditions of the Contract and Section 01 23 05 - Contract Modification Procedures.

E. Include quality control submittals on Submittals Schedule specified in Section 01 33 00 Submittals- Shop Drawings, Product Data and Samples.

F. Schedule Content: List all tests, inspections results and reports specified to be submitted, indicating submittal number, submittal type (field test, field inspection, fabrication inspection, etc.), scheduled date of quality control activity and the date report was made.

G. Review by Engineer and Engineer's consultants shall be only for general conformance with the design concept and requirements based on the information presented. Neither Engineer nor Engineer's consultants will validate submitted quality control data.

PART 3 - EXECUTION

3.1 CONTRACTOR'S REVIEW

A. Contractor shall stamp each submittal with a review action stamp and sign each copy certifying that:

1. Field measurements have been determined and verified.

2. Field construction criteria have been verified.

3. Catalog numbers and similar data are correct.

4. Conformance with requirements of Contract Drawings and Specifications is confirmed.

5. All deviations from requirements of Drawings and Specifications have been identified and noted, and product is available.

B. Review submittals and indicate where conflicts occur with Contract Documents and with work of other subcontractors. Review and stamp submittals from subcontractors prior to submitting to the Engineer.

1. Return submittals which vary significantly from Contract Documents for correction and resubmittal prior to submittal to the Engineer.

2. Submittals which vary significantly from Contract Documents and which fail to indicate thorough Contractor review prior to submission will be returned without review.

3. Cursory review and stamping of subcontractor submittal by Contractor shall not be acceptable. Prior to submission to the Engineer for review, Contractor shall review each submittal for completeness and conformance to specified requirements.

4. Review, approve and submit submittals required by Contract Documents with reasonable promptness and so as to cause no delay in Work or in activities of the Engineer or of separate contractors.

5. Submit shop drawings for each specification section at the same time to facilitate coordination of related items.

   a. Submit all formwork shop drawings at the same time.

   b. Submit reinforcing steel and stressing tendons shop drawings for each floor at the same time.

6. Submittals made by Contractor which are not required by Contract Documents may be returned without action.

7. Submittal represents Contractor has determined and verified materials, field measurements and field construction criteria, and has checked and coordinated information with requirements of Work and of Contract Documents.

C. Changes in Work: Changes in the Work shall not be authorized by submittals review actions. No review action, implicit or explicit, shall be interpreted to authorized changes in the Work. Changes shall only be authorized by separate written direction, in accordance with the Conditions of the Contract and Section 01235 - Contract Modification Procedures.

3.2 ENGINEER'S ACTION

A. The Engineer will review submittals reasonably promptly so as to avoid delay, and will review only for conformance with design concepts of Project. Effort will be made by the Engineer to discover errors but responsibility for accuracy shall be the Contractor's.

1. In general, allow minimum fifteen work days for review of complete submittals; review period will not commence until complete submittal is received by the Engineer.

   a. Allow time for potential rejection and resubmittal.

   b. If additional data or resubmittals for review are required, the additional time required to prepare and review such data shall be considered to be part of the specified contract duration.

2. Multiple and complex submittals may require additional review time; there shall be no change to the Contract Time or to Contract Amount when such additional review time is required.

3. Review of a separate item shall not indicate acceptance of an assembly in which item functions.

B. The Engineers' comments and required actions by the Contractor will be indicated by notation on the shop drawings and vendor data submittals or by inclusion in the letter of transmittal. The comments of the Engineer will generally be categorized as follows:

1. "NO EXCEPTION TAKEN": Submittals so noted will generally be categorized as drawings and data which appear to be satisfactory without corrections. "No Exception Taken" indicates acceptance subject to its compatibility with future submittals and additional partial submittals for portions of the work not covered in this submittal. Fabrication, manufacture, or construction may proceed provided it complies with the Contract Documents.

2. "MAKE CORRECTIONS NOTED": This category will cover drawings and vendor data which, with the corrections noted or marked on the submittal, appear to be satisfactory and require no further review by the Engineer prior to construction. Revised shop drawings reflecting corrections shall be provided upon request.

3. "REVISE AND RESUBMIT": Rejected because of inconsistencies or errors which shall be resolved or corrected by the Contractor prior to subsequent review by the Engineer. No work shall be fabricated, manufactured or constructed. Submittals so noted will require a corrected resubmittal for one or more of the following reasons:

   a. Drawings and vendor data require corrections, as noted, prior to final review.

   b. Drawings and vendor data are incomplete and require more detailed information prior to final review.

   c. Drawings and vendor data do not meet the specifications.

4. "REJECTED": Submittals so noted do not conform to the Contract Documents and shall not be used for this project.

5. "SUBMIT SPECIFIED ITEM": Submittals so noted cover specific drawings and vendor materials for which there are insufficient data to complete the review. Items so noted shall be submitted for further review.

C. One marked reproducible copy of the shop drawings and vendor data will be returned to the Contractor with appropriate stamps and notations. The Contractor shall, when directed, make indicated changes and corrections, promptly resubmitting the original number of copies as many times as required to obtain acceptance.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

SECTION 01 35 15

MAINTENANCE AND PROTECTION OF RAILROAD TRAFFIC

PART 1 - GENERAL

A. SUMMARY

This section sets forth the procedures for Contractor work on or near track structures

1.2 WORK ON TRACK AND TRACK STRUCTURE

A. The Contractor's work on the track structure prior to returning the track to full service, shall be protected by speed restrictions for train traffic consistent with the direction of the Authority, who will interpret the current issue of the SCRRA "Track Maintenance and Engineering Instructions," and the Track Safety Standards of the FRA. The Contractor shall comply with the SCRRA interpretation of all requirements relating to work on track and track structures.

1. In order to minimize impacts to the SCRRA quality of passenger service, the Work will be arranged so that there are not more than two locations with speed restrictions due to the Contractor's work at any time on any passenger route, and the cumulative amount of such delay is not to exceed 4 minutes per train at any time for each passenger route. Such speed restrictions are to be computed compared to the speeds contained in the latest effective SCRRA Timetable.

2. If the number of locations with speed restrictions or the amount of delay exceeds these limits, the Authority will prohibit the Contractor from beginning any additional Work. The Contractor will not be entitled to any payment for failure to obtain access to the track for Work on occasions when the Authority denies new Work locations due to excessive speed restrictions at existing Work locations

B. WORK ADJACENT TO LIVE TRACK

A. Safety and Delay of Trains

1. The Work shall be coordinated so that there will be no delay to trains, or interference in any manner with the operation of trains. If it is impossible to perform the Work in such a manner, the Authority must approve an alternate method before starting the Work.

2. Only as permitted by the Authority's Operating Dept. will the Authority allow the Contractor to take more than one adjacent mainline or controlled siding track out of service.

B. The Contractor shall abide by the instructions of the Authority, its authorized inspectors, EICs, watchmen, and other designated Authority work forces. Returning the track to service after the Contractor's work near an operating railroad track, during construction on an interim basis only, shall be the sole responsibility of the Authority at the end of the work window.

C. If damage is sustained by any of the existing or new communications or signal equipment, underground or aboveground, as a result of the Contractor's operations, whether the damage sustained was intentional or not, the Contractor shall be liable for the following incurred costs:
   1. Replacement of the damaged equipment
   2. Any necessary inspection and testing of the system, before and after replacement of the damaged equipment
   3. Any other costs incurred as a direct, or indirect, result of disruption to normal train operations

D. If the location of underground signal equipment interferes with the work, refer to Section 01 14 16, Coordination with SCRRA, for coordination requirements.

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PART 2 – PRODUCTS (Not used)

PART 3 – EXECUTION (Not used)

PART 4 - MEASUREMENT AND PAYMENT

Work of this Section is considered incidental to Work under other payment items and no separate measurement or payment will be made to the Contractor for Work of this Section.

END OF SECTION

SECTION 01 40 00

QUALITY CONTROL

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Regulatory requirements for testing and inspection.

B. Contractor's quality control.

C. Quality of the Work.

D. Inspector of Record.

E. Inspections and tests by authorities having jurisdiction.

F. Inspections and tests by serving utilities.

G. Inspections and tests by manufacturer's representatives.

H. Inspections by independent testing and inspection agency.

1.2 RELATED SECTIONS

A. Section 01 31 00 - Coordination: Coordination of Work under Contract.

B. Section 01 33 00 - Quality Control Submittals: Administrative requirements for submittals reporting results of tests and inspections during field work.

C. Section 01 60 00 - Product Requirements: Product options, substitutions, transportation and handling requirements, storage and protection requirements, and system completeness requirements.

1.3 REFERENCES

A. ASTM D3740 - Practice for Evaluation of Agencies Engaged in Testing and/or Inspection Used in Engineering Design and Construction.

1.4 REGULATORY REQUIREMENTS FOR TESTING AND INSPECTION

A. Regulatory Requirements for Testing and Inspection: Inspections, testing and approvals as required by authorities having jurisdiction. Refer to Section 01 6 0 00 - Product Requirements.

1. California Code of Regulations (CCR) - Title 24, State Building Code (Uniform Building Code with State of California Amendments), latest edition, as adopted and interpreted by authorities having jurisdiction.

2. California Code of Regulations (CCR) - Title 22, Sections 94065, 94067 and 94069.

1.5 CONTRACTOR'S QUALITY CONTROL

A. Contractor's Quality Control: Contractor shall ensure that products, services, workmanship and site conditions comply with requirements of the Drawings and Specifications by coordinating, supervising, testing and inspecting the Work and by utilizing only suitably qualified personnel.

B. Quality Requirements: Work shall be accomplished in accordance with quality requirements of the Drawings and Specifications, including, by reference, all Codes, laws, rules, regulations and standards. When no quality basis is prescribed, the quality shall be in accordance with the best accepted practices of the construction industry for the locale of the Project, for projects of this type.

C. Quality Control Personnel: Contractor shall employ and assign knowledgeable and skilled personnel as necessary to perform quality control functions to ensure that the Work is provided as required.

1.6 QUALITY OF THE WORK

A. Quality of Products: Unless otherwise indicated or specified, all products shall be new, free of defects and fit for the intended use.

B. Quality of Installation: All Work shall be produced plumb, level, square and true, or true to indicated angle, and with proper alignment and relationship between the various elements. New material shall be installed so that drainage merges with existing flow patterns on the site towards the drains.

C. Protection of Existing and Completed Work: Take all measures necessary to preserve and protect existing and completed Work free from damage, deterioration, soiling and staining, until Acceptance by the Authority.

D. Standards and Code Compliance and Manufacturer's Instructions and Recommendations: Unless more stringent requirements are indicated or specified, comply with manufacturer's instructions and recommendations, reference standards and building code research report requirements in preparing, fabricating, erecting, installing, applying, connecting and finishing Work.

E. Deviations from Standards and Code Compliance and Manufacturer's Instructions and Recommendations: Document and explain all deviations from reference standards and building code research report requirements and manufacturer's product installation instructions and recommendations, including acknowledgement by the manufacturer that such deviations are acceptable and appropriate for the Project.

F. Verification of Quality: Work shall be subject to verification of quality by the Authority or Engineer in accordance with provisions of the Conditions of the Contract.

1. Contractor shall cooperate by making Work available for inspection by the Authority or Engineer or their designated representative.

2. Such verification may include mill, plant, shop, or field inspection as required. OCTA designated Inspector shall access to material inspection.

3. Provide access to all parts of the Work, including plants where materials or equipment are manufactured or fabricated.

4. Provide all information and assistance as required, including that by and from subcontractors, fabricators, materials suppliers and manufacturers, for verification of quality by the Authority or Engineer.

5. Contract modifications, if any, resulting from such verification activities shall be governed by applicable provisions in the Conditions of the Contract.

G. Observations by the Engineer and Engineer's Consultants: Periodic and occasional observations of Work in progress may be made by the Engineer and Engineer's consultants as deemed necessary to review progress of Work and general conformance with design intent.

H. Limitations on Inspection, Test and Observations: Neither employment of an Inspector of Record, independent testing and inspection agency, or observations by the Engineer and Engineer's consultants shall in no way relieve Contractor of obligation to perform Work in full conformance to all requirements of Contract Documents and applicable Building Code and other regulatory requirements.

I. The Engineer's Acceptance and Rejection of Work: The Engineer reserves the right to reject all Work not in conformance to the requirements of the Drawings and Specifications.

J. Correction of Non-Conforming Work: Non-conforming Work shall be modified, replaced, repaired or redone by the Contractor at no change in Contract Sum or Contract Time.

K. Acceptance of Non-Conforming Work: Acceptance of non-conforming Work, without specific written acknowledgement and approval of the Authority, shall not relieve the Contractor of the obligation to correct such Work.

L. Contract Adjustment for Non-conforming Work: Should the Authority or Engineer determine that it is not feasible or in Authority's interest to require non-conforming Work to be repaired or replaced, an equitable reduction in Contract Sum shall be made by agreement between the Authority and Contractor. If equitable amount cannot be agreed upon, a Construction Change Directive will be issued and the amount in dispute resolved in accordance with the Conditions of the Contract.

M. Non-Responsibility for Non-Conforming Work: The Engineer and the Engineer's consultants disclaim any and all responsibility for Work produced not in conformance with the Drawings and Specifications.

1.7 INSPECTIONS AND TESTS BY AUTHORITIES HAVING JURISDICTION

A. Inspections and Tests by Authorities Having Jurisdiction: Contractor shall cause all tests and inspections required by authorities having jurisdiction to be made for Work under this Contract, Public Works Department, Fire Department, Health Department, AQMD, SCE and similar agencies. Except as specifically noted, scheduling, conducting and paying for such inspections shall be solely the Contractor's responsibility.

1.8 INSPECTIONS AND TESTS BY SERVING UTILITIES

A. Inspections and Tests by Serving Utilities: Contractor shall cause all tests and inspections required by serving utilities to be made for Work under this Contract. Scheduling, conducting and paying for such inspections shall be solely the Contractor's responsibility.

1.9 INSPECTIONS AND TESTS BY MANUFACTURER'S REPRESENTATIVES

A. Inspections and Tests by Manufacturer's Representatives: Contractor shall cause all tests and inspections specified to be conducted by materials or systems manufacturers to be made. Additionally, all tests and inspections required by materials or systems manufacturers as conditions of warranty or certification of Work shall be made, the cost of which shall be included in the Contract Sum.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

PART 4 - MEASUREMENT AND PAYMENT

Work of this Section is considered incidental to Work under other payment items and no separate measurement or payment will be made to the Contractor for Work of this Section.

END OF SECTION

SECTION 01 46 00

TESTING LABORATORY SERVICES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes: Requirements for testing laboratory services.

B. Related Requirements:

1. Testing and adjustment by Contractor of products that are required for installation and operation: Check all Sections.

1.2 GENERAL

A. Concept: Contractor shall retain, at their expense, the services of one or more Independent Testing Laboratories to perform specified testing.

1. Scope of Services: As specified herein.

2. Employment of a laboratory shall in no way relieve the Contractor's obligations to perform the Work.

1.3 QUALITY ASSURANCE

A. Laboratory Qualifications:

1. Standards:

a. "Recommended Requirements for Independent Laboratory Qualification," published by American Council of Independent Laboratories.

b. ASTM E329, "Agencies Engaged in the Testing and/or Inspection of Materials Used in Construction."

2. Licensing: Authorized to operate in the State in which the Project is located.

3. Verification: Submit copy of facilities inspection report made by National Bureau of Standards' Reference Laboratory during the most recent tour of inspection, with memorandum of remedies of any deficiencies reported by inspection.

4. Testing Equipment: Calibrated at reasonable intervals by devices of accuracy traceable to either:

a. National Bureau of Standards.

b. Accepted values of natural physical constants.

5. Personnel: Trained and highly experienced in the work to be inspected.

B. Reference Standards: Reference Standards apply to this Section and shall be the most current editions of the following:

1. Unless otherwise specified, or if not specifically designated, comply with applicable procedures and requirements of ASTM International (ASTM).

1.4 GENERAL LABORATORY DUTIES

A. Coordination: Cooperate with the Engineer and Contractor; provide qualified personnel after due notice from Owner, or his representative.

B. Execution: Perform specified inspections, sampling and testing of materials and verification of methods of construction.

1. Comply with specified standards.

2. Ascertain compliance of materials with requirements of Contract Documents.

C. General Reporting: Promptly submit written report of each test and inspection; one copy of each to Engineer, Project Structural Engineer, local building department if required, and Contractor. Each report shall include:

1. Date issued.

2. Project title and number.

3. Testing laboratory name, address and telephone number.

4. Name and signature of laboratory inspector.

5. Date and time of sampling or inspection.

6. Record of temperature and weather conditions.

7. Date of test.

8. Identification of product and specification section.

9. Location of sample or test in the Project.

10. Type of inspection or test.

11. Results of test and compliance with Contract Documents.

12. Interpretation of test results, when requested by Engineer.

D. Deficiencies: Promptly notify Engineer, Structural Engineer and Contractor of observed irregularities or deficiencies of Work or products.

E. Summary Report: Furnish, for each portion of Work inspected, a report stating the completed Work conforms with the Contract Documents.

F. Limitations: Laboratory is not authorized to:

1. Release, revoke, alter or enlarge on requirements of Contract Documents.

2. Approve or accept any portion of the Work.

3. Perform any duties of the Contractor.

1.5 TESTS AND INSPECTIONS BY TESTING LABORATORY

A. Earthwork: Perform tests and inspections as specified in Earthwork Section and as follows. Inspect excavation, backfill and compaction operations including, but not necessarily limited to, the following:

1. Foundation Excavations: Inspect prior to placement of reinforcing steel.

a. Foundation Drains: If used, inspect placement prior to backfilling.

b. Excavated Surfaces: Inspect prior to fill placement.

c. Backfilling: Observe placement and compaction of all fill and backfill.

1) Determine criteria for backfilling moisture content and compaction densities.

2) Examine and test samples of proposed fill and backfill materials.

3) Inspect compacted fills and backfill.

4) Make compaction tests and such other tests as are necessary and submit report certifying the compaction and compatibility of earth fill.

d. Porous Fill: Observe placement and compaction of rock base.

1) Examine and test samples of proposed materials.

2) Inspect compacted base prior to placement of paving.

3) Make compaction tests and such other tests as are necessary and submit report certifying the compaction of rock base.

B. Reinforcing Steel: Perform inspections as specified in Section 03 21 00 - Concrete Reinforcement.

C. Cast-in-Place Concrete: Perform tests and inspections as specified in Section 03 31 00 - Structural Concrete.

D. Structural Steel: Perform tests and inspections as specified in Section 05 12 23 - Structural Steel.

1.6 CONTRACTOR'S RESPONSIBILITIES

A. Required Tests and Inspections: Arrange and pay for all tests and inspections required by laws, ordinances, rules, regulations, orders, etc. of Governing Authorities that are not specified to be performed by the Owner's Independent Testing Laboratory, including, but not necessarily limited to, those required by the 2007 California Building Code, Chapter 17 - "Structural Tests and Special Inspections".

B. General: Cooperate with Governing Authorities and Laboratory personnel, provide access to Work and manufacturing operations.

1. Coordination: Ensure that parts of the work required to remain visible for tests and inspections remain uncovered, and that construction operations that would interfere with testing and inspection are delayed, until testing and inspection are complete.

2. Covered Work: Uncover as required.

C. Samples: Secure and deliver to the laboratory adequate quantities of representational samples of materials proposed to be used and which require testing.

D. Design Mixes: Furnish to the laboratory the preliminary design mix proposed to be used for concrete and other materials which require control by the Laboratory.

E. Manufacturer's Test Reports and Certifications: Furnish copies to laboratory when required.

F. Furnish incidental labor and facilities:

1. To provide access to Work to be tested.

2. To obtain and handle samples at the Project site or at the source of the product to be tested.

3. To facilitate inspections and tests.

4. For storage and curing of test samples done at the project site.

G. Schedule: Provide schedule of construction to laboratory; update as required. Allow within the construction schedule the time required for the laboratory to perform tests and issue findings. Coordinate revisions to the construction schedule with the laboratory.

H. Advance Notification: Notify the Testing Laboratory, Engineer and Structural Engineer sufficiently in advance of operations, 72 hours minimum, to allow for assignment of personnel and scheduling of tests.

1. Compensation: When tests or inspections cannot be performed after such notice, Contractor will reimburse Owner for laboratory personnel and travel expenses incurred due to Contractor's negligence.

I. Contractor's Testing: Employ and pay for the services of a separate, equally qualified, independent testing laboratory to perform additional inspections, sampling and testing that may be required for the Contractor's convenience.

J. Change of Source: Pay for costs of additional inspections and tests when sources of supply are changed by Contractor.

1. Submittals: Resubmit required mix designs, certifications, etc.

1.7 ADDITIONAL TESTING AND INSPECTION

A. Failure of Initial Tests: If initial inspection or testing reveals a failure of the Work to comply with the Contract Documents, the Contractor shall bear all costs for any required retesting or reinspection, including reimbursement to Owner for Engineer's additional services made necessary by such failure.

B. Other Additional Testing: If the Engineer determines that any Work requires additional inspection, testing or approval, he will, upon written authorization from the Owner, direct the Contractor to order such inspection, testing or approval.

1. Failure: If additional inspection, testing or approval reveals a failure of the Work to comply with the Contract Documents, the Contractor shall bear all costs, including reimbursement to the Owner for Engineer's additional services made necessary by such failure.

2. Compliance: If additional inspection, testing or approval indicates that the Work complies with the Contract Documents, the Owner shall bear all costs, and an appropriate Change Order shall be issued.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

PART 4 - MEASUREMENT AND PAYMENT

Work of this Section is considered incidental to Work under other payment items and no separate measurement or payment will be made to the Contractor for Work of this Section.

END OF SECTION

SECTION 01 50 00

TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes: This section describes temporary construction facilities and temporary controls, including the following:

1. Temporary water
2. Temporary electricity
3. Temporary heating, ventilating, and air conditioning
4. Field offices and sheds
5. Sanitary facilities
6. Construction aids
7. Vehicular Access and Parking
8. Temporary barriers and enclosures
9. Temporary controls
10. Project identification

B. Contact governing authorities to establish extent of temporary facilities and temporary controls required by authorities.

C. Provide temporary construction facilities and temporary controls as required to conform with applicable authorities and as required to complete Project in accordance with Contract Documents.

1. Temporary facilities shall be approved by the Owner and other authorities having legal jurisdiction.
2. Locate facilities where and as directed and maintain in safe and sanitary condition at all times until completion of Work.

1.2 TEMPORARY UTILITIES

A. Temporary Water: Contractor shall arrange and pay costs for water required for construction purposes.

1. Contractor shall furnish and install piping or hose to carry water to every point where needed on Project. All water used on Project shall be potable.

B. Temporary Electricity:

1. Provide and maintain temporary electrical power and wiring requirements to facilitate work of trades and services connected with Project.

2. Make application for electric service, arrange for metering, and pay all costs including electric energy used in temporary and permanent electrical facilities until acceptance of Project by the Owner.

3. Provide adequate temporary lighting for work as required including bright lighting where required to perform quality work.

4. Temporary wiring and electrical facilities shall be in accordance with applicable provisions of OSHA and Electrical Safety Orders of State of California.

1.3 CONSTRUCTION FACILITIES

A. Field Office for Owner's Construction Manager is not required.

1.4 CONSTRUCTION AIDS

A. Construction Elevators, Hoists, and Cranes: Erect, equip, operate, and maintain construction equipment in accordance with applicable status, laws, ordinances, rules, and regulations of authorities having jurisdiction.

B. Scaffolding: Provide and maintain scaffolding, staging, runways, and platforms, as needed.

1.5 VEHICULAR ACCESS AND PARKING

A. Entrances to Work Site: Contractor and Contractor's employees shall use existing parking lots, areas or sites for access to the site or as directed by the Owner.

1. Maintain these roads in satisfactory condition during Contract time, and repair damages attributable to work of this Project at intervals as needed.

2. At completion of Contract, roads and entrance ways shall be left in condition at least equal to that existing at start of Contract, except as may be otherwise required by Contract Documents.

3. Parking will not be allowed on any existing Metrolink parking lot.

1.6 TEMPORARY BARRIERS AND ENCLOSURES

A. Barriers: Provide as required to prevent public entry to construction areas, to protect adjacent properties from damage from construction operations, and to protect person from construction operation.

1. Covered Walkways: Provide lighted covered painted wood walkways if required by governing authorities for public rights-of-way.
2. Maintain access and connection to train platform and underpass for the public throughout construction.

B. Barricades: Provide as required by Governing Authorities.

1. Refer to requirements of 2007 California Building Code.

2. Attention is also directed to Safety Orders issued by State of California, Divisions of Industrial Safety. Contractor shall obtain copies of such Safety Orders as are applicable to type of work to be performed, and shall be governed by those requirements in construction operation.

3. Fully inform each subcontractor and material supplier as to requirements of applicable Safety Orders.

C. Tree and Plant Protection: Provide barriers around trees and plants. Protect against vehicular traffic, stored materials, dumping, chemically injurious materials, and puddling or continuous running water.

D. Temporary Enclosures:

1. Provide temporary weather-tight closures for exterior openings to maintain acceptable workable conditions, for protection for materials, for temporary heating, and to prevent entry of unauthorized persons.

2. Provide enclosures with doors having self-closing hardware and locks.

E. Security Measures: Contractor is responsible for security of site during entire time of Contract.

1. Make good damages to work and loss of materials due to vandalism or theft, within this responsibility.

1.7 TEMPORARY CONTROLS

A. Dewatering Excavations: Provide and operate drainage and pumping equipment; maintain excavations and site free of standing water. Do not use foundation excavation for drainage.

1. Divert water from excavations insofar as is practicable. Do not use footing excavations for drainage trenches. Remove water from excavations by pumping.

2. Provide pumps, well points, piping, and hoses or a combination of these, as may be required, to keep excavations dry and to carry the water off the site.

3. Continue de-watering operations until concrete and backfill are placed.

4. No debris, soil, silt, sand, rubbish, oil, cement washing, etc., shall be allowed to enter into or placed so that it may be washed by rainfall or runoff into storm drains or surface drains in sufficient quantities to cause damage to or have deleterious effect upon the drainage system, or to fish or wildlife at the site, adjacent areas, or streams to which the drainage system is a tributary.

B. Noise, Dust and Pollution Control:

1. Provide materials and equipment necessary to comply with local requirements for noise, dust and pollution control.

2. Use water wagons or spray from hoses to control dust created by work operations in areas on Owner property during entire period of this Contract as directed by Owner.

3. Satisfactorily control dust created by operations on property used, other than Owner property, to satisfaction of all concerned.

C. Fire Protection: Maintain on-site fire protection facilities as required by applicable authorities and insurance requirements.

D. Protection of Existing Utilities: Protect existing utility lines from damage which are not specified to be altered by Work of the Contract.

1. Repair or replace utilities damaged to condition equal to that existing prior to commencing Work of Contract.

1.8 PROJECT IDENTIFICATION

A. Provide and maintain Project sign at location approved by the Owner.

B. Project Sign: Provide a 4 feet by 8 feet project identification sign of wood frame and exterior grade plywood construction, painted with exhibit lettering by professional sign painter.

1. Information and Design: Provide proposed design to Owner for approval.

2. List title of Project, names of Owner, professional consultant, and Contractor.

C. Erect sign within 15 calendar days after Notice to Proceed. Sign will remain property of Contractor and shall be removed upon completion of Work.

D. No other signs or advertising will be permitted, except that Contractor's name may be placed on his field office.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

PART 4 - MEASUREMENT AND PAYMENT

Work of this Section is considered incidental to Work under other payment items and no separate measurement or payment will be made to the Contractor for Work of this Section.

END OF SECTION

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SECTION 01 55 26

MAINTENANCE AND PROTECTION OF TRAFFIC

PART 1 - GENERAL

1.1 SUMMARY

This Section specifies provisions for the Contractor furnishing, erecting and maintaining temporary barricades, changeable message signs, signs, flaggers, lights, road surfaces, pavement markings for detours, object markers and other safeguards necessary to protect the safety of the public during performance of the Project Work.

1.2 REFERENCE STANDARDS

A. The Contractor shall comply with provisions of the most recent edition, including all addenda, of the following codes, specifications, standards, and recommenced practices, except as otherwise indicated:

1. CPUC -California Public Utilities Commission General Orders

2. CAL TRANS -State of California Department of Transportation May 2006 Standard Specifications and Standard Plans

3. CAMUTCD -California Manual on Uniform Traffic Control Devices

4. SSPWC -Standard Specifications for Public Works Construction of the Joint Cooperative Committee

5. WATCH -Work Area Traffic Control Handbook, latest edition

1.3 SUBMITTALS

The Contractor shall comply with Local Agency Requirements including the preparation of all traffic control plans, any advance message signs required by the local agencies. The Contractor shall coordinate approval for the traffic control plans, and obtain the traffic control and encroachment permits, and pay all fees. The temporary warning devices shall be designed to minimize the inconvenience to the general public and shall comply with the regulations of the agencies having jurisdiction.

1.4 PROCEDURAL REQUIREMENTS

A. The Contractor shall furnish construction signs, barricades, delineators, warning lights, CMS messages in advance of and during construction and all other devices used to implement the plan shall comply with California Manual on Uniform Traffic Control Devices or WATCH Manual latest edition, and local agency permit requirements. Providing all temporary warning devices in the incorporated areas of the project, as necessary, to convey traffic through the Project and as required by the permits.

B. Flashing yellow beacons shall be used on all W20-1 signs and all Type II barricades guarding the work area overnight.

C. The Contractor shall have all signs, delineators, barricades, and other devices properly installed prior to commencing construction. All signs shall be reflectorized and standard size. All delineators shall be 28" minimum portable, reflectorized and maintained erect in indicated position at all times, and shall be repaired, or cleaned as necessary to preserve their appearance and continuity.

D. Additional traffic controls, signs, delineators or barricades may be required in the field. The Contractor shall be responsible for the placement of any additional devices necessary to assure safety to the public at all times during construction.

1.5 DETOUR COORDINATION AND APPROVAL

Detour: In no case shall traffic be diverted from the existing traveled way without prior approval of the Authority and appropriate municipalities and local agencies. The following representatives/agencies shall be notified 48 hours in advance of any detour or construction activities:

City/Field Engineer
Traffic Engineer
Police Department (give location and duration)
Fire Department
Transit Buses

Detour striping will not be permitted on any finish course of asphalt concrete pavement.

PART 2 - PRODUCTS

A. All striping and marking shall conform to Section 310-5.6 of the Standard Specifications for Public Works Construction. Temporary removable striping tape (detour grade) may be used in lieu of painted striping.

PART 3 - EXECUTION

A. All traffic control devices shall be installed in accordance with Caltrans' Standard Specifications and WATCH, Standard Plans; and CAMUTCD. In addition to work included above, the Contractor shall furnish and install guide markers and delineators at the locations indicated on the Contract Documents and where directed by the Authority.

B. The Contractor shall provide for access to all adjacent properties during working hours. Construction operations shall be conducted in such a manner as to cause as little inconvenience as possible to abutting property owners/operators. The Contractor shall provide access to pedestrian all times. Construction operations shall be conducted in such a manner as to cause as little inconvenience as possible to pedestrian. Pedestrian shall be protected as required by CAMUTCD, Part 6D-1 or WATCH Manual Latest Edition, Section 11.

C. The Contractor shall maintain on a 24-hour basis all signs, delineators, barricades, etc., to ensure proper flow and safety of traffic, the cost of which shall be incidental to the project and no additional compensation shall be allowed.

PART 4 - MEASUREMENT AND PAYMENT

Work of this Section is considered incidental to Work under other payment items and no separate measurement or payment will be made to the Contractor for Work of this Section.

END OF SECTION

SECTION 01 57 19

TEMPORARY ENVIRONMENTAL CONTROLS

PART 1 - GENERAL

1.1 SUMMARY

The Work specified in this Section consists of eliminating or minimizing air, water, and noise pollution generated by construction activities, and of complying with all legal requirements applicable to any construction generated hazardous wastes, including preparation and implementation of waste and wastewater management plans.

1.2 REGULATIONS

The Contractor shall comply with all pertinent regulations including the following:

A. State of California requirements relating to Air Resources Board (CARB), Code of Regulations (CCR), Health and Safety Code (CHSC), Regional Water Quality Control Board, and the Water Resources Control Board (SWRCB)

B. Federal Code of Federal Regulations (CFR)

C. U.S. Environmental Protection Agency (EPA), National Pollutant Discharge Elimination system (NPDES)

D. The Federal Occupational Safety and Health Act (OSHA) and the California Occupational Safety and Health Act (CAL/OSHA)

E. South Coast Air Quality Management District (SCAQMD)

1.3 SUBMITTALS

The Contractor shall prepare and submit the following:

A. Certificates that materials provided comply with Standard Specifications for Public Works Construction.

B. The Contractor Generated Waste Management Plan - Required within 30 calendar days after the effective date of the Limited Notice to Proceed (LNTP) with required documents to properly govern the Contractor Generated Hazardous Wastes in accordance with Title 22, Division 4.5, CCR, and all other applicable laws and regulations. The Authority or its designee will have the right to review, modify, and approve this Waste Management Plan, and to provide quality assurance/quality control monitoring on the Contractor's implementation of this Plan.

C. Stormwater Pollution Prevention Plan (SWPPP) as required under the Clean Water Act and related federal and state laws and regulations: Required within 30 calendar days of effective date of LNTP.

D. Wastewater Management Plan - within 30 calendar days of the effective date of LNTP, the Contractor shall prepare and submit a Wastewater Management Plan for the project to the Authority for review and approval prior to beginning any

work on the project site. The Plan shall be prepared consistent with the provisions of the National Pollution Discharge Elimination System (NPDES) General Permit No. CAS000002 for Waste Discharge Requirements for Discharges of Storm Water Runoff Associated with Construction Activity adopted by the State Water Resources Control Board on August 20, 1992, as Order No. 92-08-DWQ. Submit monthly reports of daily monitoring wastewater discharges as specified in Paragraph 3.5.B. The Contractor shall identify in the Plan the specific Best Management Practices (BMP's) it proposes to use in connection with the execution of construction activity at the subject site. The Contractor shall use the applicable BMP's included in the California Storm Water Best Management Practice Handbook for Construction Activity, March 1993 prepared by the California State Water Resources Control Board.

E. The Contractor shall prepare permit applications and obtain permits not provided by Authority as necessary for performance of the Work under this Contract including, but not limited to

1. Maintenance and protection of vehicle traffic.
2. Excavation, dewatering and discharge of water and runoff into existing drainage systems or surface waters.
3. Disposal of debris and soils.
4. All other activities with potential to adversely affect the environment.
5. Written permission from the property owner for right-of-entry work that requires entering private property.
6. Submit copies of permit applications and permits to the Authority.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 AIR POLLUTION CONTROLS

A. The Contractor shall comply with all requirements for controlling fugitive dust including specific impact mitigation measures contained in the latest version of the South Coast Air Quality Management District (SCAQMD) Rules and Regulations that include minimum procedures and techniques:

1. Cover loads of materials, debris, and soil transported from construction sites. Trim or remove loose material from loads before leaving the Project. Do not cause or allow emissions of fugitive dust to remain visible in atmosphere beyond the property line of the emission source.
2. Daily or more frequently, if necessary, water down and sweep adjacent streets and sidewalks that have heavy volumes of construction vehicles carrying debris and excavated materials.
3. Establish regular cycles and locations for cleaning trucks that haul soil from site.

4. Comply with dust control requirements identified in Section 01 50 00, Temporary Facilities and Controls and water down construction sites as required for suppressing dust, during handling of excavation soil or debris, or during demolition.

5. If conveyors are used, cover all transfer points along the conveyor system that is moving soil. Minimize the drop height to the stockpile. Provide a sprinkler system that will apply water to soil before it drops to stockpile.

6. Any adapted measures developed by SCAQMD on Best Available Control Measures (BACM) for Fugitive Dust and Rule 403 will be incorporated into the site operations for Fugitive Dust Control.

B. Burning of wastes is prohibited. Remove scrap and waste material and dispose of it in accordance with laws, codes, regulations, ordinances and permits.

C. Use construction equipment designed and equipped to prevent or control air pollution in conformance with the most restrictive regulations of the EPA, state, and local authorities. Maintain evidence of such design and equipment and make it available for inspection by the Authority or its designee.

D. Establish and maintain records of the routine maintenance program for internal combustion engine powered vehicles and equipment used on the Project. Keep records available for inspection by the Authority, or its designee.

E. During excavation, gases may be released from soil and from underground reservoirs. Gases may contain methane, other more complex hydrocarbons, or hydrogen sulfide, and may present hazards due to flammability or toxicity. Safety during construction is required by regulations of OSHA and CAL/OSHA. Although the composition, quantity, and concentration of gases that might be released are unknown, release of gases into the atmosphere may be subject to control by SCAQMD and the California Air Resources Board (CARB). The Authority will coordinate this issue with SCAQMD and CARB and will inform the Contractor of further required actions.

F. In accordance with all regulations, perform a survey for asbestos containing materials and notify regulatory agencies including SCAQMD prior to renovation or demolition of any facility. Notify regulatory agencies prior to commencing Work on bridges or structures. Provide a copy of all notices to the Authority.

G. Prevent or immediately remove “track-out” of material or dust onto public paved roadways. Daily or more frequently, if necessary, water down and sweep streets, which have construction vehicles carrying debris and excavated materials and adjacent sidewalks to remove deposited materials.

3.2 WATER POLLUTION CONTROLS

A. The Authority retains the sole right to determine whether discharged wastewaters will be discharged to the sanitary or the storm drain system. The Contractor shall treat wastewater, including storm runoff that is pumped from excavations and other water encountered during operations; remove suspended particles, pollutants, and hydrocarbons through settling basins or hydrocarbon separators in order to comply with Authority direction and regulatory criteria for pollutants in water set by state and local water agencies.

B. The Contractor shall monitor wastewater discharge to ensure it meets standards set by appropriate laws, codes, regulations, ordinances and permits. Retain records of measurements for inspection by the Authority or its designee. Perform daily monitoring of wastewater discharges and record daily discharged quantities according to NPDES permit guidelines. Submit certified monthly reports not later than seven days after the end of the month.

C. The Contractor is responsible for preventing or mitigating potential chemical releases, erosion and sedimentation impacts associated with storm water runoff.

D. The Contractor shall provide copies of the approved Wastewater Management Plan to its Subcontractors and shall keep a copy available onsite at the project office. The Contractor shall provide amendments to the Wastewater Management Plan whenever there is a change in construction, operations, or where storm water runoff conditions which may affect the discharge of significant quantities of pollutants to surface waters, groundwater, or separate municipal storm sewer systems.

E. An Authority approved Wastewater Management Plan does not relieve the Contractor or its Subcontractors of their responsibilities to comply with other state, county, and local governmental requirements, including those for storm water management or non-point source runoff controls.

3.3 SOLID AND HAZARDOUS WASTE CONTROLS

This Section applies to the Contractor Generated Hazardous Waste.

A. The Contractor is responsible for, and shall indemnify, defend, and hold the Authority harmless against any costs (including attorney's fees and costs), demands, claims, damages, losses, delay costs ("Claims") arising from or associated with the management, abatement, removal, remediation, clean-up, transport, reuse, recycling, storage, and disposal of any Contractor Generated Hazardous Waste, or associated with any noncompliance with the Contractor Generated Waste Management Plan.

B. In the event that the Contractor or the Authority reasonably suspects that the Contractor has generated, released, or discharged the Contractor Generated Hazardous Waste, the Contractor is to bear all costs of sampling and monitoring tests and other investigations to determine whether said waste is Solid Waste or Hazardous Waste in accordance with all federal, state and local requirements, including, without limitation, RCRA and Title 22, CCR Chapter 30, Article II (as amended, modified, or replaced from time to time). The Authority reserves the right (but not the obligation) to perform its own physical and chemical analyses and tests on suspected Contractor Generated Hazardous Waste. The Contractor shall furnish samples, at the Contractor's cost, as directed by the Authority.

C. The Contractor shall be responsible for the management, abatement, removal, remediation, clean-up, transport, reuse, recycling, storage, and disposal of the Contractor-Generated Hazardous Waste in accordance with laws, rules, regulations, and orders, including, without limitation, Title 22, Chapter 30 et seq., California Code of Regulations, California Health and Safety Code Section 25100 et seq., Titles 23 and 26, California Code of Regulations, and regulations of the waste disposal facility to be used. Haul routes for transporting solid or hazardous

wastes are subject to the approval of local jurisdictions, or other regulatory agencies.

PART 4 - MEASUREMENT AND PAYMENT

Work of this Section is considered incidental to Work under other payment items and no separate measurement or payment will be made to the Contractor for Work of this Section.

END OF SECTION

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SECTION 01 60 00

PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. General requirements for products used for the Work:

1. Products/Product options.

2. Substitutions.

3. System completeness.

4. Transportation and handling requirements.

5. Storage and protection.

1.2 RELATED SECTIONS

A. Section 01 33 00 - Shop Drawings, Product Data, and Samples: Requirements applicable to submittals for "or equal" and substitute products.

1.3 PRODUCTS

A. Products: Items purchased for incorporation in the Work, whether purchased for the Project or taken from previously purchased stock, and include materials, equipment, assemblies, fabrications and systems.

1. It is OCTA policy that all manufactured products and supplies be provided by United States manufacturing industries in agreement with related Union organizations. Therefore in the performance of the contract, Contractor shall give United States made products preference.

2. Named Products: Items identified by manufacturer's product name, including make or model designations indicated in the manufacturer's published product data.

3. Materials: Products that are shaped, cut, worked, mixed, finished, refined or otherwise fabricated, processed or installed to form a part of the Work.

B. Specific Product Requirements: Refer to requirements of Section 01 40 00 - Quality Control and individual product Specifications Sections in Divisions 2 through 34 for specific requirements for products.

C. Minimum Requirements: Specified requirements for products are minimum requirements.

D. Product Selection: Provide products that fully comply with the Contract Documents, are undamaged and unused at installation.

E. Standard Products: Where specific products are not specified, provide standard products of types and kinds that are suitable for the intended use in similar conditions and that have been used successfully on similar projects. Products shall be as selected by Contractor and subject to review and acceptance by the Engineer.

F. Product Completeness: Provide products complete with all accessories, trim, finish, safety guards and other devices and details needed for a complete installation and for the intended use and effect.

G. Code Compliance: All products, other than commodity products prescribed by Code, shall have a current ICBO Evaluation Service (ICBO ES) Research Report or CABO National Evaluation Report (NER).

H. Interchangeability: To the fullest extent possible, provide products of the same kind from a single source. Products required to be supplied in quantity shall be the same product and interchangeable throughout the Work. When options are specified for the selection of any of two or more products, the product selected shall be compatible with products previously selected.

I. Nameplates:

1. Except for require labels and operating and safety instructions, do not attach manufacturer's identifying nameplates or trademarks on surfaces exposed to view in occupied spaces or to the exterior.

2. Provide a permanent nameplate on each item of service-connected or power-operated equipment. Nameplates shall contain identifying information and essential operating data such as the following example:

- Name of manufacturer
- Name of product
- Model and serial number
- Capacity
- Power Characteristics
- Speed

1.4 PRODUCT OPTIONS

A. Products Specified by Description: Where Specifications describe a product, listing characteristics required, with or without use of a brand name, provide a product that provides the characteristics and otherwise complies with the specified requirements.

B. Products Specified by Performance Requirements: Where Specifications require compliance with performance requirements, provide product(s) that comply with performance requirements and are recommended by the manufacturer for the intended application. Verification of manufacturer's recommendations may be by product literature or by certification of performance from manufacturer.

C. Products Specified by Reference to Standards Only: Where Specifications require compliance with a standard, provided product shall fully comply with the standard specified.

D. Products Specified by Identification of Manufacturer and Product Name or Number:

1. Specified Manufacturer: Provide the specified product(s) of the specified manufacturer. If only one manufacturer is specified, provide only the specified product(s). Substitutions will not be considered unless "or equal" provisions is indicated.

2. Acceptable Manufacturer(s): Product(s) of the manufacturers named as acceptable manufacturers, which are determined to be equivalent to the specified product(s) of the specified manufacturer, will be accepted in accordance with the provisions specified below in paragraph titled "Or Equal" provisions and in Article 1.5 titled "SUBSTITUTIONS", except time and cost requirements will not be waived.

3. Unnamed manufacturers: Product(s) of unnamed manufacturers will not be considered unless reference is made to "Or Equal" provision in identifying acceptable manufacturers.

4. Quality Standard: Product(s) of the specified manufacturer shall serve as the standard by which substitute products of named acceptable manufacturers and unnamed substitute manufacturers will be evaluated. Where the characteristics of the product are described, performance characteristics are identified, and reference standards are listed in addition to identification of specified manufacturer and product name(s) or number(s), such characteristics are specified to identify the most significant attributes that will be considered in evaluation of the substitution.

E. Products Specified by Combination of Methods: Where products are specified by a combination of described characteristics, performance characteristics, reference standards and manufacturer identification, provide products conforming to all such characteristics.

F. "Or Equal" Provision: Where "or equal" is included after named manufacturer(s) and product(s), equivalent products of unnamed manufacturers will be considered in accordance with requirements specified in Article titled "SUBSTITUTIONS".

1. Prior to submitting "Or Equal" product(s) for consideration, Contractor shall review and determine that product(s) meet or exceed the minimum quality and warranty provisions of the specified product.

2. Cost and time considerations will be waived for products and manufacturers submitted under the "Or Equal" provision, except no increase in Contract Sum or Contract Time shall result.

3. Contractor's attention is called to the substitution provisions of the Conditions of the Contract.

G. Visual Matching: Where Specifications require visual matching a sample, the decision by the Engineer on whether a proposed product matches shall be final. Where no product matches and complies with other requirements, comply with provisions for "SUBSTITUTIONS" for selection of a matching product in another category.

H. Visual Selection: Where requirements include the phrase "as selected from manufacturer's standard colors, patterns, textures", or a similar phrase, selections of products will be made by the Consultant or Engineer. The Engineer will select color, pattern and texture from the product line of submitted manufacturer, if all other specified provisions are met.

1.5 SUBSTITUTIONS

A. Substitutions: Requests by Contractor to deviate from specified requirements for products, materials, equipment, and methods, or to provide products other than those specified, shall be considered requests for substitutions except under the following conditions:

1. Substitutions are requested during the bidding period, and accepted prior to execution of the Contract.

2. Revisions to Contract Documents requested by the Authority or the Engineer.

3. Specified options of products and construction methods stated in the Contract Documents.

4. Compliance with regulations and orders issued by governing authorities having jurisdiction.

B. Substitution Provisions: Refer to substitution provisions of the Conditions of the Contract, in addition to the following specific requirements.

C. Substitution Submittal Period:

1. Time Limit: Only within 14 days of the Notice to Proceed will the Authority and Engineer consider requests for substitutions.

2. Product Availability Waiver: Substitutions will be considered after 21 days of execution of the Agreement only when a product becomes unavailable due to no fault of Contractor. Failure to place orders for specified products sufficiently in advance of required date for incorporation into the Work will not be considered as a valid reason for which Contractor may request a substitution or deviation from requirements of the Drawings and Specifications.

D. Provisions for Consideration and Acceptance of Substitutions:

1. Documentation: Substitutions will not be considered when they are indicated or implied on shop drawing, product data or sample submittals without a separate written request, or when acceptance will require substantial revision of the Contract Documents.

2. Cost and Time Considerations: Substitutions will not be considered unless a net reduction in the Contract Sum or Contract Time results to the Authority's benefit, including redesign costs, life cycle costs, changes in related Work and overall performance of building systems.

3. Data: It shall be the responsibility of the Contractor to provide adequate data demonstrating the merits of the proposed substitution, including cost data and information regarding changes in related Work.

4. Engineer's Determination: The Engineer will determine the acceptability of proposed substitutions, and notify the Contractor in writing, within a reasonable time, whether the proposed substitution is accepted or rejected.

5. Substitution Limitation: Only one request for substitution will be considered for each product.

6. Non-Acceptance: If a proposed substitution is not accepted, provide the specified product.

E. Substitution Submittal Process:

1. Submit the intended substitution to the Engineer for review and approval. Submit a minimum of 5 copies.

2. Submit product data, including drawings and descriptions of products, fabrication details and installation procedures. Include samples where applicable or requested.

3. Include appropriate product data of the specified product(s) of the specified manufacturer, suitable for use in comparison.

4. Submit a comparison of significant characteristics of the proposed substitution with those of the specified product. Include a list of changes or modifications needed to other parts of the Work and to construction to be performed by the Authority and separate Contractors, that will be necessary if the proposed substitution is accepted.

5. Submit a statement indicating the substitution's effect on the Construction Schedule compared to the Schedule without approval of the substitution. Indicate the effect of the proposed substitution on overall Contract Time.

6. Submit cost information, including a proposal of the net change, if any, in the Contract Sum.

7. Submit certification that the substitution is equivalent or superior in every respect to that required by the Contract Documents, and that the substitution is suited for and can perform the purpose or application for the particular use intended in the Contract Documents. Include Contractor's waiver of rights to additional payment or time, that may be necessary because of the substitution's failure to perform adequately.

8. If, in the Engineer's opinion, sufficient data has not been submitted to enable a full and thorough review of the intended substitution, the substitution may be denied.

F. Contract Document Revisions:

1. Should a Contractor-proposed substitution or alternative sequence or method of construction require revision of the Contract Drawings or Specifications, including revisions for the purposes of determining feasibility, scope, cost, or revisions for the purpose of obtaining review and approval by governing authorities having jurisdiction, revisions will be made by the Engineer, or other consultants of the Authority who are the design professionals of record, only as approved in advance by the Authority.

2. Services of the Engineer, or consultants of the Authority, including time spent in researching and reporting on proposed substitutions or alternative sequence and method of construction, shall be paid by Contractor when such activities are considered additional services to the design services contracts of the Authority.

3. Costs of services by the Engineer, or other consultant of the Authority, shall be paid on a time and materials basis, based on current hourly fee schedules, with reproduction, long distance telephone and shipping costs reimbursable.

4. Such fees shall be paid whether or not the proposed substitution or alternative sequence or method of construction is ultimately accepted by the Authority and a Change Order is executed.

5. Such fees shall paid from the Contractor's portion on savings, if a net reduction in Contract Sum results. If fees exceed Contractor's portion of net reduction, Contractor shall pay all remaining fees unless otherwise agreed in advance by the Authority.

6. Such fees owed shall be deducted from the amount owed the Contractor on the Application for Payment next made following completion of revised Contract Drawings and Specifications or completion of research and other services. Contractor will then pay the Engineer or other consultants of the Authority.

G. Contractor's Representation

1. Requests for substitution constitute a representation that the Contractor:

a. Has investigated proposed substitution and determined it meets or exceeds item in all respects.

b. Will provide same warranty for substitution as for specified item.

c. Will coordinate installation and make changes as may be required for Work to be complete in all respects.

d. Waives claims for additional costs and time extensions not identified at time of request for substitution.

e. Will reimburse Owner for review and redesign services associated with reapproval by authorities.

H. Engineer Duties

1. The Engineer will determine acceptability of proposed substitution with reasonable promptness.

2. The Engineer will notify the Contractor in writing of decision to accept or reject request for substitution.

3. Promptly notify the Contractor of any costs for review and or redesign services associated with requests for substitution.

1.6 BASIS FOR DESIGN

A. Wherever more than one manufacturer's product is specified, the first-named product is the basis for the project design and the use of alternative named manufacturer's products or substitutes may require modifications in the project design and construction. If such alternatives are proposed by Contractor and are accepted by the Owner, Contractor shall assume costs required to make necessary revisions and modifications including additional costs to the Owner for evaluations of modifications of the project design submitted by Contractor to the Owner.

B. When materials are specified by first manufacturer's name and product number, second manufacturer's name, or equal, the second manufacturer's product or any equal's product shall be submitted in accordance with the requirements for substitute items.

1.7 MATERIAL AND EQUIPMENT

A. Material and equipment incorporated into the Work:

1. Condition: New, unused, unless otherwise shown.

2. Standards: Conform to applicable specifications and standards.

3. Utility: Comply with size, make, type and quality specified.

4. Manufactured and Fabricated Products:

a. Design, Fabrication and Assembly: In accord with the best engineering and shop practices.

b. Interchangeability: Manufacture like parts of duplicate units to standard sizes and gauges, to be interchangeable. Two or more items of the same kind shall be identical, by the same manufacturer.

c. Equipment Capacities, Sizes and Dimensions: As shown or specified unless variations are specifically approved in writing.

d. Features: Include all features that are listed in the manufacturer's catalog as standard, unless otherwise shown.

1) Options: Include when shown or specified.

5. Usage: Do not use material or equipment for any purpose other than that for which it is designed or specified.

1.8 REUSE OF EXISTING MATERIAL

A. General: Except as specifically indicated or specified, materials and equipment removed from an existing structure shall not be used in the completed Work.

B. Reuse: Use special care in removal, handling, storage and reinstallation to assure proper function in the completed Work.

1. Temporary Storage: Arrange for transportation, storage and handling of products which require off-site storage, restoration or renovation.

1.9 TRANSPORTATION, DELIVERY, AND HANDLING

A. Comply with manufacturer's instructions and recommendations for transportation, delivery and handling, in addition to the following.

B. Transportation: Transport products by methods to avoid product damage.

C. Schedule delivery to minimize long-term storage and prevent overcrowding construction spaces. Coordinate with installation to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft and other losses.

D. Deliver products in undamaged condition in manufacturer's original sealed container or packaging system, complete with labels and instructions for handling, storing, unpacking, protecting and installing. Contractor is responsible and should be present at work site for receiving his material delivery at site of work.

E. Provide equipment and personnel to handle products by methods to prevent soiling, marring or other damage.

F. Promptly inspect products on delivery to ensure that products comply with contract documents, quantities are correct, and to ensure that products are undamaged and properly protected.

1.10 STORAGE AND PROTECTION

A. Store and protect products in accordance with manufacturer's instructions, with seals and labels intact and legible.

1. Periodically inspect to ensure products are undamaged, and are maintained under required conditions.

2. Products damaged by improper storage or protection shall be removed and replaced with new products at no change in Contract Sum or Contract Time.

B. Store products to facilitate inspection and measurement of quantity or counting of units.

C. Store heavy materials away from the structure in a manner that will not endanger supporting construction.

D. Store moisture-sensitive products in a weathertight enclosure or covered with an impervious sheet covering. Provide adequate ventilation to avoid condensation. Maintain product storage within temperature and humidity ranges required by manufacturer's instructions.

1. For exterior storage of fabricated products, place on sloped supports above ground.

2. Store loose granular materials on solid surfaces in a well-drained area. Prevent mixing with foreign matter. Prevent material from flowing or blowing away to other areas of the site. Provide covers for sand, aggregate base, and debris so that wind does not cause it to blow away.

3. Arrange storage to provide access for inspection. Periodically inspect to assure products are undamaged, and are maintained under required conditions.

E. Protection:

1. Provide barriers, flashing lights, substantial coverings and notices to protect installed Work from traffic and subsequent construction operations.

2. Remove protective measures when no longer required and prior to Acceptance of the Work.

1.11 SYSTEM COMPLETENESS

A. The Contract Drawings and Specifications are not intended to be comprehensive directions on how to produce the Work. Rather, the Drawings and Specifications are instruments of service prepared by the responsible design professional to describe the design intent for the completed Work.

B. It is intended that materials, equipment, systems and assemblies be complete and fully functional even though not fully described. Provide all products and operations necessary to achieve the design intent described in the Contract Documents.

C. Contractor shall report to the Engineer immediately when elements essential to proper execution of the Work are discovered to be missing or misdescribed in the Drawings and Specifications or if the design intent is unclear.

D. Should an essential element be discovered as missing or misdescribed prior to receipt of bids, and Addendum or Clarification will be issued so that all costs may be accounted for in the Contract Sum.

E. Should an obvious omission or misdescription of a necessary element be discovered and reported after execution of the Agreement, the Contractor shall provide the element as though fully and correctly described, and a no-cost Change Order shall be executed.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 INSTALLATION OF PRODUCTS

A. Installation of Products:

1. Comply with manufacturer's instructions and recommendations for installation of products.

2. Anchor each product securely in place, accurately located and aligned with other Work.

3. Clean exposed surfaces and provide protection to ensure freedom from damage and deterioration at time of Substantial Completion review.

3.2 MANUFACTURER'S INSTRUCTIONS

A. Instructions, Recommendations: When Contract Documents require that installation of products shall comply with manufacturer's instructions, recommendations, etc., obtain and distribute copies of such instructions to parties involved in the installation.

1. Records: Maintain one set of complete instructions at the job site during installation and until completion.

B. Workmanship: Handle, install, connect, clean, condition and adjust products in strict accordance with such instructions and in conformity with specified requirements.

1. Should job conditions or specified requirements conflict with manufacturer's instructions, consult with the Engineer for further instructions.

2. Do not proceed with work without clear instructions.

C. Installation: Perform work in accordance with manufacturer's instructions. Do not omit any preparatory step or installation procedure unless specifically modified or exempted by Contract Documents.

PART 4 - MEASUREMENT AND PAYMENT

Work of this Section is considered incidental to Work under other payment items and no separate measurement or payment will be made to the Contractor for Work of this Section.

END OF SECTION

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SECTION 01 71 00

CLEANING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes: Clean up and disposal work as specified, complete. Final Cleaning for Substantial Completion review and final acceptance.

B. Related Sections: This Section forms a part of all other Sections of the specifications. Cleaning for specific products or elements of Work are described in individual product Specification Sections describing that Work.

1.2 GENERAL CLEAN UP AND DISPOSAL REQUIREMENTS

A. Conduct cleaning and disposal operations in compliance with all applicable codes, ordinances and regulations, including environmental protection laws, rules and practices.

B. In case of dispute between the Contractor and other contractors employed on or about the structure or structures upon which the work is to be done, as to responsibility for the removal of the rubbish, etc., or in case the debris is not promptly removed as herein required, the Authority may remove rubbish, etc., and backcharge the Contractor.

1.3 CLEANING DURING CONSTRUCTION

A. Contractor shall at all times keep the premises free from accumulations of waste material or rubbish caused by his employees or work, or the employees or work of any subcontractor and at the completion of the Work shall remove all rubbish from the project area and all his and his subcontractors' tools, scaffolding and surplus materials and shall leave the work "broom clean", or its equivalent, except as hereinafter specified.

1. Keep work and storage areas clean and free of rubbish; perform special protective and clean-up work within one day of being so notified by the Owner.

2. Do not allow items to accumulate more than 24 hours.

3. Do not store flammable or toxic materials in structures.

B. Dispose of trash resulting from Work, off Owner's property as it accumulates; dispose of off-site at intervals approved by Owner. pay fees required for use of public dumps; burning on Owner's property is prohibited. Contractor shall arrange for their own refuse containers.

C. Clean interior areas prior to start of finish work, maintain areas free of dust and other contaminants during finishing operations.

D. Streets, alleys, and parking areas adjacent to project site shall be kept clean by sweeping or watering, from all dirt and debris generated from earthwork and other construction activities on the project site at all time.

1.4 FINAL CLEAN UP AND DISPOSAL

A. After completion of all work on the project, and before making application for acceptance of the work, Contractor shall remove all debris and clean the construction site, including all areas under the control of the Authority that have been used by the Contractor in connection with the work on the project.

B. Full compensation for conforming to the provisions in this section, not otherwise provided for, shall be considered as included in the bid price and no additional compensation will be allowed therefore.

C. Final acceptance of the work by the Authority will be withheld until the Contractor has satisfactorily complied with the foregoing requirements for final cleanup of the project site.

D. Under no circumstances shall rubbish or waste material be disposed of in fill or backfill. All debris, rubbish and waste or surplus material shall be removed from the Owner's property daily and legally disposed of.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Cleaning Agents and Materials: Use only those non-corrosive and non-abrasive cleaning agents and materials which will not create hazards to health or property and which will not damage surfaces.

1. Use only those cleaning agents, materials and methods recommended by manufacturer of the material to be cleaned.

2. Use cleaning materials only on surfaces recommended by cleaning agent manufacturer.

PART 3 - EXECUTION

3.1 SUBSTANTIAL COMPLETION REVIEW CLEANING, GENERAL

A. Execute a thorough cleaning prior to Substantial Completion review by the Engineer. Complete final cleaning before submitting final Application for Payment.

3.2 FINAL COMPLETION SITE CLEANING

A. Clean surrounding areas affected by construction. Clean and repair all surrounding areas and appurtenances such as curbs, gutters, swales, storm drain, platforms, equipment, landscaping, and driveways. Repair equipment, curbs, surrounding driveways, landscaping, and site affected by the construction work by thorough brooming and washdown

3.3 INSPECTION

A. Prior to Final Payment or acceptance by the Engineer for partial occupancy of premises, the Contractor and the Engineer shall jointly conduct an inspection of visible interior and exterior surfaces to verify that entire Work is acceptably clean. Any deficient cleaning operations, as determined by the Authority, shall be immediately corrected as directed.

END OF SECTION

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SECTION 01 71 23

FIELD ENGINEERING

PART 1 - GENERAL

1.1 SUMMARY

This Section includes general administrative and procedural requirements for field engineering and surveying for the Work including, establishing and maintaining baselines, design lines, grades and field control points as required for construction layout survey.

1.2 SUBMITTALS

A. Submit for the Authority's approval the name and professional history of the land surveying firm designated by the Contractor as its Project Surveyor. The Project Surveyor or professional engineer selected must be a current California State licensed land surveyor and have a minimum of five years of verifiable experience performing field surveys and related office engineering.

B. On request, the Contractor shall submit to the Authority all documentation that verifies the accuracy of the survey work.

C. Certificates and Site Drawings: Prior to Completion and when requested by the Authority, submit a certificate and site drawing signed by, a Land Surveyor, or Professional Engineer, certifying that the location and elevation of improvements are in conformance with Contract Documents.

D. The Contractor shall submit a complete copy of the baseline survey field notes and final survey layout. The layout will include data and offset calculations.

1.3 QUALITY CONTROL

A. The Contractor shall maintain a complete and accurate log of control and survey work as it progresses.

B. The Authority reserves the right to check the Contractor's survey measurements and calculations. Whether the Authority exercises this right or not, the requirement for accuracy will not be waived.

C. On completion of construction and major site improvements, the Contractor shall prepare a final certified survey illustrating dimensions, locations, angles, and elevations of the construction and the Work site.

PART 2 - PRODUCTS (Not used)

PART 3 - EXECUTION

3.1 EXAMINATION

The Contractor shall verify locations of survey control points prior to starting any Work on the Project site. The Contractor shall immediately notify the Authority of any discrepancies discovered.

3.2 SURVEY REFERENCE POINTS

A. The Contractor shall locate and protect survey controls, survey monuments and reference points and preserve permanent reference points during construction.

B. The Contractor shall report to the Authority the loss or destruction of any reference points or relocation required because of changes in grades or other reasons.

C. The Contractor shall replace dislocated survey control points based on the original survey control, and shall make no changes without prior written notice to and approval by the Authority.

3.3 FIELD ENGINEERING

A. Identification: The Authority will identify existing benchmarks, control points, and property corners. Control datum for the survey is indicated on the Drawings.

B. The Contractor shall locate existing permanent benchmarks, control points, and similar reference points before beginning the Work and preserve and protect permanent benchmarks and control points during construction operations. The Contractor shall not change or relocate existing benchmarks or control points without prior written approval of the Authority. Report lost or destroyed permanent benchmarks or control points promptly. Report the need to relocate permanent benchmarks or control points to the Authority before proceeding and upon approval shall replace lost or destroyed permanent benchmarks and control points promptly. Base replacements on the original survey control points.

C. Benchmarks: Establish and maintain a minimum of two permanent benchmarks on the Project site, referenced to data established by survey control points. Comply with authorities having jurisdiction for the type and size of benchmark.

1. Record benchmark locations, with horizontal and vertical data, on Project Record Documents.

2. Where the actual location or elevation of layout points cannot be marked, provide temporary reference points sufficient to locate the Work.

3. Remove temporary reference points when no longer needed. Restore marked construction to its original condition.

3.4 CONSTRUCTION LAYOUT

A. Before proceeding to lay out the Work, the Contractor shall verify layout information shown on Drawings, in relation to the property survey and existing benchmarks. If discrepancies are discovered, the Contractor shall notify the Authority promptly.

B.` General: Engage a land surveyor or professional engineer to lay out the Work using accepted surveying practices in accordance with the following:

1. Establish benchmarks and control points to set lines and levels at each story of construction and elsewhere as needed to locate each element of the Project. Establish limits on use of the Project site.

2. Establish dimensions within tolerances indicated. Do not scale Drawings to obtain required dimensions.

3. Inform installers of lines and levels to which they must comply.

4. Check the location, line and grade of every major element as the Work progresses. Notify the Authority when deviations from required lines or grades exceed allowable tolerances. Such notification shall include a thorough explanation of the problem, and a proposed plan and schedule for remedying the deviation. Remedial work shall not proceed without the Authority's concurrence of the remediation plan.

5. Close site surveys with an error of closure equal to or less than the standard established by authorities having jurisdiction.

C. Site Improvements: Locate and lay out site improvements, including pavements, grading, fill and topsoil placement, utility slopes, and rim and invert elevations.

D. Building Lines and Levels: Locate and lay out control lines and levels for structures, building foundations, column grids, and floor levels, including those required for mechanical and electrical work. Transfer survey markings and elevations for use with control lines and levels. Level foundations and piers from two or more locations.

E. Record Log: Maintain a log of layout control work. Record any deviations from required lines and levels. Include beginning and ending dates and times of surveys, weather conditions, name and duty of each survey party member, and types of instruments and tapes used. Make the log available for reference by the Authority.

3.5 SURVEYS AND RECORDS

A. Working from lines and grades established by baseline surveys as shown in relation to the Work, the Contractor shall establish and maintain bench marks and other dependable markers to set lines and levels for Work on site as needed to locate each element of the Project.

B. The Contractor shall calculate and measure required dimensions as shown on the Contract Drawings (within recognized tolerances if not otherwise indicated) and immediately notify the Authority of any discrepancies. The Contractor shall use written rather than scaled dimensions. Where both dimensions relative to track and absolute dimensions (e.g. coordinates, elevations) are given, the dimensions relative to the track shall govern unless otherwise directed by the Authority.

C. The Contractor shall inform tradesmen performing the Work of marked lines and grades provided for their use in layout work.

D. The Contractor shall provide a complete copy of baseline survey field notes and final layout to the Authority prior to starting construction.

E. In areas scheduled for excavation or embankment, the Contractor shall be responsible for a baseline cross-section survey suitable to document or verify actual topography prior to the start of Work. No adjustments will be made to earthwork quantities by means other than a sealed before-and-after survey, suitable to calculate volume based on average end areas, measured in either cut or fill areas. Load counts, truck weights, work duration, representative area deviations from bid schedule quantities, or other means of estimating earthwork volume will not be accepted, except for use in determining progress payments.

F. The basis for dimensioning railroad track is the centerline between the rails and elevation of the top surface of the rail unless noted otherwise in the plans or the Specifications or by the Authority.

END OF SECTION

SECTION 01 74 00

WARRANTIES AND BONDS

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. General administrative and procedural requirements for preparation and submission of warranties and bonds required by the Contract Documents, including manufacturer's standard warranties on products and special Project warranties

1. Refer to the Conditions of the Contract for terms of Contractor's special warranty of workmanship and materials.

2. Certifications and other commitments and agreements for continuing services to the Authority are specified elsewhere in the Contract Documents.

1.2 DEFINITIONS

A. Warranty: Assurance to the Authority by the Contractor, installer, supplier, manufacturer or other party responsible as warrantor, for the quantity, quality, performance and other representations of a product, system service of the Work, in whole or in part, for the duration of the specified period of time.

B. Guaranty: Assurance to the Authority by the Contractor or product manufacturer or other specified party, as guarantor, that the specified warranty will be fulfilled by the guarantor in the event of default by the warrantor.

C. Standard Product Warranty: Preprinted, written warranty published by product manufacturer for particular products and specifically endorsed by the manufacturer to the Authority.

D. Special Project Warranty: Written warranty required by or incorporated into Contract Documents, to extend time limits provided by standard warranty or to provide greater rights for the Authority.

E. Correction Period: The Correction Period shall be synonymous with warranty period and guaranty period used in the Contract Specifications.

1.3 WARRANTIES AND GUARANTEES

A. Warranties and Guarantees, General: Provide all warranties and guarantees with the Authority named as beneficiary. For equipment and products, or components thereof, bearing a manufacturer's warranty or guaranty that extends for a period beyond the one year time beyond the Contractor's warranty and guaranty, so state in the warranty or guaranty.

B. Provisions for Special Warranties: Refer to the Conditions of the Contract for terms of the Contractor's special warranty of workmanship and materials.

C. General Warranty and Guaranty Requirements: Warranty shall be an agreement to repair or replace, without cost and undue hardship to the Authority, Work performed under the Contract which is found to be defective during the warranty or guaranty period (correction period).

D. Disclaimers and Limitations: Manufacturer's disclaimers and limitations on product warranties and guarantees shall not relieve Contractor of responsibility for warranty and guaranty requirements for the Work that incorporates such products, nor shall they relieve suppliers, manufacturers, and installers required to countersign special warranties with Contractor.

E. Related Damages and Losses: When correcting warranted Work that has been found defective, remove and replace other Work that has been damaged as a result of such defect or that shall be removed and replaced to provide access for correction of warranted Work.

F. Reinstatement of Warranty: When Work covered by a warranty has been found defective and has been corrected by replacement or rebuilding, reinstate the warranty by written endorsement. The reinstated warranty shall be equal to the original warranty with an equitable adjustment for depreciation.

G. Replacement Cost: Upon determination that Work covered by a warranty has been found to be defective, replace or reconstruct the Work to a condition acceptable to the Authority, complying with applicable requirements of the Contract Documents. Contractor shall be responsible for all costs for replacing or reconstructing defective Work regardless of whether the Authority has benefited from use of the Work through a portion of its anticipated useful service life.

H. Authority's Recourse: Written warranties made to the Authority shall be in addition to implied warranties, and shall not limit the duties, obligations, rights and remedies otherwise available under law, nor shall warranty periods be interpreted as limitations on time in which the Authority can enforce such other duties, obligations, rights, or remedies.

1. Rejection of Warranties: The Authority reserves the right to reject warranties and to limit selections to products with warranties not in conflict with requirements of the Contract Documents.

I. Warranty as Condition of Acceptance: The Authority reserves the right to refuse to accept Work for the Project where a special warranty, certification, or similar commitment are required on such Work or part of the Work, until evidence is presented that entities required to countersign such commitments are willing to do so.

1.4 PREPARATION OF WARRANTY AND BOND SUBMITTALS

A. Number of Copies: Make all submittals of warranties, guarantees and bonds in duplicate.

B. Project Warranty and Guaranty Forms: Form for the Contractor's guaranty is included at the end of this section. Prepare written documents utilizing the appropriate form, ready for execution by the Contractor, or the Contractor and subcontractor, supplier or manufacturer. Submit a draft to the Engineer for approval prior to final execution.

1. Refer to product Specifications Sections of Divisions 2 through 34 for specific content requirements, and particular requirements for submittal of special warranties.

2. Prepare standard warranties and guarantees, excepting manufacturers' standard printed warranties and guarantees, on Contractor's, subcontractor's, material suppliers', or manufacturer's own letterhead, addressed to the Authority, as directed by the Engineer.

3. Warranty and guaranty letters shall be signed by all responsible parties and by the Contractor in every case, with modifications only as approved in advance by the Engineer to suit the conditions pertaining to the warranty or guaranty.

C. Manufacturer's Guaranty Form: Manufacturer's guaranty form may be used in lieu of special Project form included at the end of this Section. Manufacturer's guaranty form shall contain appropriate terms and identification, ready for execution by the required parties.

1. If proposed terms and conditions restrict guaranty coverage or require actions by the Authority beyond those specified, submit draft of guaranty to the Engineer for review and acceptance before performance of the Work.

2. In other cases, submit draft of guaranty to the Engineer for approval prior to final execution of guaranty.

D. Signatures: Signatures shall be by person authorized to sign warranties, guarantees and bonds on behalf of entity providing such warranty, guaranty or bond. All signatures on warranties, guarantees and bonds shall be original and notarized.

E. Co-Signature: All installer's warranties and bonds shall be co-signed by Contractor. Manufacturer's guarantees will not require co-signature.

1.5 FORM OF WARRANTY AND BOND SUBMITTALS

A. Form of Warranty and Bond Submittals: At Final completion, compile two copies of each required warranty, guaranty and bond, properly executed by Contractor, or jointly by Contractor, subcontractor, supplier, or manufacturer. Collect and assemble all written warranties and guarantees into binders and deliver binders to the Engineer for final review and acceptance.

1. Prior to submission, verify that documents are in proper form and contain all required information and are properly signed.

2. Organize warranty and guaranty documents into an orderly sequence based on the Table of Contents of the Project Manual.

3. Include Table of Contents for binder, neatly typed, following order and section numbers and titles as used in the Project Manual.

4. Bind warranties, guarantees and bonds in heavy-duty, commercial quality, durable 3-ring vinyl covered loose-leaf binders, thickness as necessary to accommodate contents, with clear front and spine to receive inserts, and sized to receive 8-1/2 inch by 11-inch paper.

5. Provide heavy paper dividers with celluloid or plastic covered tabs for each separate warranty. Mark tabs to identify products or installation, and Section number and title.

6. Include on separate typed sheet, if information is not contained in warranty or guaranty form, a description of the product or installation, and the name, address, telephone number and responsible person for applicable installer, supplier and manufacturer.

7. Identify each binder on front and spine with typed or printed inserts with title "WARRANTIES AND BONDS", the Project title or name, and the name of the Contractor. If more than one volume of warranties, guarantees and bonds is produced, identify volume number on binder.

8. When operating and maintenance data manuals are required for warranted construction, include additional copies of each required warranty and guaranty in each required manual.

1.6 TIME OF WARRANTY AND BOND SUBMITTALS

A. Submission of Preliminary Copies: Unless otherwise specified, obtain preliminary copies of warranties, guarantees and bonds within ten days of completion of applicable item or Work. Prepare and submit preliminary copies for review as specified herein.

B. Submission of Final Copies: Submit fully executed copies of warranties, guarantees and bonds within ten days of date identified in Certificate of Completion but no later than three days prior to application date for Final Payment.

C. Date of Warranties and Bonds: Unless otherwise directed or specified, commencement date of warranty, guaranty and bond periods shall be the date established in Certificate of Completion.

1. Warranties for Work accepted in advance of date stated in Certificate of Completion: When a designated system, equipment, component parts or other portion of the Work is completed and occupied or put to beneficial use by the Authority, by separate agreement with Contractor, prior to Final Completion, submit properly executed warranties to the Engineer within ten days of completion of that designated portion of the Work. List date of commencement of warranty, guaranty or bond period as date of Acceptance.

2. Warranties for Work not accepted as of date of Substantial completion: Submit documents within ten days after acceptance, listing date of such acceptance as beginning of warranty, guaranty or bond period.

D. Duration of Warranties and Guarantees: Unless otherwise specified or prescribed by law, warranty and guaranty periods (Correction Period) for all work shall not be less than one year from the filing date of notice of completion. See product Specifications Sections in Divisions 2 through 1634 of the Supplemental Specifications for extended warranty and guaranty beyond the minimum duration.

PART 2 - PRODUCTS (Not Used)

PART 3 - MAINTENANCE AND GUARANTY

3.01 GUARANTY

A guaranty form to be signed and delivered to the Engineer before acceptance of the Contract is included in the Bidding and Contractual Documents.

Contractor guarantees that the work performed and materials furnished hereunder by Contractor or subcontractors or suppliers will be free from defects in design, material, and workmanship for a period of at least one year from the date of final acceptance.

The Contractor shall make all repairs and replacements at Contractor's own expense promptly upon the request of the Engineer. If the Contractor fails to make such repairs or replacements promptly, the Authority reserves the right to do the work and the Contractor and surety shall be liable to the Authority for the cost thereof.

END OF SECTION

(Sample Form Letter to Follow)

********** FORM LETTER **********

FOR MANUFACTURER'S GUARANTY

MANUFACTURER'S LETTERHEAD

SPECIAL LIMITED PROJECT [WARRANTY] [GUARANTY] FOR_____WORK

We, the undersigned, do hereby [warrant] [guaranty] that the portion of the Work described above which [we have provided] [was provided by (*Installer or Subcontractor's Name*) for Orange County Transportation Authority (OCTA), The City of Laguna Niguel, OCTA Laguna Niguel/Mission Viejo Metrolink, 28200 Forbes Road, Laguna Niguel, California is in accordance with the Contract Documents and that all such Work as installed will fulfill or exceed all minimum warranty requirements. We agree to repair or replace Work installed by [us,] [(*Installer or Subcontractor's Name*)] together with any adjacent Work which is displaced or damaged by so doing, that proves to be defective in workmanship, material, or function within a period of five (5) *years*, commencing (*date indicated in Certificate of Completion, unless otherwise directed*) and terminating (*date*).

The following terms and conditions apply to this [warranty] [guaranty] (*obtain the Engineer's approval before submission*):

In the event of our failure to comply with the above-mentioned conditions within a reasonable time period determined by Orange County Transportation Authority, after notification in writing, we, the undersigned, all collectively and separately, hereby authorize Orange County Transportation Authority to have said defective Work repaired or replaced to be made good, and agree to pay to Orange County Transportation Authority upon demand all moneys that Orange County Transportation Authority may expend in making good said defective Work, including all collection costs and reasonable attorney fees.

Local Representative: For warranty maintenance, repair, or replacement service, contact:

(*Name*)_____

(*Address*)_____

(*City*)_____(*State*)_____(*ZIP*) _____

(*Phone*)_____/ _____

_____	_____
(*signed*)	(*signed*)
(*Date*)_____	(*Date*)_____
(*Typed Name*) _____	(*Typed Name*) _____
(*Title*)_____	(*Title*)_____
(*Firm*)_____ _____	(*Firm*)_____ _____
(*Installer, applicator, manufacturer or supplier*)	(*Contractor*)

State License No: _____

********** FORM LETTER **********

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SECTION 01 74 19

CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

PART 1 - GENERAL

1.1 SUMMARY

This Section includes administrative and procedural requirements for salvaging nonhazardous demolition and construction waste, recycling nonhazardous demolition waste and disposing of nonhazardous demolition and construction waste.

1.2 DEFINITIONS

A. Construction Waste: Building and site improvement materials and other solid waste resulting from construction, remodeling, renovation, or repair operations. Construction waste includes packaging.

B. Demolition Waste: Building and site improvement materials resulting from demolition or selective demolition operations.

C. Disposal: Removal off-site of demolition and construction waste and subsequent sale, recycling, reuse, or deposit in landfill or incinerator acceptable to authorities having jurisdiction.

D. Recycle: Recovery of demolition or construction waste for subsequent processing in preparation for reuse.

E. Salvage: Recovery of demolition or construction waste and subsequent sale or reuse in another facility.

F. Salvage and Reuse: Recovery of demolition or construction waste and subsequent incorporation into the Work.

1.3 PERFORMANCE REQUIREMENTS

A. Facilitate recycling and salvage of materials to achieve maximum rates for salvage/recycling by weight of total non-hazardous solid waste generated. Practice efficient waste management in the use of materials in the course of the Work. Use all reasonable means to divert construction and demolition waste from landfills and incinerators.

B. Packaging: Regardless of salvage/recycle goal indicated above, salvage or recycle 100 percent of the following uncontaminated packaging materials, including paper, cardboard, plastic, polystyrene packaging and wood crates.

1.4 SUBMITTALS

A. Within 14 days of the Limited Notice to Proceed, submit a Waste Management Plan according to ASTM E 1609, the requirements of the jurisdiction having Authority, and requirements in this Section. Distinguish between demolition and construction waste. Indicate quantities by weight or volume, but use the same units of measure throughout the waste management plan. List each type of waste and whether it will be salvaged, recycled, or disposed of in a landfill or incinerator. Include points of waste generation, total quantity of each type of waste, quantity for each means of recovery, and handling and transportation procedures.

B. Waste Reduction Progress Reports: Submit a report concurrent with each Application for Payment. The report shall cover the period of the application for payment. Include the following information:

1. Material category
2. Generation point of waste
3. Total quantity of waste, in tons
4. Quantity of waste salvaged, both estimated and actual, in tons
5. Quantity of waste recycled, both estimated and actual, in tons
6. Total quantity of waste recovered (salvaged plus recycled), in tons
7. Total quantity of waste recovered (salvaged plus recycled) as a percentage of total waste.

PART 2 - PRODUCTS (Not used)

PART 3 - EXECUTION

3.1 PLAN IMPLEMENTATION

A. Provide handling, containers, storage, signage, transportation, and other items as required to implement the waste management plan during the entire duration of the Contract.

B. Site Access and Temporary Controls: Conduct waste management operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities. Designate specific areas on the Project site necessary for separating materials that are to be salvaged, recycled, reused, donated, and sold.

3.2 RECYCLING DEMOLITION AND CONSTRUCTION WASTE, GENERAL

A. General: Recycle paper and beverage containers used by on-site workers.

B. Recycling Incentives: Revenues, savings, rebates, tax credits, and other incentives received for recycling waste materials shall accrue to the Contractor.

C. Preparation of Waste: Prepare and maintain recyclable waste materials according to recycling or reuse facility requirements. Maintain materials free of dirt, adhesives, solvents, petroleum contamination, and other substances deleterious to the recycling process.

D. Procedures: Separate recyclable waste from other waste materials, trash, and debris. Separate recyclable waste by type at the Project site to the maximum extent practical, according to the approved construction waste management plan.

1. Provide appropriately marked containers or bins for controlling recyclable waste until removed from the Project site. Include a list of acceptable and unacceptable materials at each container and bin.

2. Inspect containers and bins for contamination and remove contaminated materials (if found).

3. Stockpile processed materials on site without intermixing with other materials. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.

4. Stockpile materials away from the construction area. Do not store within the drip line of remaining trees.

5. Store components off the ground, and protect them from the weather.

6. Remove recyclable waste from Authority property and transport to a recycling receiver or processor.

3.3 DISPOSAL OF WASTE

A. General: Except for items or materials to be salvaged, recycled, or otherwise reused, remove waste materials from the Project site and legally dispose of them in a landfill or in another manner acceptable to authorities having jurisdiction.

1. Except as otherwise specified, do not allow waste materials that are to be disposed of to accumulate on site.

2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.

B. Burning: Do not burn waste materials.

Disposal: Remove waste materials from the Authority's property and legally dispose of them.

PART 4 - MEASUREMENT AND PAYMENT

Work of this Section is considered incidental to Work under other payment items and no separate measurement or payment will be made to the Contractor for Work of this Section.

END OF SECTION

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SECTION 01 74 20

SPECIAL PROJECT PROCEDURES

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Products and installation for patching and extending Work.

B. Transitions and adjustments.

C. Repair of damaged surfaces, finishes, and cleaning.

1.2 RELATED SECTIONS

A. Section 01 31 00 - Coordination: Authority occupancy and maintenance of utility services.

B. Section 31 11 50 – Demolition, Cutting and Patching: General requirements for cutting and patching requirements.

C. Section 01 50 00 - Construction Facilities and Temporary Controls: Temporary enclosures, protection installed Work, and cleaning during construction.

PART 2 - PRODUCTS

2.1 PRODUCTS FOR PATCHING AND EXTENDING WORK

A. New Materials: As specified in PART 2 - PRODUCTS of applicable product Specification Sections, provide suitable products and construction procedures for patching and extending Work.

B. Type and Quality of Existing Products: Determine by inspection and testing of Products where necessary, referring to existing construction as a standard.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that demolition is complete, and areas are ready for execution of Work.

B. Beginning of alteration Work will be interpreted to mean that Contractor has examined existing conditions and determined that they are acceptable.

3.2 PREPARATION

A. Coverings:

1. Provide weather- and dust-protection coverings as necessary to contain dust and debris. Protect OCTA and / or affected Cities, equipment, utilities, landscaping, and accessories from dust.

2. At end of work day, provide fenced and locked enclosure around staging area. Contractor to lock all equipment and materials in staging area enclosure overnight.

B. Access for Work: Demolish, Cut, move or remove items as necessary for access for alterations, renovation and extension Work. Replace and restore at completion.

C. Disposal of Materials: Immediately remove unsuitable material not marked for salvage, such as decayed wood, insulation, asphalt concrete, corroded rebar, accessories and other materials as required to complete the work. Replace materials as specified for finished Work.

1. Do not allow debris to accumulate in work areas. Dispose debris daily off-site in a legal manner. Dispose all existing asphalt concrete and accessories that are to be removed, and legally dispose off-site.

2. Remove debris and abandoned items from work area and from parking spaces.

D. Surface Preparation: Remove surface finishes and prepare surfaces to provide for proper installation of new materials and finishes.

E. Protection: Protect equipment adjacent to construction area from damage.

3.3 INSTALLATION

A. Coordinate Work for alterations and renovations to expedite completion and to accommodate the Authority's concurrent occupancy and use of the facility.

B. Coordinate Work for alterations and renovations in a timely manner to expedite completion and minimize disruption to the Authority's continued use occupied areas and spaces. Park all construction equipment and materials inside areas of construction and barricade construction area on all sides at end of work day.

C. Remove, cut, and patch Work in a manner to minimize damage and to provide a means of restoring products and finishes to original or specified new condition.

D. Refinish visible existing surfaces to condition before start of construction. Match adjacent finish surface in color and material. Finish to specified condition for each material, with a near transition to adjacent finishes.

E. In addition to specified work, in case of breakdown of under or above ground utilities, plumbing, electrical power, and lighting, restore to fully operational condition immediately as before construction commenced. All power and other systems should be operational at end of work day. The plans are diagrammatic and do not show all utilities, ducting, equipment, and accessories on the site. Contractor will be required to repair immediately utilities, ducting, plumbing lines, power lines, data lines, equipment, and accessories in case of breakdown or disruption due to construction work and as required to complete the work.

F. Install products as specified in applicable product specification Sections.

3.4 TRANSITIONS

A. Where Work abuts or aligns with existing construction, perform a smooth and even transition. Patches shall match existing adjacent construction in texture and appearance.

B. When finished surfaces are cut so that a smooth transition is not possible, terminate existing surface along a straight line at a natural line of division.

3.5 ADJUSTMENTS

A. Where removal of materials results in adjacent spaces becoming one, rework to a smooth plane without breaks, steps or bulkheads.

B. Where a change of plane of 1/4-inch or more occurs, submit recommendation for providing a smooth transition for the Engineer's review.

3.6 REPAIR OF DAMAGED SURFACES

A. Replace portions of adjacent existing surfaces which are damaged, lifted, discolored, or showing other imperfections or require replacement or repairs during replacement work. Extent of replacement will be required to nearest construction joint, expansion joint, break line, natural break, or in a straight line. Provide a smooth transition between existing and new surface.

B. Repair substrate prior to patching finish.

3.7 FINISHES

A. Finish surfaces as specified in applicable Sections.

B. Finish patches with material and paint to produce uniform finish and texture over entire area. When finish cannot be matched, refinish entire surface to nearest intersections or joints.

3.8 CLEANING

A. Clean areas around the site where asphalt concrete material has fallen during work day. Clean site of work daily before leaving site at end of each work day. Haul debris off-site daily.

PART 4 - MEASUREMENT AND PAYMENT

Work of this Section is considered incidental to Work under other payment items and no separate measurement or payment will be made to the Contractor for Work of this Section.

END OF SECTION

SECTION 01 77 00

SUBSTANTIAL COMPLETION

PART 1 - GENERAL

1.1 SUMMARY

This Section addresses administrative and procedural requirements for Substantial Completion and beneficial occupancy.

1.2 RELATED REQUIREMENTS

A. Section 01 77 19, Project Closeout

B. Section 01 78 23, Operation and Maintenance Data

C. Section 01 78 39, Project Record Documents

1.3 SUBSTANTIAL COMPLETION SUBMITTALS

A. The Contractor shall prepare and submit the following a minimum of 14 days or prior to requesting inspection for determining the date of Substantial Completion.

1. Certificates of Release: Obtain and submit releases from authorities having jurisdiction granting the Authority unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.

2. Submit closeout submittals specified in other Specifications Sections, including Project record documents, all QC Material testing and special inspection results, Final As-Built Schedule, operation and maintenance manuals, final completion construction photographic documentation, damage or settlement surveys, property surveys, and similar final record information, warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.

3. Prepare and submit a schedule of maintenance material submittal items, including the name and quantity of each item and the name and number of the related Specification Section that identifies tools, spare parts, extra materials, and similar items, to be delivered to the location designated by the Authority.

4. Submit test/adjust/balance records.

5. Submit changeover information related to the Authority's occupancy, use, operation, and maintenance.

1.4 SUBSTANTIAL COMPLETION PROCEDURES

A. The Contractor shall complete the following prior to requesting Substantial Completion;

1. Provide a Final As-Built Schedule that is approved by the Authority.

2. Advise the Authority of pending insurance changeover requirements.

3. Make the final changeover of permanent locks and deliver keys to the Authority. Advise the Authority of the changeover in security provisions.

4. Complete the start-up and testing of systems and equipment.

5. Perform preventive maintenance on equipment used prior to Substantial Completion.

6. Instruct the Authority's personnel in the operation, adjustment, and maintenance of products, equipment, and systems.

7. Advise the Authority of the changeover in utilities.

8. Terminate and remove temporary facilities from the Project site, along with mockups, construction tools, and similar elements.

9. Complete final cleaning requirements, including areas adjacent to the project site such as streets, curbs, gutters, swales and other drainage facilities. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.

10. Deliver tools, spare parts, extra materials, and similar items to the location designated by the Authority. Label with manufacturer's name and model number where applicable.

B. The Contractor shall submit a written request for inspection to determine Substantial Completion a minimum of 14 days prior to the date the work will be completed and ready for final inspection and tests. On receipt of such request, the Authority will either proceed with the inspection or notify the Contractor of unfulfilled requirements. The Authority will prepare the Certificate of Substantial Completion and a Final Punchlist for Final Completion after inspection, or will notify the Contractor of outstanding items that must be completed or corrected before the certificate will be issued.

C. The date of Substantial completion of the Work as allowed by the Contract Documents, is the date certified by the Authority when work is sufficiently complete, in accordance with Part A above and the Contract Documents, so the Authority may occupy or use the Work, or a designated part or portion thereof, for the use for which it is intended.

1.5 BENEFICIAL OCCUPANCY

A. The Authority shall have the right to take Beneficial Occupancy of any portion of the Work. The Authority may at any time notify the Contractor in writing that it intends to take Beneficial Occupancy of any portion of the Work that is not otherwise complete. At the time of taking Beneficial Occupancy, the Contractor and the Authority shall make an inspection of that portion of the Work to determine its status of completion and shall prepare a list of the Work items remaining to be completed. During Beneficial Occupancy, the Authority shall allow the Contractor reasonable access to complete or correct items on the list and to complete the Work, but they shall have no tenancy. However, a failure of the Authority to list any item of Work shall not relieve the Contractor of responsibility for complying with the terms of the Contract. The Authority's possession or use shall not be deemed an acceptance of any Work under the Contract.

B. Beneficial Occupancy shall not be deemed an acceptance of the Work. While the Authority is in such possession, the Contractor shall be relieved of the responsibility for maintenance, loss, or damage to that portion of the Work for which the Authority has taken Beneficial Occupancy other than that resulting from the Contractor's act or omission, negligence willful misconduct, or breach of warranty. If such possession or use by the Authority unreasonably delays progress of the Work or causes additional expense to the Contractor, an adjustment may be made in the compensation or time to perform the Work, in accordance with Contract Change Order Procedures.

PART 2 – PRODUCTS

2.1 SPARE PARTS AND MAINTENANCE MATERIALS

Provide products, spare parts, maintenance and extra materials in quantities specified in Section 01 78 23, Operation and Maintenance Data and individual Specification Sections.

PART 3 - EXECUTION

3.1 FINAL CLEANING

A. General: Perform final cleaning. Conduct cleaning and waste-removal Operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.

B. Cleaning Procedures: Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for the entire Project, or for a designated portion of the Project:

1. Clean the Project site, yard, and grounds in areas disturbed by construction activities—including landscape development areas—of rubbish, waste material, litter, and other foreign substances.

2. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.

3. Remove tools, construction equipment, machinery, and surplus material from the Project site.

4. Remove labels that are not permanent.

3.2 REPAIR OF THE WORK

A. Complete repair and restoration operations before requesting inspection for determination of Substantial Completion.

B. Repair or remove and replace defective construction. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment. Where damaged or worn items cannot be repaired or restored, provide replacements. Remove and replace operating components that cannot be repaired. Restore damaged construction and permanent facilities used during construction to their specified condition.

C. Touch up and otherwise repair and restore marred or exposed finishes and surfaces. Replace finishes and surfaces that already show evidence of repair or restoration.

PART 4 - MEASUREMENT AND PAYMENT

Work of this Section is considered incidental to Work under other payment items and no separate measurement or payment will be made to the Contractor for Work of this Section.

END OF SECTION

SECTION 01 77 19

PROJECT CLOSE-OUT

PART 1 - GENERAL

1.1 SUMMARY

This Section specifies procedures and requirements for Contract close out, including but not limited to final submittals, final acceptance, all required financial and legal documentation, and release of final payment to the Contractor at completion of the Contract Work.

1.2 FINAL COMPLETION SUBMITTALS

Submittals Prior to Final Completion: Before requesting final completion, the Contractor shall submit the following:

A. Summary:

1. Provide final contract status report.

2. Submit final contract cost and schedule summary.

B. Closeout:

1. Submit Certificate of Final Acceptance for Authority approval.

2. Submit Notice of Completion.

3. Submit Authority confirmation indicating that all inspections are complete.

4. Submit Request for Final Acceptance.

5. Submit Final Release.

6. Certificate of Insurance: Submit evidence of final, continuing insurance coverage complying with Contract insurance requirements.

C. Compliance:

1. Consent of the surety to final payment.

2. Provide all required Contract Compliance documents.

3. Provide all required Labor Compliance documents in accordance with General Conditions.

D. Financial:

1. Submit Request for Release of Retention / the Contractor Final Release.

2. Submit Release of Retention Invoice.
3. Final liquidated damages settlement statement, if applicable.
4. Application for Final Payment shall include the following documentation:
   a. Lien Releases from Subcontractors
   b. Certificate - “All Claims Resolved”
   c. Certificate - “No Claims for Subs”
   d. Certificate - “Warranties/Guarantees in Effect”

E. Construction:

1. Submit final quantities log.
2. Address and provide Authority documentation of completion of Punchlist items.
3. Provide documentation of permit sign-off by third party agencies, as required and provide Certificates of Release from jurisdictional authorities.
4. Final meter readings for utilities, a measured record of stored fuel, and similar data as of the date of Substantial Completion (or when the Authority took possession of and assumed responsibility for corresponding elements of Work), if applicable.
5. Provide final report for Material testing and special inspections.
6. As-Built Drawings.
7. As-Built Schedule.
8. Provide Warranties and Guarantees.
9. Maintenance and Operations Manuals
10. Certificate of Insurance: For continuing coverage if specified in Contract Documents.
11. Schedule of Maintenance Material Items for maintenance material submittal items specified in other Sections.

1.04 ACCEPTANCE OF THE WORK AND CLOSEOUT

When the Contractor determines that the Work is fully completed, the Contractor shall give the Authority a written Request for Acceptance of Work. Within 30 Days after receipt of the Contractor’s Request for Acceptance of Work, the Authority shall review all requirements of the Work and either: (1) reject the Contractor’s Request for Acceptance of Work, specifying defective or uncompleted Work items, or (2) accept the Work as complete by issuing to the Contractor.

If the Authority rejects the Contractor's Request for Acceptance of Work, the Contractor shall promptly remedy the defective or uncompleted Work items. Thereafter, the Contractor shall again give Authority a written Request for Acceptance of Work. The foregoing procedure shall apply successively thereafter until Authority has issued the Contractor a Certificate actor a Certificate of Final Acceptance and approving the final payment. of Final Acceptance.

PART 2 - PRODUCTS (Not used)

PART 3 - EXECUTION (Not used)

PART 4 - MEASUREMENT AND PAYMENT

Work of this Section is considered incidental to Work under other payment items and no separate measurement or payment will be made to the Contractor for Work of this Section.

END OF SECTION

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SECTION 01 78 39

PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.01 SUMMARY

This Section addresses administrative and procedural requirements for preparing project As-Built drawings, specifications, product data and other miscellaneous documents submitted as required by the Contract.

PART 2 - PRODUCTS

2.1 AS-BUILT DRAWINGS

A. Record Prints: Maintain one set of marked-up paper copies of the Contract Drawings and Shop Drawings, incorporating new and revised drawings as modifications are issued.

1. Preparation: Mark record prints to show the actual installation where installation varies from that shown originally. Require the individual or entity who obtained the record data, whether the individual or entity is an Installer, Sub-Contractor, or similar entity, to provide information for preparation of corresponding marked-up record prints as follows:

    a. Provide complete information on concealed elements that would be difficult to identify or measure and record later.

    b. Accurately record information in an acceptable drawing technique.

    c. Record data as soon as possible after obtaining it.

    d. Record and check the markup before enclosing concealed installations.

    e. Cross-reference record prints to corresponding archive photographic documentation.

2. Content: Types of items requiring marking include, but are not limited to, the following:

    a. Dimensional changes and revisions to details shown on Drawings. The lines shall be located on the drawings dimensionally from a fixed point, such as a street-curb line, centerline, permanent structure, or an exposed part of a structure.

    b. Locations and depths of underground utilities including horizontal and vertical location of underground utilities affected by the Work. This includes new utilities installed and utilities found and left in place.

    c. Revisions to routing of piping and conduits

d. Changes made by Change Order or Change Directive

e. Changes made following the Authority's written orders

f. Details not on the original Contract Drawings

g. Field records for variable and concealed conditions

h. Record information on the Work that is shown only schematically.

3. Mark the Contract Drawings and Shop Drawings completely and accurately. Use personnel proficient at recording graphic information in production of marked-up prints. Record new information and details that are recognized to be of importance to the Authority, but that were not shown on either the Contract Drawings or on shop drawings. Record changes on whichever drawing is most capable of showing the “field” condition fully and accurately; and when shop drawings are used for As-Built drawings.

4. Mark the As-Built set with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at same location.

5. Mark important additional information that was either shown schematically or omitted from the original Drawings.

6. Note Construction Change Directive numbers, RFI numbers, option numbers, Change Order numbers, and similar identification, where applicable.

7. As-Built Drawings: Submit two complete sets of marked-up record prints and a complete PDF electronic file. Include each drawing, whether or not changes and additional information were recorded.

2.2 AS-BUILT SPECIFICATIONS

A. Preparation: Mark Specifications to indicate the actual product installation whenever the installation varies from that indicated in Specifications, addenda, and contract modifications.

1. Provide detailed information on concealed products and equipment installations that cannot be readily identified and recorded later.

2. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.

3. Record the name of the manufacturer, supplier, and Installer, and include other information necessary to provide a record of the selections made.

4. For each principal product, indicate whether record Product Data has been submitted in operation and maintenance manuals instead of submitted as record Product Data.

5. Note related Change Orders, record Product Data, and record Drawings where applicable.

B. Format: Submit As-Built Specifications as paper copy and scanned PDF electronic files of the marked-up paper copy of the Specifications.

2.3 AS-BUILT CONSTRUCTION SCHEDULE

The most current approved construction schedule shall be marked in red pencil or ink showing all deviations occurring since the schedule was approved. Submit the final "As-Built" Project Schedule as paper copy and a scanned PDF electronic file of the marked-up paper copy of the final Project Schedule.

2.4 RECORD PRODUCT DATA

A. Preparation: Mark Product Data to indicate the actual product installation whenever the installation varies substantially from that indicated in the Product Data submittal.

1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.

2. Include significant changes in the product delivered to the Project site, and changes in the manufacturer's written instructions for installation.

3. Note related Change Orders, record Specifications, and record Drawings where applicable.

B. Format: Submit record Product Data as paper copy and scanned PDF electronic file(s) of the marked-up paper copy of the Product Data. Include a record Product Data directory organized by Specification Section number and title, electronically linked to each item of the record Product Data.

2.5 MISCELLANEOUS RECORD SUBMITTALS

A. Assemble miscellaneous records required by other Specification Sections for miscellaneous record keeping and submittal in connection with actual performance of the Work. Bind or file miscellaneous records and identify each, ready for continued use and reference.

B. Format: Submit miscellaneous record submittals as paper copy and scanned PDF electronic file(s) of marked-up miscellaneous record submittals. Include a miscellaneous record submittals directory organized by Specification Section number and title, electronically linked to each item of the miscellaneous record submittals.

2.6 SUBMITTAL TITLE

Label each document "PROJECT AS-BUILT" in two-inch-high printed letters or a height appropriate to document.

PART 3 - EXECUTION

3.1 RECORDING AND MAINTENANCE

A. The monthly progress payment application will not be processed by the Authority *until the Contractor is found by the Authority to have completely and accurately recorded all as-built information for Work performed through the period of the progress payment application.

B. Store record documents and Samples in the field office in files and racks apart from the Contract Documents used for construction. Do not use As-Built documents for construction purposes and maintain documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to As-Built documents for the Authority's reference during n o r m a l working hours.

PART 4 - MEASUREMENT AND PAYMENT

Work of this Section is considered incidental to Work under other payment items and no separate measurement or payment will be made to the Contractor for Work of this Section.

END OF SECTION

SECTION 03 15 00

DRILL AND BOND DOWELS (EPOXY CARTRIDGE)

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work included:

1. Drill and bond dowels in existing concrete or gunite/shotcrete structures.

1.2 RELATED WORK

A. Coordinate the work of this Section with the following sections:

1. 03 31 00 – Structural Concrete
2. 03 21 00 – Reinforcing Steel
3. 31 11 50 – Demolition, Cutting, and Patching

1.3 REFERENCE STANDARDS

Comply with all applicable local, State and Federal codes, specifications, standards and recommended practices.

1.4 SUBMITTALS

A. Submit the following in accordance with Section 01 33 00, Submittals:

1. Manufacturer's cut sheets for proposed products.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Subject to compliance with the Contract Documents, the following manufacturers are acceptable:

1. Epoxy Cartridge:

a. HIT-HY150 System by HILTI FASTENING SYSTEMS, INC.

b. Epcon Adhesive Anchoring System by ITW Ramset/Red Head.

c. Power-Fast by Powers Fastening, Inc.

d. Approved equal.

A. Reinforcing steel dowels shall conform to the provisions in Section 03 21 00 - Reinforcing Steel of the standard specifications.

B. Each epoxy cartridge shall be clearly and permanently marked with the manufacturer's name, model number of the epoxy cartridge system, manufacturing date, and lot number. Each carton of epoxy cartridges shall contain the manufacturer's recommended installation procedures, minimum cure time, and such warning or precautions concerning the contents as may be required by State or Federal Laws and Regulations.

2.2 TESTING

A. The Contractor shall select an epoxy cartridge system which has passed the testing requirements of the International Conference of Building Officials (ICBO) document - AC58 and additional test requirements as specified in the Caltrans Augmentation/Revisions to ICBO AC58. Testing shall be performed by an independent testing facility and the results will be reviewed and approved by the Transportation Laboratory. The Caltrans Augmentation/Revisions to ICBO AC58 document may be obtained by contacting the Transportation Laboratory, telephone: (916) 227-7000.

B. The epoxy cartridge system used shall be appropriate for the ambient concrete temperature and installation conditions at the time of installation in conformance with the manufacturer's specifications.

C. Epoxy cartridges shall be accompanied by a Certificate of Compliance. The certificate shall state that the material complies in all respects to the requirements of ICBO AC58 and Caltrans Augmentation/Revisions to ICBO AC58.

D. Authority or their representative shall be present during all testing of bonded dowels and epoxy cartridge systems.

2.3 INSPECTION AND ACCEPTANCE

A. Authority or their representative shall be present during and inspect all bonding of dowels to proposed or existing work.

B. If the Authority or their representative rejects the Contractor's work, the Contractor shall promptly remedy the defective or uncompleted Work items.

PART 3 – EXECUTION

3.1 GENERAL

A. The holes shall be drilled by methods that will not shatter or damage the concrete adjacent to the holes. If reinforcement is encountered during drilling, before the specified depth is attained, the Engineer shall be notified. Unless the Engineer approves, in writing, coring through the reinforcement, the hole will be rejected and a new hole, in which reinforcement is not encountered, shall be drilled adjacent to the rejected hole to the depth recommended by the manufacturer.

B. The drilled holes shall be cleaned in conformance with the manufacturer's instructions and shall be dry at the time of placing the epoxy cartridge bonding material and the steel dowels. The bonding material shall be a 2-component epoxy system contained in a cartridge having 2 separate chambers and shall be inserted into the hole using a dispensing gun and replaceable mixing nozzle approved by the manufacturer. Unless otherwise specified, the depth and diameter of the hole and the installation procedure shall be as recommended by the manufacturer. A copy of the manufacturer's recommended installation procedure shall be provided to the Engineer for review, per Section 01 33 Submittal Procedures, prior to the start of work.

C. Immediately after inserting the dowels into the epoxy, the dowels shall be supported as necessary to prevent movement during curing and shall remain undisturbed until the epoxy has cured a minimum time as specified by the manufacturer. Dowels that are improperly bonded, as determined by the Engineer, will be rejected. Adjacent new holes shall be drilled, and new dowels shall be placed and securely bonded to the concrete. All work necessary to correct improperly bonded dowels shall be performed at the Contractor's expense.

PART 4 - MEASUREMENT AND PAYMENT

Work of this Section is considered incidental to Work under other payment items and no separate measurement or payment will be made to the Contractor for Work of this Section.

END OF SECTION

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SECTION 03 21 00

REINFORCING STEEL

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Reinforcing steel bar requirements for concrete construction.

B. Related Specification Sections include but are not necessarily limited to:

1. Division 01 - General Requirements.

2. Section 03 31 00 – Structural Concrete

1.2 REFERENCES

A. American Concrete Institute (ACI):

1. SP 66, ACI Detailing Manual.

2. 318, Building Code Requirements for Structural Concrete.

B. ASTM International (ASTM):

1. A185, Standard Specification for Steel Welded Wire Reinforcement, Plain, for Concrete.

2. A497, Standard Specification for Steel Welded Wire Reinforcement, Deformed, for Concrete.

3. A615, Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement.

4. A706, Standard Specification for Low-Alloy Steel Deformed and Plain Bars for Concrete Reinforcement.

C. American Welding Society (AWS):

1. D1.4, Structural Welding Code - Reinforcing Steel.

D. Concrete Reinforcing Steel Institute (CRSI):

1. Manual of Standard Practice.

E. Current California Department of Transportation Standard Specifications 2010.

F. American Railway Engineering and Maintenance-of-Way Association (AREMA)

1. Chapter 8 – Concrete Structures and Foundations.

1.3 SUBMITTALS

A. Shop Drawings:

1. See Division 01 for requirements for the mechanics and administration of the submittal process.

2. Product technical data including:

a. Acknowledgement that products submitted meet requirements of standards referenced.

b. Manufacturer's installation instructions.

c. Mill certificates for all reinforcing.

d. Manufacturer and type of proprietary rebar mechanical splices.

e. Manufacturer and type of rebar adhesive anchor including installation instructions.

3. Qualifications of welding operators, welding processes and procedures.

4. Rebar number, sizes, spacing, dimensions, configurations, locations, mark numbers, lap splice lengths and locations, concrete cover and rebar supports.

5. Sufficient rebar details to permit installation of reinforcing.

6. Rebar details in accordance with ACI SP 66.

7. Locations where proprietary rebar mechanical splices are required or proposed for use.

8. Shop Drawings shall be in sufficient detail to permit installation of reinforcing without reference to Contract Plans.

a. Shop Drawings shall not be prepared by reproducing the plans and details indicated on the Contract Plans but shall consist of completely redrawn plans and details as necessary to indicate complete fabrication and installation of all reinforcing steel.

1.4 QUALITY ASSURANCE

A. Qualifications:

1. Welding operators, processes and procedures shall be qualified in accordance with AWS D1.4.

2. Welding operators must have been qualified during the previous 12 months prior to commencement of welding.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Support and store all reinforcing above ground.

B. Ship to jobsite with attached plastic or metal tags with permanent mark numbers which match the Shop Drawing mark numbers.

C. Handling of Epoxy-Coated Rebar:

1. Use padded or nonmetallic slings and padded straps to protect coated reinforcement from damage.

2. Handle bundled bars to prevent sagging that could damage the coating.

3. Do not drop or drag rebar.

4. Store on wooden cribbing.

5. Coated rebar subject to rejection by Engineer if rebar coating has been damaged. The rebar may be used for repair if approved by Engineer.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURES

A. Subject to compliance with the Contract Documents, the following manufacturers are acceptable:

1. Rebar adhesive anchors. See Specification Section 03 15 00 for accepted materials.

2. Rebar mechanical splices:

a. Lenton Rebar Splicing by Erico, Inc.

b. Richmond dowel bar splicer system by Richmond Screw and Anchor Co., Inc.

c. Bar-Grip Systems by Barsplice Products, Inc.

d. Approved equal.

B. Submit request for substitution in accordance with Division 01.

2.2 MATERIALS

A. Reinforcing Bars: ASTM A615, grade 60, deformed.

B. Reinforcing Bars to be Welded: ASTM A706.

C. Welded Wire Reinforcement: ASTM A185 or ASTM A497.

D. Smooth Dowel Bars: ASTM A615, grade 60 with metal end cap to allow longitudinal movement equal to joint width plus 1 inch.

E. Epoxy-Coated Rebar: ASTM A775 and ASTM A615, Grade 60, meeting Annex A1 for epoxy coating.

F. Epoxy-Coated Rebar Patching Material:

1. Compatible with the coating material.

2. Inert in concrete.

3. Meet requirements of Annex A1 of ASTM A775.

4. Obtained from the manufacturer of the epoxy resin that was used to originally coat the rebar.

G. Proprietary Rebar Mechanical Splices: To develop in tension and compression a minimum of 125 percent of the yield strength of the rebar being spliced.

H. Welding Electrodes:

1. E90 meeting requirements of AWS D1.4.

I. Rebar Adhesive Anchors:

1. Manufactured for the specific purpose of embedding and developing 125 percent of the yield strength of rebar in hardened concrete.

2.3 ACCESSORIES

A. Metal Chairs, Runners, Bolsters, Spacers, Hangers, and Other Rebar Supports:

1. Plastic-coated tips in contact with forms.

2. Plastic coating meeting requirements of CRSI Manual of Standard Practice.

B. Protective plastic caps at mechanical splices.

2.4 FABRICATION

A. Tolerances:

1. Sheared lengths: +1 inch.

2. Overall dimensions of stirrups, ties and spirals: +1/2 inches.

3. All other bends: +0 inch, -1/2 inches.

B. Minimum diameter of bends measured on the inside of the rebar to be as indicated in ACI 318 Paragraph 7.2.

C. Ship rebar to jobsite with attached plastic or metal tags.

1. Place on each tag the mark number of the rebar corresponding to the mark number indicated on the Shop Drawing.

2. Mark numbers on tags to be so placed that the numbers cannot be removed.

3. For epoxy-coated rebar, use only plastic tags secured to rebar by nylon or plastic ties.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Tolerances:

1. Rebar placement:

a. Clear distance to formed surfaces: +1/4 inches.

b. Minimum spacing between bars: -1/4 inches.

c. Top bars in slabs and beams:

1) Members 8 inches deep or less: +1/4 inches.

2) Members between 8 inches and 2 feet deep: -1/4 inches, +1/2 inches.

3) Members more than 2 feet deep: -1/4 inches, +1 inches.

d. Crosswise of members: Spaced evenly within +1 inches.

e. Lengthwise of members: +2 inches.

2. Minimum clear distances between rebar:

a. Beams, walls and slabs: Distance equal to rebar diameter or 1 inch, whichever is greater.

b. Columns: Distance equal to 1-1/2 times the rebar diameter or

1-1/2 inches, whichever is greater.

c. Beam and slab rebar shall be threaded through the column vertical rebar without displacing the column vertical rebar and still maintaining the clear distances required for the beam and slab rebar.

B. Minimum concrete protective covering for reinforcement: As shown on Plans.

C. Minimum concrete protective covering for reinforcement, unless indicated otherwise on Plans:

1. Three (3) inches for concrete cast against earth, 2 inches all other locations.

D. Unless indicated otherwise on Plans, provide splice lengths for reinforcing as follows:

1. For rebar: Class B splice meeting the requirements of Paragraph 12.15 of ACI 318.

2. For welded wire reinforcement:

a. Splice lap length measured between outermost cross wires of each fabric sheet shall not be less than one (1) spacing of cross wires plus 2 inches, nor less than 1.5 x development length nor less than 6 inches.

b. Development length shall be as required for the yield strength of the welded wire reinforcement in accordance with Paragraph 12.8 of ACI 318.

3. Provide splices of reinforcing not specifically indicated or specified subject to approval of Engineer.

a. Mechanical proprietary splice connectors may only be used when approved or indicated on the Contract Plans.

E. Reinforcing Steel Splices:

1. Splices of reinforcing bars shall consist of lap splices, service splices, or ultimate butt splices.

2. Splicing of reinforcing bars will not be permitted at a location designated on the plans as a "No-Splice Zone."

3. At the option of the Contractor, reinforcing bars may be continuous at locations where splices are shown on the plans.

4. The location of splices, except where shown on the plans, shall be determined by the Contractor using available commercial lengths where practicable.

5. Unless otherwise shown on the plans, splices in adjacent reinforcing bars at any particular section shall be staggered.

   a. The minimum distance between staggered lap splices or mechanical lap splices shall be the same as the length required for a lap splice in the largest bar.

   b. The minimum distance between staggered butt splices shall be 2 feet, measured between the midpoints of the splices along a line which is centered between the axis of the adjacent bars.

6. Lap Splicing Requirements:

   a. Splices made by lapping shall consist of placing reinforcing bars in contact and wiring them together, maintaining the alignment of the bars and the minimum clearances.

   b. Should the Contractor elect to use a butt welded or mechanical splice at a location not designated on the plans as requiring a service or ultimate butt splice, this splice shall conform to the testing requirements for service splice.

   c. Reinforcing bars shall not be spliced by lapping at locations where the concrete section is not sufficient to provide a minimum clear distance of 2 inches between the splice and the nearest adjacent bar.

   d. The clearance to the surface of the concrete specified on the Plans shall not be reduced.

7. Service Splicing and Ultimate Butt Splicing Requirements:

   a. Service splices and ultimate butt splices shall be either butt welded or mechanical splices, shall be used at the locations shown on the plans, and shall conform to the requirements of these Specifications and the Plans.

8. Mechanical Splices:

   a. Mechanical splices shall not be used for any reinforcing steel in the “Ultimate Splice Zone” as indicated on the Plans.

   b. Any mechanical splices proposed by the Contractor shall be submitted for review and approval by the Engineer prior to reinforcing steel fabrication.

   c. Only mechanical splices prequalified by the Transportation Laboratory of the California Department of Transportation shall be allowed.

   d. Submittal of proposed mechanical splices shall include:

1) The type or series identification of the splice material including tracking information for traceability.

2) The bar grade and size number to be spliced.

3) A copy of the manufacturer's product literature giving complete data on the splice material and installation procedures.

4) A statement that the splicing systems and materials used in conformance with the manufacturer's installation procedures will develop the required tensile strengths, based on the nominal bar area, and will conform to the total slip requirements and the other requirements in the California Department of Transportation Standard Specifications.

5) A statement that the splice material conforms to the type of mechanical splice in the California Department of Transportation current prequalified list.

9. Butt Welded Splices:

a. Except for resistance butt welds, butt welded splices of reinforcing bars shall be complete joint penetration butt welds conforming to the requirements in AWS D 1.4, and these Specifications.

b. Welders and welding procedures shall be qualified in conformance with the requirements in AWS D 1.4.

c. Only the joint details and dimensions as shown in Figure 3.2, "Direct Butt Joints," of AWS D 1.4, shall be used for making complete joint penetration butt welds of bar reinforcement.

1) Split pipe backing shall not be used.

d. Butt welds shall be made with multiple weld passes using a stringer bead without an appreciable weaving motion.

1) The maximum stringer bead width shall be 2.5 times the diameter of the electrode and slagging shall be performed between each weld pass.

2) Weld reinforcement shall not exceed 0.16 inches in convexity.

e. Electrodes used for welding shall meet the minimum Charpy V-notch impact requirement of 27°J at -4 degrees.

f. All bars to be welded shall conform to the requirements o f ASTM A706.

g. In the event that any of the specified preheat, interpass, and post weld cooling temperatures are not met, all weld and heat affected zone metal shall be removed and the splice rewelded.

h. Welding shall be protected from air currents, drafts, and precipitation to prevent loss of heat or loss of arc shielding.

1) The method of protecting the welding area from loss of heat or loss of arc shielding shall be subject to approval by the Engineer.

i. Reinforcing bars shall not be direct butt spliced by thermite welding.

j. Procedures to be used in making welded splices in reinforcing bars, and welders employed to make splices in reinforcing bars, shall be qualified by tests performed by the Contractor on sample splices of the type to be used, before making splices to be used in the work.

10. Resistance Butt Welding:

a. Shop produced resistance butt welds shall be produced by a fabricator who is approved by the Transportation Laboratory of the California Department of Transportation.

b. Before manufacturing hoops using resistance butt welding, the Contractor shall submit to the Engineer the manufacturer's Quality Control (QC) manual for the fabrication of hoops.

1) As a minimum, the QC manual shall include the following:

a) The pre-production procedures for the qualification of material and equipment.

b) The methods and frequencies for performing QC procedures during production.

c) The calibration procedures and calibration frequency for all equipment.

d) The Welding Procedure Specification (WPS) for resistance welding.

e) The method for identifying and tracking lots.

11. Service Splice and Ultimate Butt Splice Testing Requirement:

a. Testing and reporting of test results for Service and Ultimate Butt Splices shall conform to the California Department of Transportation Standard Specification, Section 52 Reinforcement.

F. Placing Rebar:

1. Assure that reinforcement at time concrete is placed is free of mud, oil or other materials that may affect or reduce bond.

2. Reinforcement with rust, mill scale or a combination of both will be accepted as being satisfactory without cleaning or brushing provided dimensions and weights including heights of deformations on a cleaned sample is not less than required by applicable ASTM Specification that governs for the rebar supplied.

3. Rebar support:

a. Uncoated rebar:

1) Support rebar and fasten together to prevent displacement by construction loads or placing of concrete.

a) Locate and support reinforcement with bar supports to maintain minimum concrete cover.

b) Set wire ties with ends directed into concrete, not toward exposed concrete surfaces.

2) On ground, provide supporting concrete blocks to support reinforcing steel.

3) Over formwork, provide plastic-coated metal chairs, runners, bolsters, spacers, hangers and other rebar support.

a) Only tips in contact with the forms need to be plastic coated.

b. Coated rebar:

1) Support coated rebar and fasten together to prevent displacement.

2) Use plastic or nylon ties to hold rebar rigidly in place.

3) Support rebar by use of plastic or plastic-coated chairs, runners, bolsters, spacers, hangers and rebar supports as required.

4. Support rebar over cardboard void forms by means of concrete supports which will not puncture or damage the void forms during construction nor impair the strength of the concrete members in any way.

5. Where parallel horizontal reinforcement in beams is indicated to be placed in two or more layers, rebar in the upper layers shall be placed directly above rebar in the bottom layer with clear distance between layers to be 1 inches.

    a. Place spacer rebar at 3 feet maximum centers to maintain the required 1 inch clear distance between layers.

6. Extend reinforcement to within 2 inches of concrete perimeter edges.

    a. If perimeter edge is formed by earth, extend reinforcement to within 3 inches of the edge.

7. To assure proper placement, furnish templates for all column/pier vertical bars and dowels.

8. Do not bend reinforcement after embedding in hardened concrete unless approved by Engineer.

    a. Do not bend reinforcing by means of heat.

9. Do not tack weld reinforcing.

10. Embed rebar into hardened concrete utilizing adhesive anchor system specifically manufactured for such installation:

    a. Drill hole in concrete with diameter and depth as required to develop 125 percent of the yield strength of the bar according to manufacturer's requirements.

    b. Clean holes per manufacturer's recommendations.

    c. Place adhesive in drilled hole.

    d. Insert rebar into hole and adhesive in accordance with manufacturer's instructions.

3.2 FIELD QUALITY CONTROL

A. Reinforcement Congestion and Interferences:

1. Notify Engineer whenever the specified clearances between rebar cannot be met.

2. Do not place any concrete until the Engineer submits a solution to rebar congestion problem.

3. Rebar may be moved as necessary to avoid interference with other reinforcing steel, conduits, or embedded items.

4. If rebar are moved more than one bar diameter, obtain Engineer's approval of resulting arrangement of rebar.

5. No cutting of rebar shall be done without written approval of Engineer.

B. Inspection of Epoxy-Coated Rebar:

1. Coated rebar will be inspected on the jobsite for handling defects, coating abrasion, coating thickness and continuity of coating.

2. Engineer may defer final inspection of rebar coating integrity and repairs until the rebar have been erected and all handling is completed.

3. Repair coated areas as directed by Engineer.

a. Do not place concrete until all repairs to coatings have been completed.

C. Patching of Epoxy-Coated Rebar:

1. Patching and repair to be performed in accordance with the instructions of patching material manufacturer.

2. Patching material to provide a minimum film thickness of 5 mils over the bare area.

a. Thickness of area adjacent to patched area not to exceed 15 mils.

3. Areas to be patched to be clean and free of surface contaminants.

a. Treat areas in accordance with patching material manufacturer's instructions before oxidation occurs.

4. Total surface area covered by patching material not to exceed 2 percent of total surface area of the rebar.

5. Rebar welds and adjacent bare rebar areas to also be patched after welding is completed.

D. Employ a testing laboratory to perform and report following:

1. Review and approve Contractor proposed welding procedures and processes for conformance with AWS D1.4.

2. Qualify welders in accord with AWS D1.4.

3. Test three (3) samples of each bar size and each type of weld in accord with AWS D1.4.

a. The tensile strength of each test shall be not less than 1 2 5 percent of the required yield strength of the rebar tested.

4. Conduct nondestructive field tests (radiographic or magnetic particle) on not less than one (1) random sample for each 10 welds.

   a. In addition, if any welds are found defective, test five (5) previous welds performed by same welder.

5. Visually inspect each weld for presence of cracks, undercuts, inadequate size and other visible defects.

PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

A. Furnish all labor, materials, tools, equipment, supplies, supervision, and incidentals, and perform all work necessary to provide and place all reinforcing steel as indicated on the Plans and described herein.

4.2 PAYMENT

A. No separate payment will be made for providing and placing the reinforcing steel. The cost therefore shall be considered as included in the Contract price for the various bid items in which reinforcing steel is required and no additional compensation will be allowed therefore.

B. Full compensation for furnishing all tie wires, blocks, chairs and other supporting devices shall be considered as included in the contract Unit Price for the various bid items in which reinforcing steel is required and no separate payment will be made therefore.

C. Full compensation for furnishing and testing sample splices, for radiographic examinations performed by the Contractor and for furnishing access facilities for inspection and non-destructive testing by the Engineer shall be considered as included in the Contract Unit Price for the various bid items in which reinforcing steel is required and no additional compensation will be allowed therefore.

END OF SECTION

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SECTION 03 31 00

STRUCTURAL CONCRETE

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Cast-in-place concrete and grout.

B. Related Specification Sections include but are not necessarily limited to:

1. Division 00 - Bidding Requirements, Contract Forms, and Conditions of the Contract.

2. Division 01 - General Requirements.

3. Section 03 21 00 – Reinforcing Steel.

1.2 REFERENCES

A. American Railway Engineering and Maintenance-of-Way Association (AREMA)

1. Chapter 8 – Concrete Structures and Foundations

B. American Concrete Institute (ACI):

1. 116R, Cement and Concrete Terminology.

2. 211.1, Standard Practice for Selecting Proportions for Normal, Heavyweight and Mass Concrete.

3. 212.3R, Chemical Admixtures for Concrete.

4. 304R, Guide for Measuring, Mixing, Transporting, and Placing Concrete.

5. 304.2R, Placing Concrete by Pumping Methods.

6. 305R, Hot Weather Concreting.

7. 306R, Cold Weather Concreting.

8. 318, Building Code Requirements for Structural Concrete.

9. 347R, Recommended Practice for Concrete Formwork.

C. ASTM International (ASTM):

1. C31, Standard Practice for Making and Curing Concrete Test Specimens in the Field.

2. C33, Standard Specification for Concrete Aggregates.

3. C39, Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens.

4. C94, Standard Specification for Ready-Mixed Concrete.

5. C138, Standard Method of Test for Density (Unit Weight), Yield, and Air Content (Gravimetric) of Concrete.

6. C143, Standard Test Method for Slump of Hydraulic Cement Concrete.

7. C150, Standard Specification for Portland Cement.

8. C157, Standard Test Method for Length Change of Hardened Hydraulic-Cement, Mortar, and Concrete.

9. C172, Standard Practice for Sampling Freshly Mixed Concrete.

10. C173, Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method.

11. C231, Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method.

12. C260, Standard Specification for Air-Entraining Admixtures for Concrete.

13. C289, Standard Test Method for Potential Alkali-Silica Reactivity of Aggregates (Chemical Method).

14. C309, Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete.

15. C494, Standard Specification for Chemical Admixtures for Concrete.

16. C578, standard Specification for Rigid, Cellular Polystyrene Thermal Insulation.

17. C618, Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete.

18. C1077, Standard Practice for Agencies Testing Concrete and Concrete Aggregates for use in Construction and Criteria for Testing Agency Evaluation.

19. C1240, Standard Specification for Use as a Mineral Admixture in Hydraulic-Cement Concrete, Mortar, and Grout.

20. D994, Standard Specification for Preformed Expansion Joint Filler for Concrete (Bituminous Type).

21. D1056, Standard Specification for Flexible Cellular Materials-Sponge or Expanded Rubber.

22. D1751, Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types).

23. E329, Standard Specification for Agencies Engaged in Construction Inspection and/or Testing.

D. Corps of Engineers (COE):

1. CRD-C621, Standard Specification for Packaged, Dry, Hydraulic-Cement Grout (Nonshrink).

E. Standard Specifications for Public Works Construction, SSPWC, Latest Edition.

1.3 DEFINITIONS

A. Per ACI 116R except as modified herein:

1. Concrete fill: Non-structural concrete.

2. Concrete Testing Agency: Testing agency employed to perform materials evaluation, design of concrete mixes or testing of concrete placed during construction.

3. Exposed concrete: Exposed to view after construction is complete.

4. Indicated: Indicated by Contract Documents.

5. Nonexposed concrete: Not exposed to view after construction is complete.

6. Required: Required by Contract Documents.

7. Specified strength: Specified compressive strength at 28 days.

8. Submitted: Submitted to Engineer.

1.4 SUBMITTALS

A. Shop Drawings:

1. See Division 01 for requirements for the mechanics and administration of the submittal process.

2. Concrete mix designs proposed for use.

a. Concrete mix design submittal to include the following information:

1) Sieve analysis and source of fine and coarse aggregates.

2) Test for aggregate organic impurities.

3) Test for deleterious aggregate per ASTM C289.

4) Proportioning of all materials.

5) Type of cement with mill certificate for cement.

6) Type of fly ash with certificate of conformance to Specification requirements.

7) Slump.

8) Air content.

9) Brand, type, ACI or ASTM designation, and quantity of each admixture proposed for use.

10) 28-day cylinder compressive test results of trial mixes per ACI 318 and as indicated herein.

11) Shrinkage test results.

12) Standard deviation value for concrete production facility.

3. Product technical data including:

a. Acknowledgement that products submitted meet requirements of standards referenced.

b. Manufacturer's installation instructions.

c. Manufacturers and types:

1) Joint fillers.

2) Curing agents.

3) Bonding and patching mortar.

4) Construction joint bonding adhesive.

5) Non-shrink grout with cure/seal compound.

4. Reinforcing steel:

a. Per Specification Section 03 21 00.

1.5 QUALITY ASSURANCE

A. Quality Assurance:

1. Concrete testing agency:

a. Contractor must employ at its own expense the services of a testing laboratory to:

1) Perform materials evaluation.

2) Design concrete mixes.

b. Concrete testing agency to meet requirements of ASTM E329.

2. Do not begin concrete production until proposed concrete mix design has been approved by Engineer.

a. Approval of concrete mix design by Engineer does not relieve Contractor of his responsibility to provide concrete that meets the requirements of this Specification.

3. Adjust concrete mix designs when material characteristics, job conditions, weather, strength test results or other circumstances warrant.

a. Do not use revised concrete mixes until submitted to and approved by Engineer.

4. Perform structural calculations as required to prove that all portions of the structure in combination with remaining forming and shoring system has sufficient strength to safely support its own weight plus the loads placed thereon.

B. Qualifications:

1. Ready mixed concrete batch plant certified by National Ready Mixed Concrete Association (NRMCA).

2. Formwork, shoring and reshoring for slabs and beams except where cast on ground to be designed by a professional engineer currently registered in the state where the Project is located.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Storage of Material:

1. Cement and fly ash:

a. Store in moistureproof, weathertight enclosures.

b. Do not use if caked or lumpy.

2. Aggregate:

a. Store to prevent segregation and contamination with other sizes or foreign materials.

b. Obtain samples for testing from aggregates at point of batching.

c. Do not use frozen or partially frozen aggregates.

d. Do not use bottom 6 inches of stockpiles in contact with ground.

e. Allow sand to drain until moisture content is uniform prior to use.

3. Admixtures:

a. Protect from contamination, evaporation, freezing, or damage.

b. Maintain within temperature range recommended by manufacturer.

c. Completely mix solutions and suspensions prior to use.

4. Reinforcing steel: Support and store all rebar above ground.

B. Delivery:

1. Concrete:

a. Prepare a delivery ticket for each load for ready-mixed concrete.

b. Truck operator shall hand ticket to Engineer at the time of delivery.

c. Ticket to show:

1) Mix identification mark.

2) Quantity delivered.

3) Amount of each material in batch.

4) Outdoor temp in the shade.

5) Time at which cement was added.

6) Numerical sequence of the delivery.

7) Amount of water added.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Subject to compliance with the Contract Documents, the following products and manufacturers are acceptable:

1. Nonshrink, nonmetallic grout:
    a. Sika "SikaGrout 212."
    b. Euclid Chemial "NS Grout."
    c. BASF Admixtures, Inc. "Masterflow 713."
    d. Approved equal.
2. Epoxy grout:
    a. BASF Admixtures, Inc. "Brutem MPG."
    b. Euclid Chemical Company, "E3-G."
    c. Fosroc, "Conbextra EPHF".
    d. Approved equal.
3. Expansion joint fillers:
    a. Permaglaze Co.
    b. Rubatex Corp.
    c. Williams Products, Inc.
    d. Approved equal.
4. Form coating:
    a. Richmond "Rich Cote."
    b. Industrial Lubricants "Nox-Crete Form Coating."
    c. Euclid Chemical "Eucoslip VOX."
    d. Approved equal.

5. Prefabricated forms:
    a. Simplex "Industrial Steel Frame Forms."
    b. Symons "Steel Ply."
    c. Universal "Uniform."
    d. Approved equal.
6. Bonding agent:
    a. Euclid Chemical Co.
    b. BASF Admixtures, Inc.
    c. L & M Construction Chemicals Inc.
    d. Approved equal.
7. Calcium nitrate:
    a. Grace Concrete Products.
        1) DCI.
        2) DCI'S.
    b. Euclid Chemical Company.
        1) Eucon BCN.
        2) Eucon CIA.
    c. Approved equal.
8. Microsilica (Silica Fume):
    a. Grace Concrete Products "Force 10,000 D".
    b. Euclid Chemical Company "Eucon MSA".
    c. Approved equal.

B. Submit request for substitutions in accordance with Division 01.

2.2 MATERIALS

A. Portland Cement: Conform to ASTM C150 Type II, III or V.

B. Fly Ash:

1. ASTM C618, Class F or Class C.

2. Non-Staining.

a. Hardened concrete containing fly ash to be uniform light gray color.

3. Maximum loss on ignition: 4 percent.

4. Compatible with other concrete ingredients.

5. Obtain proposed fly ash from a source approved by the State Highway Department in the State of California for use in concrete for bridges. A list of pre-approved products may be obtained from the following website: http://www.dot.ca.gov/hq/esc/approved_products_list/

C. Admixtures:

1. Air entraining admixtures: ASTM C260.

2. Water reducing, retarding, and accelerating admixtures:

a. ASTM C494 Type A through E.

b. Conform to provisions of ACI 212.3R.

c. Do not use retarding or accelerating admixtures unless specifically approved in writing by Engineer and at no cost to OCTA.

d. Follow manufacturer's instructions.

e. Use chloride free admixtures only.

3. Maximum total water soluble chloride ion content contributed from all ingredients of concrete including water, aggregates, cementitious materials and admixtures by weight percent of cement:

a. 0.10 all concrete.

4. Do not use calcium chloride.

5. Pozzolanic admixtures: ASTM C618.

6. Calcium nitrate: ASTM C494 Type C.

7. Microsilica: ASTM C1240.

8. Provide admixtures of same type, manufacturer and quantity as used in establishing required concrete proportions in the mix design.

D. Water: Potable, clean, free of oils, acids and organic matter.

E. Aggregates:

1. Normal weight concrete: ASTM C33, except as modified below.

2. Fine aggregate:

a. Clean natural sand.

b. No manufactured or artificial sand.

3. Coarse aggregate:

a. Crushed rock, natural gravel, or other inert granular material.

b. Maximum amount of clay or shale particles: 1 percent.

4. Gradation of coarse aggregate:

a. Lean concrete and concrete topping: Size #7 or #8.

b. All other concrete: Size #57 or #67.

F. Concrete Grout:

1. Nonshrink nonmetallic grout:

a. Nonmetallic, noncorrosive, nonstaining, premixed with only water to be added.

b. Grout to produce a positive but controlled expansion.

c. Mass expansion not to be created by gas liberation.

d. Minimum compressive strength of non-shrink grout at 28 days: 6500 psi.

e. In accordance with COE CRD-C621.

2. Epoxy grout:

a. 3-component epoxy resin system.

1) Two liquid epoxy components.

2) One inert aggregate filler component.

b. Each component packaged separately for mixing at jobsite.

c. Minimum compressive strength of epoxy grout shall be as specified in the Plans.

G. Forms:

1. Prefabricated or job built.

2. Wood forms:

a. New 5/8 or 3/4 inches 5-ply structural plywood of concrete form grade.

b. Built-in-place or prefabricated type panel.

c. 4 x 8 feet sheets for built-in-place type except where smaller pieces will cover entire area.

d. When approved, plywood may be reused.

3. Metal forms:

a. Metal forms excluding aluminum may be used.

b. Forms to be tight to prevent leakage, free of rust and straight without dents to provide members of uniform thickness.

4. Chamfer strips: Clear white pine, surface against concrete planed.

5. Form ties:

a. Removable end, permanently embedded body type with cones on outer ends not requiring auxiliary spreaders.

b. Cone diameter: 3/4 inches minimum to 1 inch maximum.

c. Embedded portion 1-1/2” minimum back from concrete face.

d. If not provided with threaded ends, constructed for breaking off ends without damage to concrete.

e. Provide ties with built-in waterstops at all walls that will be in contact with process liquid during plant operation.

6. Form release: Nonstaining and shall not prevent bonding of future finishes to concrete surface.

H. Membrane Curing Compound:

1. ASTM C309, Type I-D.

2. Resin based, dissipates upon exposure to UV light.

3. Curing compound shall not prevent bonding of any future coverings, coatings or finishes.

4. Curing compounds used in water treatment plant construction to be nontoxic and taste and odor free.

I. Bonding Agent:

1. High solids acrylic latex base liquid for interior or exterior application as a bonding agent to improve adhesion and mechanical properties of concrete patching mortars.

2. Euclid Chemical Co. "Flex-Con."

3. BASF Admixtures, Inc. "Acryl-Set."

4. L & M Construction Chemicals "Everbond."

5. Thoro System Products "Acryl 60."

J. Expansion Joint Filler:

1. In contact with water or sewage:

a. Closed cell neoprene.

b. ASTM D1056, Class SC (oil resistant and medium swell) of 2 to 5 psi compression deflection (Grade SCE41).

2. Exterior walking surfaces:

a. Asphalt expansion joint filler.

b. ASTM D994.

3. Other use:

a. Fiber expansion joint filler.

b. ASTM D1751.

K. Bead Board

1. The bead board panels shall be a minimum of two (2) inch thick, four (4) feet wide, and 8 feet long and shall meet the requirements of ASTM C578.

2. Bead board coat: A suitable and compatible bonding material for permanently adhering.

2.3 CONCRETE MIXES

A. General:

1. All concrete to be ready mixed concrete conforming to ASTM C94.

2. Provide concrete of specified quality capable of being placed without segregation and, when cured, of developing all properties required.

3. All concrete to be normal weight concrete.

B. Strength:

1. Provide specified strength and type of concrete for each use in structure(s) as follows:

Type of Construction	Concrete Class*	Maximum Slump (Inches)
Street Surface Improvements		
Concrete Pavement (not integral with curb)	565-C-3250	4”
Curb, Integral Curb and Pavement, Gutter, Walk, Alley Aprons, Extruded Curb & Gutter	565-C-3250	4”
Sewer and Storm Drainage Facilities		
Pipe Collars, Beam Support for Pipe, Pre-Cast Manhole Components, Catch Basins, Sidewalk Culverts	565-C-3250	4”
Pipe Bedding and Encasement, Anchors and Thrust Blocks, Wall Support for Pipe	520-C-2500	4”
Tunnel and Trench Backfill	520-C-2500	4”
Reinforced Structures		
Bridges, Buildings, Retaining Walls	650-CW-4000	4”
Cast-In-Place Piles	650-CW-4000	4”
Channel and Boxes	650-CW-4000	4”
Walls and Deck	650-CW-4000	4”
Miscellaneous		
Street Light and Traffic Signal Foundations, Survey Monuments	565-C-3250	4”
Fence and Guard Post Foundations	565-C-3250	4”
Coarse Masonry Grout	610-E-2000G	10”

*Refer to SSPWC Section 201 for designation.

C. Air Entrainment:

1. Provide air entrainment in all concrete resulting in a total air content percent by volume as follows:

MAX AGGREGATE SIZE	TOTAL AIR CONTENT PERCENT
1 inch or 3/4 inches	5 to 7

2. Air content to be measured in accordance with ASTM C231, ASTM C173, or ASTM C138.

D. Slump - 4 inches maximum, 1 inch minimum:

1. Measured at point of discharge of the concrete into the concrete construction member.

2. Concrete of lower than minimum slump may be used provided it can be properly placed and consolidated.

3. Pumped concrete:

a. Provide additional water at batch plant to allow for slump loss due to pumping.

b. Provide only enough additional water so that slump of concrete at discharge end of pump hose does not exceed maximum slump specified above.

4. Determine slump per ASTM C143.

E. Selection of Proportions:

1. General:

a. Proportion ingredients to:

1) Produce proper workability, durability, strength, and other required properties.

2) Prevent segregation and collection of excessive free water on surface.

2. Minimum cement contents and maximum water cement ratios for concrete to be as follows:

	MINIMUM CEMENT, LB/CY			MAXIMUM
	MAXIMUM AGGREGATE SIZE			WATER CEMENT
SPECIFIED STRENGTH	1/2”	3/4”	1”	RATIO BY WEIGHT
4000	650	650	650	0.45

3. Substitution of fly ash: Maximum of 25 percent by weight of cement at rate of 1 lb fly ash for 1 lb of cement.

4. Sand cement grout:

a. Three parts sand.

b. One part Portland cement.

c. Entrained air: Six percent plus or minus one percent.

d. Sufficient water for required workability.

e. Minimum 28-day compressive strength: 3,000 psi.

5. Normal weight concrete:

a. Proportion mixture to provide desired characteristics using one of methods described below:

1) Method 1 (Trial Mix): Per ACI 318, Chapter 5, except as modified herein.

a) Air content within range specified above.

b) Record and report temperature of trial mixes.

c) Proportion trial mixes per ACI 211.1.

2) Method 2 (Field Experience): Per ACI 318, Chapter 5, except as modified herein:

a) Field test records must be acceptable to Engineer to use this method.

b) Test records shall represent materials, proportions and conditions similar to those specified.

6. Required average strength to exceed the specified 28-day compressive strength by the amount determined or calculated in accordance with the requirements of Paragraph 5.3 of ACI 318 using the standard deviation of the proposed concrete production facility as described in Paragraph 5.3.1 of ACI 318.

F. Allowable Shrinkage: 0.048 percent per ASTM C157.

G. For Brackish or Salt Water Locations:

1. Calcium nitrate shall be added at a quantity of 5 gal per cubic yard.

a. Calcium nitrite solution shall contain 30 percent solids and shall provide 15 lbs per cubic yard chloride protection.

b. Mix shall also include 7 percent, by weight of cement microsilica.

2. Proposed admixture alternates must be approved by the OCTA prior to their use.

    a. Any proposed substitution shall include:

        1) Documentation as to the corrosion protection mechanism.

        2) Test data documenting the stated level of protection offered.

        3) Documentation that the proposed alternate meets a service life of 100 years as calculated using Fick's Second Law of Physics.

    b. All models shall use a reference diffusion coefficient of 2.81.

3. The Contractor may perform trial mixes prior to the delivery in order to adjust the desired air content, set time, and slump.

PART 3 - EXECUTION

3.1 FORMING AND PLACING CONCRETE

A. Formwork:

1. Contractor is responsible for design and erection of formwork.

2. Construct formwork so that concrete members and structures are of correct size, shape, alignment, elevation and position.

    a. Allowable tolerances: As recommended in ACI 347R.

3. Chamfer strips: Place ¾" chamfer strips in forms to produce ¾" wide beveled edges on permanently exposed corners of members.

4. Clean and adjust forms prior to concrete placement.

5. Tighten forms to prevent mortar leakage.

6. Coat form surfaces with form release agents prior to placing reinforcing bars in forms.

B. Construction, Expansion, and Contraction Joints:

1. Provide at locations indicated.

2. Locate construction joints in beams and girders as shown in the Plans.

3. Install construction joints perpendicular to main reinforcement with all reinforcement continued across construction joints.

4. At least 48 hours shall elapse between placing of adjoining concrete construction.

5. Thoroughly clean and remove all laitance and loose and foreign particles from construction joints.

6. Before new concrete is placed, existing concrete surfaces must be roughened to ¼" amplitude and coat all construction joints with an approved bonding adhesive used and applied in accordance with manufacturer's instructions.

C. Embedments:

1. Set and build in anchorage devices and other embedded items required for other work that is attached to, or supported by concrete.

2. Use setting diagrams, templates and instructions for locating and setting.

3. Secure waterstops in correct position using hog rings or grommets spaced along the length of the waterstop and wire tie to adjacent reinforcing steel.

D. Placing Concrete:

1. Place concrete in compliance with ACI 304R and ACI 304.2R.

2. Place in a continuous operation within planned joints or sections.

3. Begin placement when work of other trades affecting concrete is completed.

4. Place concrete by methods which prevent aggregate segregation.

5. Do not allow concrete to free fall more than 4 feet.

6. Where free fall of concrete will exceed 4 feet, place concrete by means of tremie pipe or chute.

E. Consolidation: Consolidate all concrete using mechanical vibrators supplemented with hand rodding and tamping, so that concrete is worked around reinforcement and embedded items into all parts of forms.

F. Protection:

1. Protect concrete from physical damage or reduced strength due to weather extremes.

2. In cold weather comply with ACI 306R except as modified herein.

a. Do not place concrete on frozen ground or in contact with forms or reinforcing bars coated with frost, ice or snow.

b. Minimum concrete temperature at the time of mixing:

OUTDOOR TEMPERATURE AT PLACEMENT (IN SHADE)	CONCRETE TEMPERATURE AT MIXING
Below 30˚ F	70˚ F
Between 30˚-45˚ F	60˚ F
Above 45˚ F	50˚ F

c. Do not place heated concrete that is warmer than 80 DegF.

d. If freezing temperatures are expected during curing, maintain the concrete temperature at or above 50˚ F for 7 days or 70˚ F for 3 days.

e. Do not allow concrete to cool suddenly.

3. In hot weather comply with ACI 305R except as modified herein.

a. At air temperature of 90˚ F and above, keep concrete as cool as possible during placement and curing.

b. Do not allow concrete temperature to exceed 90˚ F at placement.

c. Prevent plastic shrinkage cracking due to rapid evaporation of moisture.

d. Do not place concrete when the actual or anticipated evaporation rate equals or exceeds 0.2 lbs/sf/hr as determined from ACI 305R, Figure 2.1.5.

G. Curing:

1. Begin curing concrete as soon as free water has disappeared from exposed surfaces.

2. Cure concrete by use of moisture retaining cover, burlap kept continuously wet or by membrane curing compound.

3. Provide protection as required to prevent damage to concrete and to prevent moisture loss from concrete during curing period.

4. Provide curing for minimum of 7 days.

5. Form materials left in place may be considered as curing materials for surfaces in contact with the form materials except in periods of hot weather.

6. In hot weather follow curing procedures outlined in ACI 305R.

7. In cold weather follow curing procedures outlined in ACI 306R.

8. If forms are removed before 7 days have elapsed, finish curing of formed surfaces by one of above methods for the remainder of the curing period.

9. Curing vertical surfaces with a curing compound:

   a. Cover vertical surfaces with a minimum of two coats of the curing compound.

   b. Allow the preceding coat to completely dry prior to applying the next coat.

   c. Apply the first coat of curing compound immediately after form removal.

   d. Vertical surface at the time of receiving the first coat shall be damp with no free water on the surface.

   e. A vertical surface is defined as any surface steeper than 1 vertical to 4 horizontal.

H. Form Removal:

1. Remove forms after concrete has hardened sufficiently to resist damage from removal operations or lack of support but no sooner than 3 days after placement of concrete.

3.2 CONCRETE FINISHES

A. Surfaces Exposed to View:

1. Provide a smooth finish for exposed concrete surfaces.

2. Remove fins and projections, and patch voids, air pockets, and honeycomb areas with cement grout.

3. Fill tie holes with nonshrink nonmetallic grout.

B. Surfaces Not Exposed to View:

1. Patch voids, air pockets and honeycomb areas with cement grout.

2. Fill tie holes with nonshrink nonmetallic grout.

C. Troweled Finish:

1. Float finish surface.

D. Broom Finish: Immediately after concrete has received a float finish as specified, give it a transverse scored texture by drawing a broom across surface.

3.3 GROUT

A. Preparation:

1. Nonshrinking nonmetallic grout:

a. Clean concrete surface to receive grout.

b. Saturate concrete with water for 24 hours prior to grouting.

2. Epoxy grout: Apply only to clean, dry, roughened, sound surface.

B. Application:

1. Nonshrinking nonmetallic grout:

a. Mix in a mechanical mixer.

b. Use no more water than necessary to produce flowable grout.

c. Place in accordance with manufacturer's instructions.

d. Completely fill all spaces and cavities below the bottom of baseplates.

e. Provide forms where baseplates and bedplates do not confine grout.

f. Where exposed to view, finish grout edges smooth.

g. Except where a slope is indicated on Plans, finish edges flush at the baseplate, bedplate, member, or piece of equipment.

h. Protect against rapid moisture loss by covering with wet rags or polyethylene sheets.

i. Wet cure grout for seven (7) days, minimum.

2. Epoxy grout:

a. Mix and place in accordance with manufacturer's instructions.

b. Completely fill all cavities and spaces around dowels and anchors without voids.

c. Obtain manufacturer's field technical assistance as required to ensure proper placement.

3.4 FIELD QUALITY CONTROL

A. OCTA will select a concrete testing agency that meets ASTM C1077-12 criteria and requirements. The Contractor will pay for services of a concrete testing agency to perform testing of concrete placed during construction.

1. Contractor to cooperate with OCTA in obtaining and testing samples.

B. Tests During Construction:

1. Strength test - procedure:

a. Three cylinders, 6 inches dia. x 12 inches high, will be taken from each sample per ASTM C172 and ASTM C31.

b. Cylinders will be tested per ASTM C39:

1) One at 7 days.

2) Two at 28 days.

2. Strength test - frequency:

a. Not less than one test each day concrete placed.

b. Not less than one test for each 50 cy or major fraction thereof placed in one day.

c. Not less than one test for each type of concrete poured.

d. Not less than one test for each concrete structure exceeding 2 cy volume.

3. Slump test:

a. Per ASTM C143.

b. Determined for each strength test sample.

c. Additional slump tests may be taken.

4. Air content:

a. Per ASTM C231, ASTM C173, and ASTM C138.

b. Determined for each strength test sample.

5. Temperature: Determined for each strength test sample.

C. Evaluation of Tests:

1. Strength test results:

    a. Average of 28-day strength of two cylinders from each sample.

        1) If one cylinder manifests evidence of improper sampling, molding, handling, curing or testings, strength of remaining cylinder will be test result.

        2) If both cylinders show any of above defects, test will be discarded.

D. Acceptance of Concrete:

1. Strength level of each type of concrete shall be considered satisfactory if both of the following requirements are met:

    a. Average of all sets of three consecutive strength tests equals or exceeds the required specified 28-day compressive strength.

    b. No individual strength test falls below the required specified 28-day compressive strength by more than 500 psi.

2. If tests fail to indicate satisfactory strength level, perform additional tests and/or corrective measures as directed by Engineer.

    a. Perform additional tests and corrective measures at no additional cost to OCTA.

3.5 SCHEDULES

A. Form Types:

1. Surfaces exposed to view:

    a. Prefabricated or job-built wood forms.

    b. Laid out in a regular and uniform pattern with long dimensions vertical and joints aligned.

    c. Produce finished surfaces free from offsets, ridges, waves, and concave or convex areas.

    d. Construct forms sufficiently tight to prevent leakage of mortar.

2. Surfaces normally submerged or not normally exposed to view: Wood or steel forms sufficiently tight to prevent leakage of mortar.

3. Other types of forms may be used:

    a. For surfaces not restricted to plywood or lined forms.

b. As backing for form lining.

B. Grout:

1. Nonshrinking nonmetallic grout: General use.

2. Epoxy grout:

a. Grouting of dowels and anchor bolts into existing concrete.

b. Other uses indicated on Plans.

C. Concrete Finishes:

1. Unformed surfaces:

a. Use following finishes as applicable, unless otherwise indicated:

1) Troweled finish: All unformed surfaces.

2) Broom finish: All walking surfaces.

PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

A. Concrete Structures will be measured by the unit or fraction thereof furnished and completed in accordance with the Contract Documents and as measured by the Engineer. The quantities as contained on the Schedule of Quantities and Prices, or approved schedule of values, as applicable, as derived from the Plans will be used as the basis for this measurement.

B. Precast Concrete Members will be measured by the unit or fraction thereof furnished and completed in accordance with the Contract Documents and as measured by the Engineer. The quantities as contained on the Schedule of Quantities and Prices, or approved schedule of values, as applicable, as derived from the Plans will be used as the basis for this measurement.

C. Furnish all labor, materials, tools, equipment, supplies, supervision, and incidentals, and perform all work necessary to provide and place all Structural Concrete as indicated on the Plans and described herein.

D. Concrete in structures will be measured by the neat line dimensions shown on the Plans or such other dimensions as may be ordered by the Engineer. No deduction will be made for the volume occupied by bar reinforcing steel or other embedded steel items.

E. Precast Concrete Members will be measured by the various types and lengths shown in Contract Documents and for erecting the members as shown in the Contract Documents.

F. Concrete and Concrete Aggregate Testing for field quality control conducted by the testing agency selected by OCTA is considered incidental to work under other payment items under this Section and no separate measurement and payment will be made to the Contractor.

4.2 PAYMENT

A. Concrete Structures furnished and completed in accordance with the Contract Documents will be paid for at the Contract Unit Price, as listed on the Schedule of Quantities and Prices. This price shall include full compensation for furnishing all labor, Materials, tools, equipment, supplies, supervision, and incidentals, and doing all work, as shown on the Plans, and as specified in these Specifications, and as directed by the Engineer.

B. Precast Concrete Members furnished and completed in accordance with the Contract Documents will be paid for at the Contract Unit Price, as listed on the Schedule of Quantities and Prices. This price shall include full compensation for furnishing all labor, Materials, tools, equipment, supplies, supervision, and incidentals, and doing all work, as shown on the Plans, and as specified in these Specifications, and as directed by the Engineer.

C. No separate payment will be made for providing and placing the Structural Concrete. The cost therefore shall be considered as included in the Contract price for the various bid items in which Structural Concrete is required and no additional compensation will be allowed therefore.

D. The contract Unit Price for concrete structures shall include full compensation for all forming and shoring, joints, joint filler, joint seals and waterstops necessary for constructing the concrete work complete-in-place.

E. The Contract Unit Price for concrete in reinforced concrete box and culverts, and in headwalls, endwalls, and wingwallls for culverts shall also include the payment for the earthwork involved with such structures.

F. The Contract Unit Price paid for furnishing precast concrete members shall include full compensation for including reinforcing and prestressing steel as required, and for doing all work involved in constructing and furnishing precast members at the site of the work complete and ready for erection, as shown on Plans, and as specified in these Specifications, and as directed by the Engineer.

G. All holes remaining in the concrete pavement after the thickness measurements, if required, shall be completely filled by the Contractor, at the Contractor's expense.

H. Concrete and Concrete Aggregate Testing shall include furnishing all labor, materials, tools, equipment, supplies, supervision, and incidentals, and doing all work, as shown on the Plans, and as specified in these Specifications, and as directed by the Engineer and the payment for testing shall be included in the price for the various bid items in which Structural Concrete is required and no additional compensation will be allowed therefore.

END OF SECTION

SECTION 03 37 19

PNEUMATICALLY PLACED CONCRETE

PART 1 – GENERAL

1.1 DESCRIPTION

The Work specified in the Section consists of pneumatically placing gunite or shotcrete. Reinforcement must comply with Section 03 21 00 Reinforcing Steel. Concrete shall comply with Section 03 31 00 Structural Concrete.

1.2 DEFINITIONS

A. **Dry-mix process (Gunite):** Deliver mixed aggregate and cementitious material pneumatically or mechanically to the nozzle body and add water and mix the materials in the nozzle body.

B. **Wet-mix process (Shotcrete):** Deliver mixed aggregate, cementitious material, and water pneumatically to the nozzle and add any admixture at the nozzle.

C. **Rebound:** Shotcrete material that ricochets off the receiving surface, is recovered, and is clean and free of foreign material.

D. For this specification’s purpose, all pneumatically placed concrete, either dry-mix (gunite) or wet-mix (shotcrete), will be referred to as shotcrete.

1.3 SUBMITTALS

A. Submit the following in accordance with Section 01 33 00, Submittals:

1. Manufacturer's mix design for proposed products.

2. QC plan that includes:

   a. Number and qualifications of nozzlemen available to place shotcrete, number of nozzlemen on the job site at any time during shotcrete placement, description of their work schedule, and procedures for avoiding fatigue of any nozzleman
   b. Proposed method of placing shotcrete, including application rates, details of proposed construction joints and their locations, and methods for achieving the required thickness and surface finish
   c. Procedures for curing shotcrete surfaces
   d. Description of any required debris containment system

3. Preconstruction test panels and test results.

4. Production test cores and test results

1.4 QUALITY ASSURANCE

A. Qualifications

1. Each nozzleman must have at least 3,000 hours of ex`perience as a nozzleman on projects with a similar application.

B. Preconstruction Test Panels

1. Obtain authorization of the QC plan before constructing test panels.
2. Construct 1 unreinforced test panel and 1 reinforced test panel for each proposed mix design. Use nozzlemen, application crew, equipment, materials, mix designs, and procedures proposed for the work.
3. Cure the test panels under conditions similar to those in the work.
4. For the unreinforced test panel:
    a. Determine the size of the test panel
    b. Obtain 3-inch-diameter cores from the test panel
    c. Discard cores that show evidence of improper coring
    d. Identify each core that is to be tested
    e. Test cores for compressive strength
    f. Label and submit the test panel and a copy of the test results within 5 days of testing
    g. Include the mix design and ambient temperature in the submittal
5. For the reinforced test panel:
    a. Construct a square test panel that has the same (1) thickness, (2) bar size and quantity of bar reinforcement or other obstructions, and (3) positioning of bar reinforcement or obstructions as the most heavily reinforced section of shotcrete to be placed
    b. Minimum length of each side must equal 3 times the thickness of the most heavily reinforced section of shotcrete to be placed but not less than 30 inches
    c. Break the test panel in the presence of the Engineer after a minimum 7-day cure into pieces no larger than 10 inches in the greatest dimension
    d. Surfaces of the broken pieces must be dense and free of laminations and sand pockets and must show that the bar reinforcement or other obstructions are completely encased
6. Obtain and test cores for compressive strength under section 53-2.01D(4)(a).
7. Instead of constructing a separate unreinforced test panel, you may obtain cores from the reinforced test panel to determine the compressive strength. If you choose this option, do not break the test panel until it has cured for at least 14 days.
8. Dispose of test panels.

C. Quality Control

1. General
   a. Obtain cores for compressive strength testing under ASTM C1604/C1604M. Discard cores that contain bar reinforcement or other obstructions or show evidence of improper coring. Test cores for compressive strength at 28 days under ASTM C1604/C1604M at an authorized laboratory. The compressive strength is the average strength of at least 3 cores that are free from bar reinforcement or other obstructions.
   b. Notify the Engineer at least 24 hours before performing any coring or testing.

2. Field Quality Control
   a. Obtain at least four 3-inch-diameter test cores from each 50 cu yd, or portion thereof, of shotcrete placed each day. Three cores must be free from reinforcement or obstructions. One core must include reinforcement. The Engineer determines each core location.
   b. Cores must be both visually inspected and tested for compressive strength. The Engineer performs the visual inspection and you must perform compressive strength testing.
   c. Identify each core, including a description of the core location and mix design, and submit the cores immediately after coring.
   d. The Engineer will perform the visual inspection and return the cores to you for compressive strength testing within 48 hours.

2. Authority Acceptance
   a. General
      I. The Authority accepts shotcrete based on test cores for visual inspection and compressive strength.
   b. Visual Inspection
      I. Each test core must be dense and be free of laminations and sand pockets. Any core with reinforcement must show reinforcement or other obstructions are completely encased.
      II. Shotcrete represented by an unacceptable core will be rejected unless you submit evidence that the quality of the shotcrete placed in the work is acceptable.
   c. Compressive Strength
      I. If the compressive strength of the shotcrete is below the specified compressive strength:
         a) Make corrections to the mix design or fabrication procedures and obtain authorization before you place additional shotcrete.
         b) 2. Shotcrete represented by the cores is subject to one of the following:
            i. If the compressive strength is at least 95 percent of the specified strength, $10/cu yd is deducted from the payment for structural shotcrete.
            ii. If the compressive strength is below 95 percent of the specified strength but is at least 85 percent of the specified

strength, $15/cu yd is deducted from the payment for structural shotcrete.

iii. If the compressive strength is below 85 percent of the specified strength, the shotcrete must be removed.

II. If the compressive strength is below the specified strength but is at least 85 percent of the specified strength, the deductions specified above apply unless you obtain and submit evidence that the strength of the concrete placed in the work is greater than or equal to the specified strength and this evidence is accepted by the Engineer.

III. If the compressive strength is below 85 percent of the specified compressive strength, the noncompliant concrete represented by the test must be removed unless you obtain and submit evidence that the strength of the concrete placed in the work is at least 85 percent of the specified compressive strength and this evidence is accepted by the Engineer.

IV. If the evidence consists of tests made on cores taken from the work, obtain and test the cores under ASTM C1604/C1604M.

PART 2 – PRODUCTS

2.1 MATERIALS

A. Shotcrete must consist of cementitious material, fine aggregate, and water. Cementitious material, fine aggregate, and water must comply with Section 03 31 00 Structural Concrete.

B. Shotcrete must have a minimum compressive strength of 3,600 psi, unless otherwise described. The shotcrete must attain the minimum compressive strength at 28 days, except 42 days are allowed for shotcrete with a described minimum compressive strength greater than 3,600 psi.

C. For the dry-mix process:

1. Thoroughly mix 1 part cementitious material to not more than 4.5 parts fine aggregate in a dry state before charging into the machine. Measurement must be either by volume or weight.

2. Fine aggregate must contain not more than 6 percent moisture by weight.

D. For the wet-mix process:

1. Shotcrete must contain at least 632 pounds of cementitious material per cubic yard.

2. You may substitute a maximum of 30 percent pea gravel for the fine aggregate. The maximum size of pea gravel must be such that 100 percent passes the 1/2-inch screen and at least 90 percent passes the 3/8-inch screen.

3. You may add admixtures complying with Section 03 31 00 Structural Concrete.

E. If colored shotcrete is described, color shotcrete by mixing a fine ground, synthetic mineral oxide into the shotcrete. The synthetic mineral oxide must be specifically manufactured for coloring shotcrete. The coloring agent must be uniformly and homogeneously mixed with the shotcrete.

F. Reinforcement shall be as shown on the project plans and conform to Section 03 21 00 Reinforcing Steel

PART 3 – EXECUTION

3.1 PREPARING FOUNDATIONS

A. Evenly grade foundations before applying shotcrete. No point on the graded slope may be above the slope plane shown.

B. Thoroughly compact foundations. Foundations must contain enough moisture to provide a firm foundation and to prevent absorption of water from the shotcrete. Foundations must be free of surface water.

C. Use ground or gauging wires if necessary to establish thickness, surface planes, and finish lines.

3.2 PLACING SHOTCRETE

A. Apply shotcrete by either the dry-mix or wet-mix process.

B. Direct the nozzle in a way that minimizes rebound of the shotcrete.

C. Maintain a uniform velocity of the material as it leaves the nozzle and at a rate determined for the job site conditions.

D. For dry-mix shotcrete:

1. Maintain a constant pressure of at least 45 psi in the placing machine if the hose length is 100 feet or less. Increase the pressure at least 5 psi for each additional 50 feet of hose or fraction thereof.

2. Maintain uniform water pressure at the nozzle of at least 15 psi greater than the air pressure at the machine.

3. Do not use aggregate and cementitious materials that have been mixed for more than 45 minutes.

E. For wet-mix shotcrete:

1. Transport shotcrete under Section 03 31 00 Structural Concrete
2. Limit placing to 8-foot lifts measured along the slope
3. Place gauging wires at approximately 7-foot centers
4. Do not use materials that have been mixed for more than 90 minutes

F. Contractor may not reuse shotcrete material rebound on this project.

3.3 FINISHING SHOTCRETE

A. Before final set, use air blowpipes to remove rebound, overspray, and other debris from the areas to receive shotcrete.

B. Place shotcrete to the depth shown and check the surface with a straightedge. Bring to grade any low spots or depressions by placing additional shotcrete. The finished surface must be smooth and uniform for the type of work involved.

C. Remove and replace loose areas of shotcrete.

D. Cure shotcrete for at least 72 hours by spraying with water, by a moist earth blanket, or by any of the methods specified in Section 03 31 00.

E. Shotcrete must be maintained at a temperature of at least 45 degrees F for 72 hours after placing and at least 40 degrees F for an additional 4 days.

F. If you add a coloring agent to the shotcrete and you use the curing compound method for curing the shotcrete, use curing compound no. 6.

G. Protect shotcrete under Section 03 31 00.

PART 4 – MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

A. Shotcrete or Gunite will be measured by the unit or fraction thereof furnished and completed per the item in which the shotcrete or gunite is used in accordance with the Contract Documents and as measured by the Engineer. The quantities as contained on the Schedule of Quantities and Prices, or approved schedule of values, as applicable, as derived from the Plans will be used as the basis for this measurement.

B. Reinforcement for Shotcrete shall be measured per Section 03 21 00 Reinforcing Steel.

4.2 PAYMENT

A. Shotcrete or Gunite furnished and completed in accordance with the Contract Documents will be paid for at the Contract Unit Price per the item in which the shotcrete or gunite is used, as listed on the Schedule of Quantities and Prices. This price shall include full compensation for furnishing all labor, Materials, tools, equipment, supplies, supervision, and incidentals, and doing all work, as shown on the Plans, and as specified in these Specifications, and as directed by the Engineer.

B. Reinforcement for Shotcrete shall be paid per Section 03 21 00 Reinforcing Steel.

END OF SECTION

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SECTION 05 05 50

BASIC WELDING REQUIREMENTS

PART 1 - GENERAL

1.2 DESCRIPTION

The Work specified in this Section consists of basic welding requirements for structural and non-structural metal, piping and miscellaneous metal fabrications including weld performance and procedure qualification, base and filler metal requirements, preparation, technique, inspection, examination and related special processes.

A. "Off-The-Shelf" Products: Welded products identified by the Engineer as "off-the-shelf" are exempt from the requirements of this Section. "Off-the shelf" means an item produced and placed in stock by a Contractor, or stocked by a distributor, before receiving orders or contracts for its sale. The item must also be commercial. "Commercial" means an item described in commercial catalogs, drawings, or industrial standards.

1.3 QUALITY CONTROL

A. Identification for structural steel and pressure retaining welds

1. Welder identification - Assign unique identification to each qualified welder performing welding activities for use in tracking that welder's production. Indicate welder identification marks on welder's performance qualification record. Once assigned, do not assign unique identification to another welder. Maintain log to allow matching of identification mark at weld to specific welder's name.

2. Weld identification - Develop system of weld identification to track inspection activities. Use system that allows welds to be uniquely identified and traceable between inspection documents and drawings, to allow matching of weld location and inspection activity. Maintain inspection tracking documentation and referenced inspection reports as a permanent contract record, handle, and store as quality record for the contract duration. Forward rework non-destructive examination (NDE) records to the resident engineer to be maintained as a contract record.

3. NDE Documentation - Use unique identification system to document acceptance of each weld. Do not consider welds acceptable until required examination/test results are complete, acceptable and documented. Make entries in permanent ink only. Make corrections by drawing one line through error, and signing and dating correction.

4. Marking on welds: Apply marks for identification of welds by dye stamp or paint marker. Dye stamps used on dynamically loaded members are limited to blunt-nosed continuous or blunt-nosed interrupted dot types.

Marking groups of welds instead of each weld is permitted only with acceptance by the Engineer.

C. Reference Standards

1. American Society of Mechanical Engineers (ASME)

ASME/ANSI B31.1 Power Piping
ASME Section IX Welding and Brazing Qualification

2. American Society for Nondestructive Testing (ASNT)

ASNT SNT-TC-1ARecommended Practice

3. American Welding Society

AWS B2.1 Welding Procedure and Performance Qualification
AWS D1.1 Structural Welding Code - Steel
AWS D1.2 Structural welding Code - Aluminum
AWS D1.3 Structural Welding Code - Sheet Steel
AWS D1.4 Structural Welding Code - Reinforcing Steel
AWS QC 1AWS Certification of Welding Inspections
AWS D9.1 Sheet Metal Welding Code

D. Non-destructive Examinations (NDE), except visual - Performed by personnel certified in accordance with ASNT SNT-TC-1A.

1.4 SUBMITTALS

Obtain review and acceptance in writing by the Engineer before commencement of related Work, and maintain as retrievable upon request for the duration of the Contract, unless as otherwise noted below.

A. Weld Procedures - Address and document all applicable variables as noted in the suggested weld procedure forms of applicable codes for both submittal attachment, the specific application of all procedures submitted for review.

B. Performance Qualification Records - Include on the documents, applicable code, process, position(s) tested, material thickness, tests conducted, test results, authorized signature and other documentation in accordance with the applicable code.

C. Visual Inspector Certification - All welding inspectors shall be CWI-certified. Provide documented evidence as a current Certified Welding Inspector (CWI) in accordance with AWS QC1 for each person engaged in visual weld inspection activities.

D. Level II Inspector Certification for Magnetic Particle, Ultrasonic, Dye Penetrant and/or Radiographic Methods - Documented evidence of current certification, in accordance with ASNT SNT-TC-1A and the NDE contractor's Written Practice.

E. Non-destructive Examination Procedures - Establish procedures in accordance with applicable codes and standards. Provide, with the document, the performing testing agency's letterhead and signature of a Level III inspector certified for the applicable practice and employed by, or acting as an "outside agency" to, the performing NDE contractor in accordance with ASNT SNT-TC-1A and the NDE contractor's Written Practice.

F. Written Practice - Establish a Written Practice for certification of inspection personnel in accordance with ASNT SNT-TC-1A. Provide with the document, the performing testing agency's letterhead and signature of a Level III inspector certified for the applicable practices and employed by, or acting as an "outside agency" to, the performing NDE contractor in accordance with ASNT SNT-TC-1A.

G. Inspection Agency QA/QC Manual - Provide for each agency to be Subcontracted-intended for use.

H. Copy of nondestructive inspection reports, within 10 days of inspection activity, for information only.

PART 2 - PRODUCTS

Not Used.

PART 3 – EXECUTION

3.1 PROCEDURE AND WELDER QUALIFICATION

Where not referenced in the specific specification Section, qualify weld procedures and welder qualification in accordance with the following:

A.	Structural Steel (1/8" min)	AWS D1.1
B.	Structural Aluminum	AWS D1.2
C.	Structural Stainless Steel	AWS B2.1 or ASME IX
D.	Sheet Metal Structural (10 gage max.)	AWS D1.3
E.	Sheet Metal (Non Structural; CS, SS&AL)	AWS D1.9
F.	Pressure Piping	ASME IX
G.	Non Pressure, Non Structural Piping	AWS D1.1

H. Reinforcing Steel AWS D1.4

3.2 MATERIALS AND EQUIPMENT

A. Store, maintain and use equipment and materials in a manner consistent with manufacturer's recommendation and good Work practice.

B. Use constant voltage power supply for all semiautomatic wire feed processes.

C. Mark and Maintain equipment, including wire brushes and grinding wheels, used for Work with stainless steels; store and use for stainless steel only.

D. Secure gas bottles used for cutting and welding to prevent their damage or unintended movement. Replace caps on valves when not in use.

3.3 WORKMANSHIP I TECHNIQUE

A. Acceptable Welding Processes - Perform Workmanship and technique in accordance with codes or standards referenced by the specific product specification Section and the following:

1. Shielded metal arc welding (SMAW).

2. Gas tungsten arc welding (GTAW).

3. Gas metal arc welding (GMAW). GMAW in short circuiting mode is not authorized for material greater than 10 gage GMAW in globular mode is not authorized for material greater than 3/8".

4. Flux cored arc welding (FCAW).

5. Submerged Arc Welding (SAW).

6. Welds deposited by processes different from authorized processes may be subject to complete removal.

B. Filler Metal

1. Filler compatibility - Select filler metal so principal elements in deposited weld metal are of same nominal composition as base material being joined.

2. Dynamic Loading - Weld dynamically loaded structures with SMAW process using E7018 electrode.

3. FCAW Self-shielded Electrode - Document on weld procedures electrical parameters, including contact tube to Work distance, in accordance with the filler manufacturer's recommendation.

C. Weld Joint Preparation

1. Prepare weld joints by machining, grinding or thermal cutting. When thermal cutting is performed, mechanically prepare and clean joint surfaces to sound metal before welding.

2. Tee and corner joints prepared by thermal cutting - Grind smooth to facilitate alignment and proper fit.

3. Cleaning of joint surfaces- Clean free of slag, rust, scale, grease, paint, and foreign material detrimental to integrity of weld.

4. Stainless steel - Use grinding wheels and stainless steel wire brushes that have not been previously used on carbon steel. Do not perform grinding on carbon steel in the area of stainless steel fabrication.

5. Perform and maintain end preparation, root openings and alignment tolerances as described in weld procedure and applicable code. Perform tack welds used for holding alignment and position to same requirements as the root pass. Incorporate tacks into the weld only after being de-slagged, wire brushed and verified as crack free.

D. Weld Repair

1. Make repairs to correct weld defects using welding procedure and welders in accordance with the same requirements utilized on the original weld.

2. Re-examine repair areas using same inspection procedures by which defect was originally detected.

3. Two repair attempts will be allowed on a defective area. Do not attempt further repairs without authorization of the Engineer.

E. Preheat and Interpass Temperature

1. Verify maintenance of preheat and interpass temperature, as required by applicable codes, standards and procedures, with temperature crayons or other calibrated temperature measuring instruments suitable for the material welded.

2. Maintain required material preheat and interpass temperature to three inches minimum in all directions from all surfaces being welded.

3.4 NONDESTRUCTIVE EXAMINATION (NDE)

A. Site and Fabrication Yard Welding - Assure weld NDE activities including visual, magnetic particle, ultrasonic, dye penetrant and radiographic methods are performed by an independent testing laboratory employed by the Contractor.

Assure the independent test laboratory CWI is present during continuous welding operations and emphasizes in-process weld inspection in accordance with AWS D1.1, Inspection of Work and Records, Subsection 6.5, for the initial welds where changes are made with respect to welders, procedures, joint details, equipment, electrodes, and preheat.

B. Where individual specification Sections do not designate NDE requirements, perform NDE practice and acceptance criteria in accordance with following codes:

1. Structural Carbon and Stainless Steel (1/8" min. thickness) - AWS D1.1.

2. Structural Aluminum - AWS D1.2.

3. Structural Sheet metal (Carbon Steel and Stainless Steel, 10 gauge max.) - AWS D1.3.

4. Non Structural Sheet Metal (Carbon Steel, Stainless Steel and Aluminum) - AWS D9.1.

5. Pressure Piping - ASME Section V and ASME B31.1.

6. Non Pressure, Non Structural Piping - AWS D1.1

7. Reinforcing Steel - AWS D1.4

C. Perform NDE frequency in accordance with specific product specification Sections and referenced code.

D. Where inspection frequency is specified 10 percent, if a reject occurs in the first 10 percent sample, select a second 10 percent sample and test. If no failure occurs in the second 10 percent sample, accept the represented welds.

E. Rework and retest the rejected welds in the first 10 percent sample. If a failure occurs in the second 10 percent sample, test 100 percent of the welds. Rework and retest all rejected welds.

PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

The Work of this Section will not be measured separately for payment.

4.2 PAYMENT

The Accepted Work of this Section will be paid for as a part of Work to which it pertains.

END OF SECTION

SECTION 05 50 00

MISCELLANEOUS METALS

PART 1 - GENERAL

1.1 DESCRIPTION

A. Principal work in this Section:

1. Pull irons, inserts, channels and other items required by utility companies.

2. Miscellaneous metal angles, plates, bars, rods, studs, etc. shown or required to complete the work.

3. Shop-primed finish for all miscellaneous metal fabrications not receiving galvanized finish, except for gratings.

1.2 RELATED WORK

A. Coordinate work of this Section with all other Sections of this Specification and in particular:

1. Section 05 10 00: Structural Steel.

2. Section 07 62 00: Preformed Metal Roofing

1.3 REFERENCE STANDARDS

A. Comply with all applicable local, State and Federal codes, specifications, standards and recommend practices, and in particular:

1. AISC - American Institute of Steel Construction: “Design, Fabrication and Erection of Structural Steel for Buildings”.

2. AISI - American Institute of Steel and Iron: “Specifications for the Design of Cold-Formed Steel Structural Members”.

B. AWS - American Welding Society: D-1.1, “Code for Welding in Construction”

1.4 SUBMITTALS

A. Submit the following in accordance with Section 01 33 00, Submittals:

1. Shop drawings: Large scale, clearly indicating all methods of fabrication and assembly, applicable field measurements, dimensions, weights, materials, finishes and all other pertinent data.

1.5 QUALITY CONTROL

A. All steel fabrications shall be done by a licensed fabrication shop with a minimum of 5 years experience in this type of work.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Steel plates, bars and studs:

1. Rolled shapes and plates: ASTM A 36

2. Bars: ASTM A 36

3. Studs: ASTM A 1044 / A 1044M

B. Steel tubing:

1. Cold-drawn tubing: ASTM A 512, sunk drawn, butt welded, cold-finished and stress relieved

2. Hot-formed tubing: ASTM A 501, butt welded, cold-finished and stress relieved

C. Iron castings:

1. Gray iron castings: ASTM A 48, Class 30B

3. Malleable iron castings: ASTM A 47

D. Anchors: Expansion anchors by Hilti, Rawlplug Company, Inc., or equal. Provide anchors of the types shown and required for the various conditions of use, installed in accordance with manufacturer's printed instructions.

E. Fasteners: Galvanized steel fasteners of the type, grade and class required for the installation of miscellaneous metal items.

F. Welding electrodes: Low hydrogen type conforming to AWS D1.4, E70 XX Series.

G. Shop primer: Fabricator's standard thermosetting or air-drying shop primer compatible with alkyd enamel finish paint specified in Section 09900, Painting and Coatings, applied in a uniform dry film not less than 1-1/2 mils thick.

2.2 FABRICATION

A. Metal Work Exposed to View - Use materials that are smooth and free of surface blemishes including pitting, seam marks, and roller and grinding marks, before cleaning, treating and applying finishes including zinc coatings.

B. Use materials of size and thicknesses indicated or, if not indicated, of required size and thickness to produce adequate strength and durability in finished product for intended use. Work to dimensions shown on reviewed and accepted Shop Drawings, using proven details of fabrication and support. Use types of materials indicated for various components of Work.

C. Form exposed Work true to line and level, with accurate angles and surfaces and straight, sharp edges. Ease exposed edges to a radius of approximately 1/32 inch unless otherwise indicated. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing Work.

D. Verify dimensions by accurate field measurement before fabrication where Work of this Section adjoins preceding Work. Do not delay job progress; allow for trimming and fitting metalwork where taking field measurements before fabrication might delay the Work. Note on Shop Drawings dimensions verified by field measurement.

E. Form exposed connections with hairline joints flush and smooth, using concealed fasteners wherever possible. Exposed fasteners - f type indicated or, if not indicated, use Phillips flat-head countersunk screws or bolts.

F. Pre-drill bolt and screw holes as indicated and required for attachment of metalwork and adjacent materials.

G. Furnish inserts and anchoring devices to be set in concrete for installation of metalwork. Coordinate delivery with other Work to avoid delay. Install inserts and anchoring devices in accordance with Section 03 31 00, Structural Concrete.

H. Provide anchorage of type indicated. Fabricate and space anchoring devices as indicated and required to provide adequate support for intended use of Work.

I. Cut, reinforce, drill and tap metalwork as required to receive finish hardware and similar items of Work.

J. Use hot-rolled steel bar for Work fabricated from bar stock, unless Work is indicated to be fabricated from cold-finished or cold-rolled stock.

K. Pre-assemble Work in shop to greatest extent practicable; minimize field splicing and assembly of units at Worksite. Disassemble units to extent necessary to comply with shipping and handling limitations. Clearly mark units for reassembly and proper installation.

L. Where indicated as galvanized, complete shop fabrication before applying coating. Remove mill scale and rust, clean and pickle units as required for coating. Apply hot-dip zinc coating, two ounces per square foot, in accordance with ASTM A123.

M. Fabricate complete with anchors, inserts and hardware.

N. Form and finish to shape and size with sharp angles and lines.

O. Countersink metalwork to receive required hardware and to provide bevels and clearances.

P. Weld on hardware mounting plates. Drill or punch holes for bolts and screws. Conceal fastenings wherever possible.

Q. Grind exposed edges smooth. Construct joints exposed to weather to exclude water and provide weep holes indicated.

R. Brackets, lugs and similar accessories required for installation - Include as part of fabrication.

S. Welding:

1. Weld all shop and field connections continuously in accordance with the referenced AWS specifications, unless bolted connections are specifically shown.

2. Grind all exposed welds flush and smooth with parent metal surfaces.

3. All welders shall be qualified in accordance with AWS requirements.

T. Form bent metal corners to the smallest radius possible without causing grain separation or otherwise impairing the work.

U. Bend pipe without collapsing or deforming the walls, to produce a smooth, uniform curved sections and maintain uniform sectional shape.

V. Fabricate items in the largest sections practical to minimize field jointing.

2.3 FINISHING

A. Galvanizing: Galvanize plates and angles, after fabrication, to obtain a minimum zinc coating of 1.25 ounces per square foot when tested in accordance with ASTM A 123.

B. Shop priming: After galvanizing shop prime steel surfaces as follows.

1. Clean steel surfaces of all oil and other foreign substances that would interfere with paint bond in accordance with applicable SSPC specifications.

2. Apply pretreatment to cleaned steel surfaces using solution recommended by SSPC.

3. Apply the shop primer within the time limits recommended for the pretreatment system used. The shop primer shall be a smooth and even coating with a dry film thickness of not less than 1-1/2 mils.

PART 3 - EXECUTION

3.1 INSPECTION

A. Inspect adjacent construction and make sure that all conditions detrimental to the timely and proper execution of this work have been corrected before proceeding.

3.2 INSTALLATION

A. Perform all cutting, drilling and fitting required for the installation of this work. Install all items accurately in their proper location, alignment and elevations, plumb and level, free of rack as measured from established lines and levels. Provide temporary bracing or anchors for items that are to be built into concrete, masonry or similar construction.

B. Fit exposed connections accurately to form tight hairline joints. Weld connections that are not to be left as exposed joints, but cannot be shop welded because of shipping size limitations. Grind exposed joints smooth and flush with parent metal and touch-up shop paint coat.

C. Comply with AWS recommendations for welding procedures, appearance and quality of welds made, and methods used to correct faulty welds.

3.3 TOUCH-UP OF DAMAGED SHOP PRIMER

A. Clean the damaged shop primer, sand smooth, re-clean and spot-prime with the same paint used for shop priming.

3.4 PROTECTION AND REPLACEMENT

A. Protect fabrications from construction damage.

B. Promptly replace work damaged beyond satisfactory field repair before its acceptance, with new materials at no additional cost to SCRRA.

PART 4 – MEASUREMENT AND PAYMENT

Miscellaneous Metal will not be measured or paid for separately. Miscellaneous Metal will be incidental to the Work associated with project items that include all requirements for Miscellaneous Metal and shall include furnishing all labor, materials, tools, equipment, supplies, supervision, and incidentals necessary for Miscellaneous Metal as described by the Contract Documents.

END OF SECTION

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SECTION 05 52 00

HANDRAILS AND RAILINGS

PART 1 - GENERAL

1.1 SUMMARY

A. This Section addresses the products, materials and work for the installation of metal hand railing, stainless steel hand railing, Right-of-Way Security Gates, and pedestrian barricade as shown on the Contract Plans and as specified in these Specifications, and as directed by the Engineer.

B. Related Specification Sections include but are not necessarily limited to:

1. Section 05 12 23 - Structural Steel

2. Section 09 90 00 - Painting and Coating

1.2 REFERENCES

A. AWS D1.1: Structural Welding Code-Steel

B. SSPWC: Standard specifications for Public Works Construction, Latest Edition

C. CALTRANS: State of California Department of Transportation Standard Specifications 2010 Section 83

D. American Iron and Steel Institute: Type 302 and 304 Steel

E. American National Standards Institute (ANSI) ANSI A12.1 Safety Requirements for Floor and Wall Openings, Railings and Toeboards

F. American Society for Testing and Materials (ASTM)

1. A123 Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products

2. D4956 Standard Specifications for Retroreflective Sheeting for Traffic Control

G. State of California, Department of Industrial Relations, Division of Occupational Safety and Health (CAL/OSHA): As applicable to railing

H. Use finishes for stainless steel complying with “Metal Finishes Manual” by NAAMM.

I. The sheet Work, except as otherwise indicated or specified, shall comply with “Architectural Sheet Metal Specifications” and “Architectural Sheet Metal Manual” by SMACNA.

J. SCRRA Engineering Standards ES6330, Handrails Layout and Details.

1.3 SUBMITTALS

A. Submit the following in accordance with Section 01 33 00, Submittal Procedures:

1. Shop Drawings: In accordance with the Contract Plans, showing the details and dimensions of all removable metal hand railing and metal hand railings, sleeve post, and posts and fences. Note dimensions which have been field verified.

2. Welding procedures and welder qualifications and welder registration as required by the American Welding Society.

3. Manufacturer's product data for non-shrink, non-ferrous cement grout.

B. Shop Drawings showing layout, locations, Sections, elevations, details, dimensions, finishes and installation details.

C. Certified test reports, as required, for materials specified in Part 2 - Products.

D. Submit Shop Drawings for the fabrication and erection of stainless steel assemblies and proprietary products which are not otherwise completely shown by manufacturer’s data sheets. Include plans and elevations at not less than one-inch to one-foot scale, and include details of sections and connections at not less than three inches to one foot scale. Show anchorage and accessory items, and finishes.

1.4 QUALITY ASSURANCE

A. All uncoated spots or damaged coating shall be repaired by hot-dip process. Small areas as determined by the Engineer may be repaired by recoating them with “Galvicon” or “Gavalloy” or approved equivalent.

B. Perform welding in accordance with AWS D1.1.

C. Set handrails and posts true to location, alignment and grade as indicated in the Contract Plans. The railings shall present a smooth, uniform appearance in their final positions.

D. Painting of Rails: In accordance with Section 09 90 00, Painting and Coating, unless otherwise directed by the Engineer.

PART 2 - PRODUCTS

2.1 STEEL PIPES

Pipe for post, sleeve post, rail and pickets shall be seamless steel pipe, conforming to ASTM A53, Type S, Grade A.

2.2 GENERAL

A. Metal Surfaces – For the fabrication of Work which will be exposed to view, use materials which are smooth and free of surface blemishes. Do not use materials which have stains and discolorations, including welds which do not match the materials in color and grain characteristics.

B. Surface Flatness and Edges – For exposed Work provide materials which have been cold-rolled, cold-finished, cold-drawn, extruded, stretcher leveled, machine cut or otherwise produced to the highest commercial standard for flatness with edges and corners sharp and true to angle or curvature as required.

2.3 STAINLESS STEEL

Use AISI Type 302 or Type 304 (at fabricator's option), except as otherwise indicated. Comply with the following general standards, with specific type, alloy, heat treatment and finish as required to produce the specific Work. Finish products to a No. 4 directional satin unless otherwise shown or specified. Protect with adhesive paper covering.

A. Sheet – ASTM A167, ASTM A480, and AISI Type 302 or 304

B. Plate – ASTM A167

C. Bar Stock – ASTM A276

D. Tubing – ASTM A269

E. Castings – ASTM A296, iron-chromium, nickel

F. Extruded Shapes – Manufacturer's standards

2.4 FASTENERS AND ANCHORAGE MATERIALS

A. Welding Electrodes and Filler Metal – Provide the alloy and type required for strength, workability, compatibility, and color match after grinding smooth and finishing the fabricated product.

B. Fasteners – Some basic metal or alloy as the metal fastened, and finished to match in color and texture. Comply with FS FF-S-92 for machine screws. Provide the type of fasteners indicated and provide Phillips flat-head screws for exposed fasteners.

C. Anchors and Inserts – Either furnish inserts to be set in concrete and masonry Work, or provide other anchoring devices as required for the installation of

stainless steel Work. Furnish stainless steel or epoxy-coated inserts (See Concrete and Masonry Sections for installation); provide toothed stainless steel expansion bolt devices for drilled-in-place anchors.

2.5 FABRICATION - GENERAL

A. Fabricate from the thicknesses, sizes and shapes indicated, or if not indicated, as required to produce Work of adequate strength and durability, without objectionable deflections or “oil canning.”

B. Form exposed Work true to line and level, with flush surfaces and accurate angles. Ease exposed edges to a 1/32-inch radius, unless otherwise indicated. Miter exposed corner joints and machine fit to a hairline joint.

C. Weld corners and seams continuously, grind smooth and flush on exposed surfaces. For exposed metal finishes, use metals which will blend and match with sheet metals being joined; discolorations or stains will not be acceptable for exposed portions of natural finish metals. Comply with recommendations of AWS for welding.

D. Provide brackets, plates and straps with each assembly, as may be required for proper support and anchorage to other Work.

E. Cut, reinforce, drill and tap Work as may be required to receive finish hardware and similar items of Work.

F. Preassemble Work at shop to the greatest extent possible, so as to minimize mechanical joints, splicing and assembly of units at the site.

2.6 RAILINGS AND HANDRAILS

A. Comply with ANSI A12.1 and CAL OSHA requirements for railings around floor openings and exposed edges of floors, stairs, ramps, and similar locations. Install railings and supports able to withstand a horizontal force of 150 pounds per linear foot and vertical force of 100 pounds per linear foot at the top or 50 pounds per foot along the top rail, whichever is greater.

B. In tubular members, where mechanical joints are necessary, use bar stock inserts with flat-head screws located on the least visible surfaces. Where bends are shown, form members to a smooth, uniform radius without distortion of the cross-sectional shape.

C. Miter and cope members at corners and intersections. Bevel, weld and grind smooth, without fillets, to form smooth transitions and maintain sharp lines.

D. Post-mounted railings – Use base plates as indicated.

E. Provide dissimilar metals isolation pads where required.

G. Comply with ASTM D4956 Standard Specifications for Retroreflective Sheeting for Traffic Control for yellow sheeting on railing.

PART 3 - EXECUTION

3.1 FABRICATION

Fabrication of metal hand railings and fencing shall be in accordance with SSPWC, Latest Edition, Sub-Section 304-2.1.2.

3.2 INSTALLATION

A. Set stainless steel Work accurately as measured from established building lines and levels, plumb and in true alignment with previously completed Work. Temporarily brace or anchor securely in formwork where Work is to be built into concrete, masonry or similar construction.

B. Securely anchor in place using concealed anchorage wherever possible.

C. Accurately fit mechanical joints together to form tight joints and uniform reveals and shapes for joint fillers and sealants. Restore finishes that have been damaged by shipment and installation.

D. Do not cut or abrade finishes which cannot be completely restored in the field. Return units with such finishes to the shop for required alterations, followed by complete refinishing.

E. Remove protective coverings when there is no longer danger of damage to the stainless steel Work from other Work yet to be performed. Restore protective coverings which have been removed or damaged during shipment or installation of the Work, if other Work is yet to be performed.

F. Form bends and simple and compound curves in tubing by bending members in jigs to produce uniform curvature, maintain profile of member throughout bend without buckling, twisting or otherwise deforming exposed surfaces of handrail and railing components.

G. Railing splices performed in field - Use epoxy structural adhesive or other equivalent means standard with railing manufacturer. Field welding - Not permitted. Railing splices - Butted to flush hairline joint and reinforced using manufacturer's standard concealed fittings with concealed fasteners. Lay out Work to position splices in inconspicuous locations.

H. Provide weep holes or other means for evacuation of entrapped water in hollow Sections of railing members.

I. Provide wall returns at ends of wall mounted handrails, except where otherwise indicated.

J. Close exposed ends of handrail and tubular rail members by use of plates welded and ground smooth.

K. Furnish inserts and other anchorage devices for connecting handrails and railings to concrete or masonry Work. Fabricate and space anchorage devices as indicated and as required providing adequate support. Coordinate anchorage devices with supporting structure.

L. The galvanized bolt thread for removable metal hand railing shall not be deformed after installation.

M. Removal of Existing Pavement - Remove the existing pavement by core drilling pavement to the full depth of the existing pavement thickness in clean, straight lines with neat edges. Haul all removed material off the work site daily and dispose of in a legal manner.

N. Excavation - Remove material to the width and depth required for construction of the pedestrian gate foundation. Take care not to disturb the bottom of the excavation before the concrete for the foundation is placed. Replace excavation below the required grade or more than the required width with the same class of concrete specified for the foundation, at no additional cost to the Authority.

O. Foundation and Installation of Gate Posts

1. Inspection Required Before Placing Concrete - Do not deposit concrete until the excavation, placing of the reinforcing steel, and placing of the gate posts has been inspected and approved. Provide at least one working day's advance notice that the excavation is ready for inspection and the procedure is approved for installation of the gates.

2. Concrete - Class 520-C-3250 - Portland Cement Concrete shall be used for the foundation.

PART 4 – MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

A. Furnish all labor, materials, tools, equipment, supplies, supervision, and incidentals, and perform all work necessary to provide and place all Hand Railing as indicated on the Plans and described herein.

4.2 PAYMENT

A. No separate payment will be made for providing and placing Hand Railing. The cost therefore shall be considered required and no additional compensation will be allowed therefore.

END OF SECTION

SECTION 31 11 00

SITE CLEARING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Site clearing and grubbing of trees, stumps, undergrowth, brush, trash, grass, weeds, roots, rubbish, refuse, or other debris, modifying irrigation systems, stripping of topsoil and protecting trees within the limits of excavation, embankment, borrow, and other areas as shown on the Contract Plans or required to perform the Work of this Contract.

B. Related Specification Sections include but are not necessarily limited to:

1. Division 01 - General Requirements.

2. Section 01 74 19 – Construction Waste Management and Disposal.

3. Section 31 11 50 – Demolition, Cutting, and Patching.

4. Section 32 91 00 – Soil Erosion, Sediment Control, Topsoiling and Seeding.

1.2 SUBMITTALS

A. General:

1. Submittals shall be made in accordance with Division 01 requirements.

B. Site Clearing Plan:

1. A site clearing plan must be prepared by the Contractor and submitted to the Engineer for acceptance prior to commencing work. The site clearing plan shall include:

a. Location and limits of clearing and grubbing.

b. Methods for protection of areas of vegetation designated as “no construction zones” and trees noted in plans to be saved.

c. Methods to be employed and equipment to be used.

d. Safety measures including signs, barriers, temporary walkways and hand railing.

e. Haul routes and disposal sites.

f. Permits for transport of materials off the worksite where applicable and other permits as required by local agencies, project environmental documents and the project Plans.

g. Schedule of site clearing activities including anticipated railroad flagging needs.

C. Permits, Notices, Certifications and Authorizations:

Contractor shall provide Storm Water Pollution Prevention Plan (SWPPP) and National Pollution Discharge Elimination System (NPDES) Permit per Construction General Permit Order 2009-0009-DWQ. SWPPP and NPDES Permit furnished and completed in accordance with the Contract Documents will be considered as incidental to the project and no other payment shall be considered.

1.3 ENVIRONMENTAL CONDITIONS

A. On site burning or burial of site clearing materials will not be allowed.

B. The Contractor must take possession of material and debris collected from site clearing procedures and be responsible for disposing of them in accordance with these Specifications, any project permits, and applicable laws and regulations in accordance with Division 01 requirements.

C. Contractor shall provide noise abatement in accordance with Division 01 requirements.

D. Site cleanliness, sweeping and dust control shall be in accordance with Division 01 requirements.

PART 2 - PRODUCTS - (NOT APPLICABLE TO THIS SECTION)

PART 3 - EXECUTION

3.1 PREPARATION

A. Protect existing trees, other vegetation, and existing site improvements on OCTA or adjacent property that are to remain.

1. Do not smother trees by stockpiling construction materials or excavated materials within drip line.

2. Avoid foot or vehicular traffic or parking of vehicles within drip line of trees or shrubs.

3. Provide barricades, coverings, temporary fencing, or other types of temporary protection as required by the Project environmental documents or the Engineer in accordance with the Plans and these Specifications.

B. Repair or replace trees, vegetation, and existing site improvements including modifying irrigation systems that are to remain that are damaged by construction operations.

1. Repair of damaged trees and shrubs to be performed by a certified arborist or tree surgeon.

2. Remove trees that are damaged to the extent that a certified arborist or tree surgeon determines cannot be repaired and restored to full-growth status.

a. Replace with new trees of minimum 4 inches caliper.

3. Damaged vegetation shall be replaced in-kind as approved by the Engineer.

4. Existing site improvements will be repaired or replaced as approved by the Engineer.

5. Irrigation systems shall be modified as shown in the Plans.

C. OCTA will obtain authority for removal and alteration work, as required by the Plans, on adjoining property prior to Contractor starting work.

3.2 SITE CLEARING

A. Topsoil, fertile, friable soil of a loamy character with organic matter normal to the area, Removal:

1. Strip topsoil to depths encountered.

a. Remove heavy growths of grass before stripping.

b. Stop topsoil stripping sufficient distance from such trees to prevent damage to main root system.

c. Separate from underlying subsoil or objectionable material.

2. Stockpile topsoil where directed by Engineer.

a. Construct stockpiles to freely drain surface water.

b. Provide temporary cover or seeding of stockpiles to prevent erosion in accordance with SCRRA Specification 32 91 00 Soil Erosion, Sediment Control, Topsoiling and Seeding.

3. Do not strip topsoil in wooded areas where no change in grade occurs.

4. Topsoil from borrow sources shall be free of subsoil, objects over 2 inches diameter, weeds and roots.

5. Clearing: Clear from within limits of construction all trees except those marked to remain.

a. Include shrubs, brush, downed timber, rotten wood, heavy growth of grass and weeds, vines, rubbish, structures and debris.

b. Rubbish shall be removed from cleared areas and disposed of in accordance with project environmental documents and federal, state and local laws in accordance with Division 01 requirements.

c. Clearing shall be level with the ground surface so that no obstruction will interfere with close machine or hand mowing of cleared areas.

d. Cleared areas shall be left smooth and free of obstructions or depressions that will impound water.

B. Removed materials shall become the property of the Contractor and shall be disposed of outside the public right of way in conformance with the provisions in Section 01 74 19 - Construction Waste Management and Disposal and reference Section 300-1.3 “Removal and Disposal of Materials” of the Standard Specifications for Public Works Construction, Latest Edition. Within the limits of clearing, all stumps, roots, root mats, logs, debris and other objectionable material shall be removed as follows:

1. Grubbing shall extend to the outside excavation and fill slope lines except where tops of slopes are to be rounded. In these locations, the areas shall extend to the outside limits of slope rounding.

2. Grub where subdrainage trenches will be dug, unsuitable material removed or structures built.

3. Grub areas in which hillsides or existing embankments will be terraced.

4. Grub areas upon which embankments, foundations or other structures will be placed.

   a. Areas beneath embankments greater than 3 feet in depth shall be free from all vegetation and roots to a depth of 6 inches below the ground surface (after topsoil has been removed).

   b. For embankments 3 feet in depth or less, roots that are over 2 inches dia. shall be removed to a depth of 1 foot below ground surface.

3.3 CLEAN-UP

A. Remove and dispose of barricades, coverings or other protections used to prevent damage to existing vegetation or improvements upon clean-up of the Work.

3.4 SCHEDULE

A. Contractor must complete clearing and grubbing work far enough in advance of other operations to permit the placement of construction stakes. Construction schedule shall be adjusted so cleared areas are not left susceptible to erosion or sediment runoff due to weather.

3.5 ACCEPTANCE

A. Upon completion of the site clearing and grubbing, obtain Engineer's written acceptance of the extent of clearing, depth of stripping, and removal of deleterious material.

PART 4 - MEASUREMENT AND PAYMENT

1.3 MEASUREMENT

A. Site Clearing and Grubbing will be measured by the unit or fraction thereof furnished and completed in accordance with the Contract Documents and as measured by the Engineer. The quantities as contained on the Schedule of Quantities and Prices, or approved schedule of values, as applicable, as derived from the Plans will be used as the basis for this measurement.

1.4 PAYMENT

A. Site Clearing and Grubbing furnished and completed in accordance with the Contract Documents will be paid for at the Contract Unit Price, as listed on the Schedule of Quantities and Prices. This price shall include full compensation for furnishing all labor, Materials, tools, equipment, supplies, supervision, and incidentals, and doing all work, as shown on the Plans, and as specified in these Specifications, and as directed by the Engineer.

END OF SECTION

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SECTION 31 11 50

DEMOLITION, CUTTING AND PATCHING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Demolition, removal and disposal, salvage, cutting and patching of existing construction, sawcutting and removing of existing construction, surface or subsurface, where shown on Plans, or as required to accommodate new work shown or specified including backfilling of excavations and depressions to restore Worksite to final grade.

B. Related Specification Sections include but are not necessarily limited to:

1. Division 01 - General Requirements.

2. Section 31 11 00 – Site Clearing

3. Section 31 20 00 - Earthwork.

4. Section 31 50 00 - Excavation Support Systems.

5. Section 32 91 00 - Soil Erosion, Sediment Control, Topsoiling and Seeding.

1.2 SUBMITTALS

A. General

1. Submittals shall be made in accordance with Division 01 requirements.

B. Contractor shall provide a Site Demolition Plan:

1. The Site Demolition Plan shall include the following items:

a. Location and limits of demolition.

b. Methods and equipment to be utilized including backfilling of excavations and depressions.

c. Shoring or other structures necessary to complete the demolition in accordance with Section 31 50 00.

d. Proposed materials and methods to be used for cutting and patching, sawcutting and removing, or matching and repairing existing construction to remain.

e. Safety measures including signs, barriers, temporary walkways and hand railing.

f. Schedule for performing site demolition, cutting and patching, sawcutting and removing including railroad flagging needs.

g. Haul routes and disposal sites.

h. Utility coordination plan for Contractor demolished utilities as well as utilities being demolished by others as shown in the Plans.

i. Traffic control measures or traffic plan where required by Contractor's proposed methods in accordance with Division 01 requirements.

j. Identification of permits as required by the project environmental documents, federal, state or local agency in accordance with Division 01 requirements.

C. Contractor shall provide copies of notices, permits, certifications and authorizations:

1. Copies of demolition authorization permits and other permits as required by project environmental documents, federal, state or local agency in accordance with Division 01 requirements.

2. Delivery manifests for materials hauled and disposed by Contractor.

3. Private property owner's release for material removed from the OCTA project site and deposited on private property.

a. Releases shall absolve OCTA and its member agencies from any responsibility in connection with the disposal of materials on private property.

b. Releases shall be signed by the owner(s) of the property on which the material will be deposited.

c. Two copies of the releases shall be submitted to the Engineer for approval not more than 15 days before the start of material being deposited on private property.

4. Disposal certification for materials removed from job site indicating they have been disposed of in accordance with applicable laws and regulations.

D. Contractor shall provide material certification:

1. Indicating manufacturer and type of proposed nonshrink grout and epoxy bonding adhesive for patching or repairs to existing concrete structure to remain.

1.3 DELIVERY, STORAGE, AND HANDLING

A. General:

1. Contractor to salvage items, designated for owner's salvage, as a functional unit.

2. Clean, list and tag each item in a manner acceptable to the Engineer for storage.

3. Protect salvage items from damage and deliver to location designated in the Plans or as directed by the Engineer.

4. Salvage each item with auxiliary or associated equipment required for operation.

B. Demolished Materials:

1. On-site burning or burial of demolished materials will not be permitted.

2. Contractor shall take possession of all demolished materials except as noted in the Contract Documents to be salvaged.

3. Contractor shall be responsible for disposing of demolished materials in accordance with applicable federal, state and local laws and regulations in accordance with Division 01 requirements.

C. Environmental Requirements:

1. Cleanliness, Sweeping and Dust Control shall be maintained in accordance with Division 01 requirements.

2. Contractor shall provide noise abatement as required by environmental permits or local agency requirements in accordance with Division 01 requirements.

1.4 SITE CONDITIONS

A. Perform preliminary investigations as required in Section 31 20 00, Earthwork and in accordance with Division 01 requirements to ascertain extent of work.

1.5 SEQUENCING AND SCHEDULING

A. Coordinate and reschedule work as required to avoid interference with other operations of SCRRA or OCTA, as identified in the Construction Documents or in accepted schedule of site demolition, cutting and patching, sawcutting and removing.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Subject to compliance with the Contract Documents, the following products and manufacturers are acceptable for nonshrink grout and epoxy bonding adhesive to be used for patching of concrete to remain after demolition:

1. Nonshrink grout:

a. Supreme Grout by Gifford Hill.

b. Masterflow 713 Plus by BASF Building Systems.

c. Sika Grout 212 by Sika.

d. Approved equal.

2. Epoxy bonding adhesive:

a. Euco No.452 MV by Euclid Chemical Co.

b. Sikadur 32, Hi-Mod by Sika Corporation.

c. Approved equal.

B. Submit request for substitution in accordance with Division 01 requirements.

2.2 MATERIALS

A. Nonshrink Grout:

1. Nonmetallic, noncorrosive and nonstaining.

2. Premixed with only water to be added in accordance with manufacturer's instructions at jobsite.

3. Grout to produce a positive but controlled expansion. Mass expansion not to be created by gas liberation or by other means.

4. Minimum compressive strength at 28 days to be 6500 psi.

5. Coat exposed edges of grout with a cure/seal compound recommended by grout manufacturer.

B. Epoxy Bonding Adhesive:

1. Two component, moisture insensitive adhesive manufactured for the purpose of bonding fresh concrete to hardened concrete.

C. Other Temporary or Permanent Material:

1. Other temporary or permanent material shall be provided by the Contractor for proper execution of work in this Section.

D. Backfill Material:

1. Material used for backfill shall conform to the requirements of Section 31 20 00.

PART 3 - EXECUTION

3.1 GENERAL

A. No party other than the Contactor shall remove demolished material from OCTA property.

B. Contractor shall perform the demolition, removal, salvage, cutting and patching, sawcutting and removing including handling of demolished debris in accordance with the Contract Plans, Project Specifications and the submitted approved site demolition plan.

C. Any shoring, if required to accomplish demolition work, shall be designed and constructed in accordance with Section 31 50 00.

3.2 EXISTING STRUCTURES AND RELATED FACILITIES

A. Where demolition is indicated, remove and dispose of:

1. Existing fences as identified in the Plans.

a. Coordinate fence removal with maintaining temporary and permanent site security.

2. Temporary fences when no longer required to protect and secure the construction site.

3. Structures in their entirety or portions to be demolished as indicated in the Plans.

a. Exposed remaining concrete faces shall be saw cut to neat lines or finished with epoxy binder and non-shrink grout.

b. Concrete shall be removed as required and any remaining concrete to be utilized in the finished work or left as an existing structure shall be protected from damage and finished with epoxy binder and non-shrink grout or as indicated in the Plans.

4. Obstructions in their entirety or portions of obstructions as indicated in the Plans including abandoned concrete signal foundations, footings and bases located within the right-of-way shall be demolished.

5. Removal and disposal shall be in accordance with these Specifications and the submitted and approved site demolition plan.

B. Where salvage of material or portions of structures and related facilities is indicated, material shall be carefully removed as shown in the plans for installation of new work and neatly stacked at a location approved in advance to the satisfaction of the Engineer and in accordance with the approved site demolition plan. The materials shall be left in a satisfactory condition for use by OCTA as identified in the Plans or in future projects.

C. The Contractor shall replace or repair, at no expense to OCTA, any existing structure or portion of existing structure or related facility designated to remain that are damaged during removal of the portions designated for demolition.

3.3 PAVEMENT

A. Pavement shall be demolished as indicated in the Plans and removed in accordance with the submitted and approved site demolition plan.

B. Pavement shall be removed to clean straight lines. Saw cutting of edges to be joined is required. Saw cuts shall be a minimum depth of 1-1/2 inches.

1. Portland cement concrete pavement removal shall have a second full depth relief saw cut offset 12 to 18 inches parallel to the initial saw cut unless approved otherwise.

2. If a saw cut in concrete falls within three feet of a construction joint, cold joint, expansion joint, or edge, the concrete shall be removed to the joint or edge.

C. The Contractor shall provide surface drainage of resulting surfaces following pavement removal in accordance with SCRRA Specification 32 91 00 Soil Erosion, Sediment Control, Topsoiling and Seeding.

D. The Contractor shall replace at no expense to OCTA any existing pavement designated to remain that is damaged as a result of Contactor activities.

3.4 WIRING AND POLES

A. Wiring and Poles designated to be removed by the Contractor shall be removed in accordance with the Plans and the approved site demolition plan. No work shall be performed until clearance to proceed has been provided by the Engineer.

3.5 UTILITIES

A. Demolition of existing utilities removed by others as shown in the Plans shall be coordinated by the Contractor with the utility companies and agencies in accordance with Division 01 in accordance with the approved site demolition plan.

B. The Contractor shall cap and plug storm drain, sanitary sewer, and underdrain in accordance with the utility owner’s standard details and instructions. Cap and plug pipe and other conduits abandoned due to demolition, with approved type caps and plugs as required by the utility owners.

C. Abandoned utilities under railroad tracks shall be removed and backfilled or filled in accordance with these specifications and the project plans and technical Specifications.

3.6 BACKFILL OF DEMOLITION EXCAVATIONS

A. Any shoring used for support of demolition excavations shall be removed in accordance with Section 31 50 00 and the submitted and approved site demolition plan.

B. Excavations created by demolition activities shall be backfilled and compacted in the same manner as backfilling excavations in OCTA Supplemental Specification Section 31 20 00.

PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

A. Existing facilities to be reconstructed, relaid, relocated or reset is considered incidental to work under other payment items and no separate measurement and payment will be made to the Contractor for Work of this Section. Work of this existing facilities shall include furnishing all labor, materials, tools, equipment, supplies, supervision, and incidentals, and doing all work, as shown on the Plans, and as specified in these Specifications, and as directed by the Engineer.

B. When existing facilities are to be salvaged, no separate measurement and payment will be made for removing the facilities.

4.2 PAYMENT

A. When the Contract Documents include separate items, and units or lump sum prices for removing, salvaging, adjusting, modifying, remodeling, abandoning, obliterating, relaying, reconstructing, relocating or resetting any of the facilities, the quantities will be paid for at the Contract unit, or lump sum price for the item of work involved.

B. This price shall be full compensation for furnishing all labor, materials, tools, equipment, supplies, supervision, and incidentals and for doing all work involved in completing the operations as shown on the Plans, and as specified in these Specifications, and as directed by the Engineer.

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C. Full compensation for all excavation and backfill required to remove, dispose of, salvage, relay, reset, relocate and reconstruct facilities, for which payment is not otherwise provided, shall be considered as included in the Contract unit or lump sum price paid for the items of work involved and no separate payment will be made therefor.

D. When the Contract does not include separate items for removing any of the existing facilities encountered within the area to be cleared and grubbed or the removal is not included in another item, then payment for removing the facilities shall be considered incidental to work under other payment items and no separate measurement and payment will be made to the Contractor for Work of this Section.

END OF SECTION

SECTION 31 20 00

EARTHWORK

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Excavation, embankment fill, structural excavation and backfill, borrow and removal of unsuitable material.

2. Structural excavation shall consist of excavation for the construction of foundations for structures, excavation for trenches for the construction of culverts, pipes and other facilities. Structural backfill shall consists of furnishing, installing, and compacting backfill material around structures.

3. Slope Preparation shall consist of track-walking, blading, use of a slope board, or other earth moving means to grade a surface in such a way as to remove erosion rills, gullies, and other erosional ruts in preparation to install a permanent type of slope protection such as Stone Revetment (Rip-Rap) as covered in Section 34 80 11 or Geosynthetic Cellular Confinement Soil Stabilization System as covered in Section 31 35 19.

B. Related Specification Sections include but are not necessarily limited to:

1. Division 01 - General Requirements.

2. Section 03 31 00 – Structural Concrete

3. Section 31 11 00 - Site Clearing.

4. Section 31 11 50 - Demolition, Cutting and Patching.

5. Section 31 50 00 - Excavation Support.

6. Section 34 11 27 - Sub-Ballast and Aggregate Base.

1.2 REFERENCES

A. ASTM International (ASTM):

1. C131, Standard Test Method for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine.

2. D422, Standard Test Method for Particle Size Analysis of Soils.

3. D1556, Standard Test Method for Density and Unit Weight of Soil In Place by the Sand Cone Method.

4. D1557, Standard Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft (2,700 kN-m/m)).

5. D2419, Standard Test Method for Sand Equivalent Value of Soils and Fine Aggregate.

6. D4254, Standard Test Methods for Minimum Index Density and Unit Weight of Soils and Calculation of Relative Density.

7. D4318, Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.

8. D4829, Standard test Methods for Expansion Index of Soils.

9. D6938, Standard Test Methods for IN-Place Density and Water Content of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depths).

B. California Code of Regulations, Title 8, Subchapter 4, Construction Safety Orders.

C. Standard Specifications for Public Works Construction, Latest Edition, Section 300 – Earthwork.

D. Caltrans Section 19 - Earthwork

1.3 SUBMITTALS

A. General:

1. Submittals must be made in accordance with Division 01 requirements.

B. Plans and Procedures:

1. Submittals of plans and procedures to the Engineer must be made and approval obtained prior to commencing work for Rough Grading, temporary storage area(s) for topsoil, Excavation, Embankment Fill, Structure Excavation and Backfill, subgrade preparation, borrow (on-SCRRA property and off OCTA property) and removal of unsuitable materials.

2. Plans shall include, as necessary, haul routes, public streets to be used, traffic control and other incidental work necessary to complete the Rough Grading, Excavation, Embankment Fill, Structure Excavation and Backfill, subgrade preparation, borrow (on-OCTA property and off OCTA property) and removal of unsuitable materials.

3. Contractor must submit an Excavation and Embankment Fill Plan:

   a. Proposed excavation methods, procedure and equipment to be utilized.

   b. Information provided the Engineer does not relieve Contractor of responsibility for the successful excavation performance.

4. Contractor must submit a Structure Excavation and Backfill Plan.

   a. Proposed excavation methods, procedure and equipment to be utilized for structural work.

   b. Proposed backfill methods, procedure and equipment to b e utilized for structural work.

   c. Information provided the Engineer does not relieve Contractor of responsibility for the successful structure excavation and backfill performance.

C. Certificates:

1. Material Test Reports for products purchased and used in the project.

2. Certification of proper disposal of demolition materials.

3. Tickets or certification from material suppliers demonstrating compliance with Materials Tests or Specifications.

4. Certified laboratory test reports for fill material, imported or obtained from OCTA property, documenting:

   a. ASTM D422, Sieve Analysis.

   b. ASTM D1557 or ASTM D4254, Moisture Density Results.

   c. ASTM D4318, liquid limit, plastic limit and plasticity index.

5. The Engineer will determine adequacy of the test reports or certifications in accordance with the Contract Documents and may require additional testing to confirm requirements with the Specifications.

D. Product Data and Shop Plans:

1. Product technical data including:

a. Acknowledgement that products submitted meet requirements of standards referenced.

b. Manufacturer's installation instructions.

E. Samples:

1. Submit samples, soils test results, and sources of fill, backfill and borrow materials proposed for use.

2. Submit material samples when requested by the Engineer for use as confirmation of Contractor test results.

F. Miscellaneous Submittals:

1. Submit test results for density and compaction tests performed by certified test laboratory hired by the Contactor and approved by the Engineer to perform and report testing.

a. Test results submittal shall be on a form approved in advance by the Engineer.

2. Verification documentation, in accordance with Division 01 requirements, that Contractor requested DigAlert field location of underground utilities and SCRRA Signal and Communications field location of underground railroad lines prior to starting any excavation work.

1.4 QUALITY ASSURANCE

A. Prior to commencing Work, the Contractor must examine the Contract Plans and Specifications, inspect the site, consult all available record Plans of existing Work and utilities, and note all conditions and limitations, which may influence Work required by this Section.

B. Materials not meeting the requirements of this specification must not be used in the Work.

1.5 SITE CONDITIONS

A. Contractor must execute Work under this Specification in such a manner as to minimize impact to the daily operation of the SCRRA, vehicular and pedestrian traffic.

B. The Contractor must barricade open excavations and post with warning lights those excavations occurring on property adjacent to or within public access areas and along the SCRRA tracks in accordance with requirements of Section 31 50 00. Operate warning lights during hours from dusk to dawn each day and as otherwise required. Warning lights shall be located to avoid shining directly into Locomotive Engineer’s eyes in oncoming trains.

C. The Contractor must protect utilities, structures and facilities designated as protect in place from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by excavation and backfill operations.

D. The Work shall allow rainfall to drain freely at all times in accordance with project environmental requirements and permit conditions in accordance with Division 01 requirements.

1.6 ENVIRONMENTAL CONDITIONS

A. The Contractor must protect against erosion and uncontrolled run-off within and adjacent to right-of-way in accordance with the Project's Storm Water Pollution Prevention Plan and the approved NPDES Permit in accordance with Division 01 requirements and Supplemental Specification Section 31 11 00 1.2.C.1.

B. The Contractor must obtain all required permits for dewatering and legally dispose of water from dewatering operations.

1. Comply with requirements of permits and agencies having jurisdiction over the project site in accordance with Division 01 requirements.

C. Cleanliness, Sweeping and Dust Control shall be in accordance with Division 01 requirements.

D. Contractor must provide noise abatement as required by environmental permits or local agency requirements in accordance with Division 01 requirements.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Structure Excavation:

1. Excavation for the construction of foundations for structures; excavation of trenches for the construction of culverts, pipes, rods, deadmen, and cutoff walls; other excavation designated on the plans or in these specifications or in the technical provisions as structure excavation.

B. Embankment fill and backfill shall consist of suitable material from project site excavation, from other OCTA property or off site borrow as shown in the Plans and approved by the Engineer.

1. Suitable fill materials may be obtained from on site excavation and rough grading operations provided the Contractor submits laboratory test results demonstrating that the materials meet or exceed the criteria established in this Section. If sufficient suitable materials are not available to meet requirements, the material shall be obtained from outside sources.

2. Materials from on-site excavations, which may otherwise be suitable for use as fill, may contain excess moisture in their natural state, or may take on excess moisture during handling and stockpiling that would render them unsuitable for use as fill. The Contractor must dry the material as necessary as specified in the Section entitled “Moisture Control” herein to attain the required minimum standard, at no additional expense to OCTA.

3. Nesting of rock pieces that will create voids will not be permitted.

4. Fill and backfill material shall be free from organic matter, excessive fines, or unsuitable products of demolition. Fill and backfill shall contain no rocks or lumps over 3 inches in greatest dimension within 1 foot of the top of subgrade.

5. Fill and backfill material shall have plasticity index of 15 or less and a liquid limit of 30 or less and expansion index of 30 or less, except where otherwise approved by the Engineer.

6. Suitable materials from structure excavation not used as structure backfill shall be deposited as fill or backfill material.

7. Materials not meeting these requirements will be classified as unsuitable and shall be removed and legally disposed off-site by the Contractor, or as directed by the Engineer.

C. Structural Backfill:

1. Various items of work involved in furnishing, placing and compacting backfill material around structures to the lines designated on the plans or specified by the Engineer.

2. Material shall have a Sand Equivalent value of not less than 20 and shall conform to the following grading in Table 1:

Table 1, Structural Backfill

Sieve Sizes	Percentage Passing
3”	100
No. 4	35-100
No. 30	20-100

3. Material shall be free of stones or lumps exceeding 3 IN in greatest dimension organic or other unsatisfactory material.

4. At locations where directed by the Engineer, the material used to backfill the outer 2 feet portion of structure backfill adjacent to pipe and culvert inlets and outlets, and structure backfill placed within 2 feet of finished grade around abutments, abutment wing walls, retaining walls, and other portions of structures shall be compacted impervious material. The impervious backfill shall meet the material requirements in Table 1 except there shall be 15 percent plus or minus 2 percent minus 200 sieve material present and as determined by the Engineer to be suitable for such purpose. The Sand Equivalent requirement shall not apply to the impervious material used for structure backfill.

5. When material from Structure Excavation is unsuitable for use as structure backfill, the Engineer may require the Contractor to:

    a. Use other material covered by the Contract if such substitution involves Work that does not differ materially from what would otherwise be required. No additional compensation will be allowed.

    b. Substitute selected material available from the project site. No additional compensation will be allowed.

    c. Use Controlled Density Fill (CDF).

    d. Obtain material elsewhere from Contractor sources in accordance with Division 01.

6. When required by the Plans or submitted as an option and approved by the Engineer in advance, controlled density fill (CDF) or slurry cement backfill, a self compacting, cementitious flowable material requiring no vibration or tamping to achieve consolidation, may be used. The Contractor must submit a mix design in writing to the Engineer for approval. The design shall provide:

    a. A minimum 28-day strength of 50 psi and a maximum 28-day strength not to exceed 300-psi.

    b. Consistency shall be flowable (3 inches to 10 inches slump).

    c. The CDF materials shall meet material properties and testing contained in Section 34 80 41.

7. Pervious Backfill Material shall be placed behind bridge abutments, wing walls and retaining walls as shown on the plans and in accordance with these Specifications.

        a. Material shall consist of gravel, crushed gravel, crushed rock, natural sands, manufactured sand or combinations thereof.

b. Pervious backfill material shall be placed in layers along with and by the same methods specified for structural backfill. Pervious backfill material at any one location shall be approximately the same grading, and at locations where the material would otherwise be exposed to erosion shall be covered with at least a one foot layer of earthy material approved by the Engineer.

c. Pervious backfill material, except for sacked material at wall drain outlets, shall conform to the following grading requirements:

Table 2, Pervious Backfill Material

Sieve Sizes	Percentage Passing
2 inches	100
No. 50	0 - 100
No. 100	0 - 8
No. 200	0 - 4

D. Aggregate Base and Crushed Miscellaneous Base:

1. Aggregate Base material shall conform to the requirements set forth in Section 34 11 27.

2. Crushed Miscellaneous Base, CMB, shall consist of broken and crushed asphalt concrete or Portland cement concrete and may contain crushed aggregate base or other rock materials. The material shall be free of any detrimental quantity of deleterious material and contain no more than 15 percent material retained on the No. 4 sieve. Material shall not contain more than 3 percent brick by weight of dry sample.

3. Crushed Miscellaneous Base shall conform to the following grading requirements:

Table 3, Crushed Miscellaneous Base

Sieve Size	Percentage Passing Sieve	
	Coarse	Fine
2 inches	100	
1-1/2”	85 - 100	100
3/4”	50 – 85	85 - 100
3/8”		55 - 75
No. 4	25 - 45	25 - 60
No. 30	10 – 25	10 - 30
No. 200	2 - 9	2 - 9
ASTM C 131 Test Grading	A	B

4. Crushed Miscellaneous Base shall only be used in paving areas.

E. Geotextile Filter Fabric:

1. Geotextile shall conform to Caltrans Standard Specifications Section 88-1.03.

PART 3 - EXECUTION

3.1 PROTECTION

A. Protect existing surface and subsurface features on-site and adjacent to site as follows:

1. Provide barricades, coverings, or other types of protection necessary to prevent damage to existing items indicated to remain in place.

2. Protect and maintain bench marks, monuments or other established reference points and property corners.

a. If disturbed or destroyed, replace at own expense to full satisfaction of Owner and controlling agency.

b. Property corners, if disturbed or destroyed, shall be reset in accordance with applicable surveying law for the State of California after completion of rough grading and prior to commencing final excavation or grading operations.

3. Verify location and protection of existing utilities.

a. Omission or inclusion of utility items does not constitute non-existence or definite location. Locations of utilities shown on the Plans are provided for the Contractor's information only and the Contractor is responsible for verifying the location of all utilities to his own satisfaction.

b. Secure and examine local utility records for location data. In accordance with Division 01, the Contractor must make all attempts to locate utilities including potholing if necessary prior to commencing excavations. If utilities cannot be located, the Contractor must first pothole anticipated location(s) by hand methods. When located, complete excavation with caution to prevent damage.

1) When utility lines not known or indicated on the Plans are encountered within the area of operations, the Contractor must notify the Engineer and utility owner immediately. Measures shall be taken to protect the utility and prevent damage to the utility.

c. Take necessary precautions to protect existing utilities from damage due to any construction activity.

d. Repair damages to utility items at own expense.

e. In case of damage, notify Engineer at once so required protective measures may be taken.

f. SCRRA'S underground signal lines will be located by the SCRRA in accordance with Division 01.

g. Excavations created for location of underground utilities shall be backfilled in accordance with the following:

1) Backfill material shall meet the criteria established for embankment fill material. The upper 12 inches of the embankment fill shall be compacted to 95 percent relative density per ASTM D1557 and the layer below 12 inches from the top of the compacted fill shall be compacted to 90 percent relative density per ASTM D1557 and shall contain no materials greater than 3 inches in maximum dimension.

2) Place the uppermost 12 inches of compacted fill in two lifts of 6 inches (compacted). Each lift shall be compacted to 95 percent relative density per ASTM D1557 and shall contain no materials greater than 1 inch in maximum dimension.

h. Any excavation that exposes or potentially could expose an existing underground utility or structure indicated as "protect in place," "to remain" or similar indication, or any unknown utility or structure found and deemed requiring special methods by the Engineer, shall be classified as a structural excavation and backfill for purposes of replacing and compacting fill. This shall be at no additional cost to OCTA.

1) The Contractor shall not disrupt any service until utility owner and the Engineer has determined the required action on such lines.

4. Maintain free of damage, existing sidewalks, structures, and pavement, not indicated to be removed in the Plans.

a. Any item known or unknown or not properly located that is inadvertently damaged shall be repaired to original condition at no expense to OCTA.

5. Provide full access to public and private premises, fire hydrants, street crossings, sidewalks and other points as designated by Owner to prevent serious interruption of travel and emergency services.

6. The Contractor must take precautions to prevent damage to existing foundations and structures protecting them in place without undermining or causing movement.

7. Maintain stockpiles and excavations in such a manner to prevent movement or damage to structures on-site or on adjoining property that are not noted in plans as being demolished.

8. At all times during the execution of this Work, the Contractor must maintain safe and stable excavations. Where required by California Construction Safety Orders, the Contractor must employ side slope layback, benching, or shoring. Required excavation support methods shall be in accordance with Section 31 50 00.

B. Water and Storm Drainage Removal:

1. The Contractor must provide, operate, and maintain an adequate system to remove water throughout the excavation and construction operation as necessary.

2. Obtain all permits for and legally dispose of water dewatering operations to facilitate construction. Comply with requirements of the permits, project environmental conditions and agencies having jurisdiction.

3. Elements of the system shall be located to allow continuous water removal without interfering with other construction activities.

C. Salvageable Items: Carefully remove items to be salvaged, and store as directed by the Engineer in accordance with Section 31 11 50.

D. Dispose of waste materials, legally, off site.

1. Burning, as a means of waste disposal, is not permitted.

3.2 SITE EXCAVATION AND GRADING

A. The work includes all operations in connection with excavation, borrow, construction of fills and embankments and structures, rough grading, and disposal of excess materials in connection with the preparation of the site(s) for construction of the railroad roadbed or other facilities.

B. Excavation and Grading: Perform as required by the Contract Plans.

1. Prior to rough grading, the Contractor must complete clearing and grubbing in accordance with Section 31 11 00.

2. Contract Plans may indicate both existing grade and finished grade required for construction of Project.

a. Stake all units, structures, piping, fills and cuts, roads, parking areas and walks and establish their elevations upon completion of site clearing in accordance with OCTA Supplemental Specification 31 11 00.

b. Perform other construction staking work required.

3. The Contractor must not place any embankment fill or sub-ballast the ground surface for embankment fills or base of excavations without prior acceptance of the excavated and rough graded areas by the Engineer.

4. The Contractor must perform rough grading as indicated to achieve the bottom elevation for the embankment. This work shall be considered incidental to construction of embankment cuts and fills.

5. Preparation of ground surface, rough grading, for embankment cuts or fills:

    a. Before embankment fill is started or subballast placed, scarify to a minimum depth of at least 6 inches and up to 18 inches (if necessary to reach the specified density) in all proposed embankment cut and fill areas.

        1) Moisture content shall be brought to 2.0 percent above optimum and relative compaction of 90 percent relative density per ASTM D1557 reached prior to placing any embankment fill if more than 12 inches of fill required.

        2) Moisture content shall be brought to 2.0 percent above optimum and relative compaction of 95 percent relative density per ASTM D1557 reached prior to placing any embankment fill if 12 inches or less of fill is required or sub-ballast is to be placed directly on the prepared base.

    b. Where embankment fill is to be constructed against an existing ground surface that is steeper than one vertical to four horizontal, plow surface in a manner to bench and break up surface so that fill material will key into the existing surface.

        1) Benches shall have a horizontal dimension of not more than 6 feet and a vertical rise of not more than 2 feet.

        2) Benches cut into the slope shall not be allowed to remain unsupported overnight.

        3) Benches cut within 12 feet of the track centerline shall only be created during train free periods and shall be immediately backfilled and compacted unless shoring designed in accordance with SCRRA's Excavation Support Guidelines, constructed in accordance with Section 31 50 00, and these Specifications is installed.

6. Preparation of ground surface for foundations or footings.

    a. Before constructions of the foundation or footing are started, scarify a minimum of 6-inches.

1) Moisture content shall be brought to 2.0 percent above optimum and relative compaction of 95 percent relative density per ASTM D1557 reached prior to placing reinforcing steel for any foundation or footing.

7. In areas where unsuitable materials are encountered in the embankment cut or fill footprint, the Engineer may direct removal and replacement with suitable materials placed and compacted in accordance with these Specifications in accordance with Section 4, Measurement and Payment.

8. Fill and backfill shall be placed as promptly as work permits but not until completion of the following:

   a. Approval by the Engineer of the embankment cut or embankment fill base preparation.

   b. Recording of final location, elevation, and limits of any structure, utility or other underground feature that will remain in place and be covered by the embankment.

   c. Removal of any trash and debris.

   d. Removal of shoring and bracing where applicable and as directed by the Engineer.

9. Protection of finished grade:

   a. During construction, shape and drain embankment and excavations.

   b. Maintain ditches and drains to provide drainage at all times. Protect newly graded areas from erosion.

   c. Protect graded areas against action of elements prior to acceptance of work.

   d. Contractor must keep graded areas free of trash and debris until final inspection and acceptance by the Engineer.

   e. Reestablish grade where settlement or erosion occurs.

   f. Contractor must not operate equipment supported directly on the roadbed unless it can be demonstrated through compaction testing to the Engineer's approval that the equipment selected can be supported without creating softening, rutting or degradation of the roadbed.

   g. Contractor must remove any excess material that was delivered and not used for the Project at its own expense.

C. Borrow:

1. Provide necessary amount of approved fill, from material obtained from OCTA property or imported, compacted to density equal to that indicated in this Specification.

2. Fill material to be approved by Engineer prior to placement.

D. Construct embankment and structure cuts and fills as required by the Contract Plans:

1. Construct embankment cuts and fills at locations and to lines of grade indicated.

   a. Completed embankment fill and cut shall correspond to shape of typical cross section or contour indicated regardless of method used to show shape, size, and extent of line and grade of completed work.

2. Provide approved fill material for embankment fill or backfill which is free from roots, organic matter, trash, frozen material as follows:

   a. Ensure that stones larger than 3 inches are not placed in upper 12 inches of fill or embankment.

   b. Do not place material in layers greater than 8-inches loose thickness.

   c. Place layers horizontally and compact each layer prior to placing additional fill to a minimum of 90 percent relative compaction per ASTM D1557.

3. Provide approved fill material for structural fill or backfill which is free from roots, organic matter, trash, frozen material, and stones as follows:

   a. Ensure that stones larger than 3 inches are not placed against any concrete or other foundation material or used as structural fill or backfill.

   b. Do not place material in layers greater than 8 inches loose thickness.

   c. Place layers horizontally and compact each layer prior to placing additional fill to a minimum of 95 percent relative density per ASTM D1557.

4. Compaction shall be by equipment approved by the Engineer to obtain specified density.

   a. Control moisture for each layer as necessary to meet requirements of compaction.

b. Before compaction, each layer shall be moistened or aerated as necessary to provide the optimum moisture content.

c. Compaction shall not result in significant rutting under the action of the compactor on the final passes on a lift.

d. The compaction process must extend the full width of the embankment fill or cut section for the layer being worked.

5. Contractor must properly place and compact all embankment fill or structural fill or backfill materials. Deficiencies resulting from insufficient or improper compaction of such material shall be corrected by the Contractor throughout the Contract period. When specified compaction density is not being obtained or subgrade surface damaged by equipment, Contractor must:

a. Stop placing additional fill.

1) Material in place may be scarified, water content adjusted and area rerolled until required compaction is obtained.

2) Alternatively, Contractor may remove not fully compacted material and replace with different material at no additional cost to OCTA.

3) Contractor may propose other means and methods to the Engineer for approval.

b. If softening of the subgrade surface takes place under construction traffic to a degree unsatisfactory to the Engineer, Contractor must rework or remove and replace the material, recompacting and grading as required at no additional cost to OCTA.

c. If a fill material is too wet:

1) It may be scarified or disked and aerated until the proper water content is attained.

2) With approval of the Engineer, Contractor may blend drier soil with the wet fill to achieve a water content suitable for compaction.

3) Contractor may propose other means and methods to the Engineer for approval.

3.3 COMPACTION EQUIPMENT

A. Contractor must determine the type, size and weight of the compaction equipment best suited to perform the work at hand. Select and control the lift (layer) thickness within the Specifications with approval of the Engineer. Proper

control over the moisture content of the material shall be maintained to obtain required compaction results.

B. In areas inaccessible to conventional compactors, or where maneuvering space is limited, approved impact rammers, small drum vibrators, vibratory plate, or pneumatic button head compaction equipment may be used with layer thickness not to exceed 6 inches before compaction.

C. Compaction by jetting or flooding with water is not allowed.

3.4 ROCK EXCAVATION

A. Rock excavation shall be as specified in the Project Specific Specifications.

3.5 USE OF EXPLOSIVES

A. Blasting with any type of explosive is prohibited.

3.6 FIELD QUALITY CONTROLIQUALITY ASSURANCE

A. Include in bid price for earthwork the cost of inspection services indicated herein as being performed by the Contractor's Soils Engineer.

1. The Contractor must use a certified testing laboratory that is approved in advance by the Engineer.

2. Included are all retests required by the Engineer to confirm successful compaction at failed test locations.

B. Moisture density relations, to be established by the Contractor's Soils Engineer, are required for all materials to be compacted. Samples of soils shall be provided at no additional cost for verification testing by OCTA when required by the Engineer.

C. Extent of compaction testing will be as necessary to assure compliance with Specifications.

1. On-site density tests in accordance with ASTM D6938 shall be used to demonstrate that proper compaction has been obtained.

2. Visual observation may be used to augment on-site density tests. Visual inspection in no way relieves Contractor of responsibility to perform on site density testing.

3. Density testing must be performed in the following frequency:

a. At least one density test must be performed for each 200 cubic yards of embankment compacted fill.

b. At least one density test must be performed in the prepared subgrade in embankment cuts every 500 feet.

c. At least one density test is to be performed for each 30 cubic yards of compacted structural backfill.

d. Density tests shall be taken in areas representative of compactive efforts and not in areas of equipment traffic.

4. OCTA will perform Quality Assurance (verification) testing for on-site density as determined by the Engineer.

a. Testing will be by an independent certified soils testing laboratory.

b. Retests required due to Contractor not complying with the density requirements must be paid for by the Contractor as a deduction from payment.

D. Give minimum of 24 hours advance notice to the Engineer when ready for compaction or subgrade testing observation and inspection.

E. Should any compaction density test or subgrade inspection fail to meet Specification requirements, perform corrective work as necessary including but not limited to rerolling and manipulation of moisture. Additional compaction testing will be required to determine that corrective work provides compaction in the failed area meeting requirements of these Specifications.

F. Contractor must provide a record of compaction testing results including corrective actions taken if necessary on the approved form to the Engineer.

G. Contractor's corrective work to meet compaction requirements and retesting resulting from failing compaction density tests shall be at no additional cost to OCTA.

3.7 EXCAVATION, FILLING, AND BACKFILLING FOR STRUCTURES

A. General:

1. The backfilling of openings dug for Structures shall be a necessary part of and incidental to the excavation for the Structure.

2. The Engineer may require the Contractor to selectively remove and stockpile any usable material excavated for a Structure.

a. If material meets the requirements for Pervious Backfill Material, Table 2, for walls it may replace gravel as wall or abutment backfill.

3. Stockpiled material shall be protected with plastic sheeting or by some other method as approved by the Engineer from contamination and weather damage.

a. Too wet or contaminated material caused by failure of the protection method shall be disposed of by the Contractor and replaced with an equal amount of suitable material at no expense to OCTA unless the project construction schedule allows for Contractor to propose a different method for Engineer's approval.

4. All costs for supplying, if necessary, storing, protecting, rehandling and placing stockpiled material shall be included in the unit Contract price for Structure Excavation.

5. In this Section of the Specifications, the word "foundations" includes footings, base slabs, foundation walls, mat foundations, grade beams, piers and any other support element placed directly on soil or deep structural foundations such as piling or drilled shafts.

6. In the paragraphs of this Section of the Specifications, the word "soil" also includes any type of rock subgrade that may be present at or below existing subgrade levels.

B. Excavation Requirements for Structures:

1. General:

a. Do not commence excavation for foundations for structures until Engineer approves Contractor's submittals of tests or information indicating one of the following as applicable:

1) Density and moisture content of compacted fill material at structure site meets requirements of specifications.

2) Site surcharge or mass fill material can be removed due to meeting requirements in the Construction Documents from entire construction site or portion thereof.

3) Surcharge or mass fill material has been removed previously from construction area or portions thereof.

b. Engineer grants approval to begin excavations.

2. Dimensions:

a. Excavate to elevations and dimensions indicated or specified.

b. Allow additional space as required for construction operations, working space, formwork, damproofing, waterproofing and inspection of foundations.

3. Removal of obstructions and undesirable materials in excavation includes, but is not necessarily limited to, removal of old foundations, existing construction, unsuitable subgrade soils, expansive type soils, and any other materials which may be concealed beneath present grade, as required to execute work indicated on Contract Plans.

    a. If undesirable material and obstructions are encountered during excavation remove material to a depth where suitable materials are found or compacted material meeting requirements of Table 1 Structural Backfill provides a stable subgrade and meets compaction requirements.

    b. Unsuitable material removed below foundation elevations shall be replaced with material meeting requirements of Table 1, Structural Backfill and compacted in layers not exceeding 6 inches in depth to 95 percent of relative density per ASTM D1557.

    c. Engineer will approve additional excavation for unsuitable materials below the foundation. Additional work will be paid for in accordance with Part 4, Measurement and Payment of these Specifications.

4. Do not carry excavations lower than shown for foundations except as directed by the Engineer.

    a. If any part of excavations is carried below required depth without authorization, maintain excavation and start foundation from excavated level with concrete of same strength as required for superimposed foundation, and no extra compensation will be made to Contractor therefore.

5. Notify Engineer as soon as excavation is completed in order that excavated structure subgrades may be inspected.

    a. Do not commence further construction until subgrade under compacted fill material, under foundations, under floor slabs-on-grade, under equipment support pads, and under retaining wall footings as applicable has been inspected and approved by the Engineer as being free of undesirable material, being of compaction density required by this Specification as shown by the compaction tests, and being capable of supporting the allowable foundation design bearing pressures and superimposed foundation, fill, and building loads to be placed thereon.

    b. The Engineer must be given the opportunity to inspect subgrade below fill material both prior to and after subgrade compaction.

c. Place concrete for foundations, retaining wall footings, floor slabs-on-grade, and equipment support pads as soon as weather conditions permit after excavation is completed, inspected, and approved and after forms and reinforcing are inspected and approved.

d. Place fill material after removal of forms in accordance with time frame provisions of Section 34 80 41.

e. Before concrete or fill material is placed, protect approved subgrade from becoming loose, wet, frozen, or soft due to weather, construction operations, or other reasons.

6. Dewatering:

a. Where groundwater is, or is expected, to be encountered during excavation, install a dewatering system to prevent softening and disturbance of subgrade below foundations and fill material. The dewatering system shall be designed to allow foundations and fill material to be placed in the dry, and to maintain a stable excavation side slope.

b. Groundwater levels shall be maintained at least 3 feet below the bottom of any excavation.

c. Review soils investigation before beginning excavation and determine where groundwater is likely to be encountered during excavation.

d. Employ a hydrologist for selecting and designing the dewatering system.

1) Such design shall include field maintenance instructions for Contractor's personnel.

e. Keep dewatering system in operation until dead load of structure exceeds possible buoyant uplift force on structure.

f. Dispose of groundwater to an area which will not interfere with construction operations or damage existing construction.

1) Install groundwater monitoring wells as necessary.

2) Obtain dewatering permits in accordance with Project Environmental requirements.

g. Upon completion of excavation and structure foundation work, do not turn off dewatering system in a manner that the upsurge in water weakens the subgrade.

7. Subgrade stabilization:

a. If subgrade under foundations, fill material, floor slabs-on-grade, or equipment support pads is in a frozen, loose, wet, or soft condition before construction is placed thereon, remove frozen, loose, wet, or soft material and replace with approved compacted material as directed by the Engineer. Such additional work will be measured and paid for in accordance with Part 4, Measurement and Payment.

b. Provide compaction density of replacement material as stated in this Specification Section.

c. Loose, wet, or soft materials, when approved by the Engineer, may be stabilized by a compacted working mat of well graded crushed stone meeting requirements for Table 1, Structural Backfill.

1) Compact stone mat thoroughly into subgrade to avoid future migration of fines into the stone voids.

d. Method of stabilization shall be as approved by the Engineer.

e. Do not place further construction on the repaired subgrades, until the subgrades have been approved by the Engineer.

8. Protection of structures:

a. Contractor must take precautions to protect new and existing structures from becoming damaged due to construction operations or other reasons.

b. Contractor must take precautions to protect subgrade under new and existing foundations from becoming wet and undermined during construction due to presence of surface or subsurface water or due to construction operations.

9. Shoring:

a. Shore, sheet pile, slope, or brace excavations as required to prevent them from collapsing in accordance with Section 31 50 00.

b. Remove shoring as backfilling progresses but only when the area where shoring is being removed is stable and safe from caving or collapse.

10. Drainage:

a. Control grading around structures so that ground is pitched to prevent water from running into excavated areas or damaging structures.

b. Maintain excavations where foundations, floor slabs, equipment support pads or fill material are to be placed free of water.

c. Provide pumping required to keep excavated spaces clear of water during construction in accordance with Subsection 3.07.B.6, Dewatering, of these Specifications.

d. Should any groundwater, not noted in the Construction Documents be encountered in the excavation, notify Engineer.

e. Provide free discharge of water by trenches, pumps, wells, well points, or other means as necessary and drain to point of disposal that will not damage existing or new construction or interfere with construction operations in accordance with Paragraph 3.07.B.6, Dewatering, of this Section.

11. Frost protection:

a. Do not place foundations, slabs-on-grade, equipment support pads, or fill material on frozen ground.

b. When freezing temperatures may be expected, do not excavate to full depth indicated, unless foundations, floor slabs, equipment support pads, or fill material can be placed immediately after excavation has been completed and approved.

c. Protect excavation from frost if placing of concrete or fill is delayed.

d. Where a concrete slab is a base slab-on-grade located under and within a structure that will not be heated, protect subgrade under the slab from becoming frozen until final acceptance of the Project by the Owner.

e. Protect subgrade under foundations of a structure from becoming frozen until structure is completed and heated to a temperature of at least 50 deg. F.

C. Structural Fill and Backfill below Foundations, Base Slabs, Equipment Support Pads and Piping:

1. General:

a. Subgrade to receive fill or backfill shall be free of undesirable material as determined by the Engineer and scarified to a depth of 6 inches and compacted to density specified herein.

b. Surface may be stepped by not more than 12 inches per step or may be sloped at not more than 2 percent.

c. Do not place any fill or backfill material until subgrade under fill or backfill has been inspected and approved by the Engineer as being free of undesirable material and compacted to specified density.

2. Obtain approval of fill and backfill material and source from the Engineer prior to placing the material.

3. Fill and backfill placement:

a. Prior to placing fill and backfill material, optimum moisture and maximum density properties for proposed material shall be submitted to the Engineer for approval.

b. Place fill and backfill material in 6 inches lifts as necessary to obtain required compaction density.

c. Compact material by means of equipment of sufficient size and proper type to obtain specified density.

d. Use hand operated equipment for filling and backfilling immediately next to walls.

e. Do not place fill and backfill when the temperature is less than 40 deg. F and when subgrade to receive fill and backfill material is frozen, wet, loose, or soft.

f. Use vibratory equipment to compact granular material; do not use water.

4. Where fill material is required below foundations, place fill material, conforming to the required density and moisture content, outside the exterior limits of foundations located around perimeter of structure the following horizontal distance whichever is greater:

a. As required to provide fill material to indicated finished grade.

b. 5 feet.

c. Distance equal to depth of compacted fill below bottom of foundations.

Or

d. As directed by the Engineer.

D. Filling and Backfilling Outside of Structures.

1. This paragraph of this Specification applies to fill and backfill placed outside of structures above bottom level of both foundations and piping but not under paving.

2. Provide material, in accordance with Table 1, Structural Backfill as approved by the Engineer for filling and backfilling outside of structures.

3. Fill and backfill placement:

a. Prior to placing fill and backfill material, determine optimum moisture and maximum density properties for the proposed material and submit to the Engineer for approval.

b. Place fill and backfill material in 6-inch lifts as necessary to obtain required compaction density.

c. Compact material with equipment of proper type and size to obtain density specified.

d. Use only hand operated equipment for filling and backfilling within a distance of 5 feet from walls, retaining walls and other concrete structures.

e. Do not place fill or backfill material when temperature is less than 40 deg. F and when subgrade to receive material is frozen, wet, loose, or soft.

f. Use vibratory equipment for compacting granular material; do not use water except as a means to reach optimum moisture.

4. Backfilling against walls or other concrete structures:

a. Do not backfill around any part of structures until each part has reached specified 28-day compressive strength and backfill material has been approved by the Engineer.

b. Do not start backfilling until concrete forms have been removed, trash removed from excavations, pointing of masonry work, concrete finishing, dampproofing and waterproofing have been completed.

c. Bring backfill and fill up uniformly around the structures and individual walls, piers, or columns.

E. Backfilling Outside of Structures Under Piping or Paving:

1. When backfilling outside of structures requires placing backfill material under piping or paving, the material shall be placed from bottom of excavation to underside of piping or paving at the density required for fill under piping or paving as indicated in this Section.

2. This compacted material shall extend transversely to the centerline of piping or paving a horizontal distance each side of the exterior edges of piping or paving equal to the depth of backfill measured from bottom of excavation to underside of piping or paving.

3. Provide special compacted bedding or compacted subgrade material under piping or paving as required by other Sections of these Specifications.

PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

A. Excavation and backfill will be measured by the unit or fraction thereof furnished and completed in accordance with the Contract Documents and as measured by the Engineer. The quantities as contained on the Schedule of Quantities and Prices, or approved schedule of values, as applicable, as derived from the Plans will be used as the basis for this measurement.

B. Excavation and backfill will be acceptably excavated or filled within the limits of lines and slope described in typical sections and cross sections in the plans and contract documents. Measurement will be by type of excavation or backfill:

1. Excavation, unclassified excavation.

2. Embankment fill and borrow used as embankment fill.

3. Structural Excavation and Structural Backfill.

4. Removal of unsuitable material and backfill with approved suitable material.

C. Materials excavated outside of the designated sections or from borrow pits will not be measured. When the project is constructed essentially to the dimensions shown on the plans no further measurement will be required, and payment will be made for the quantities shown in the contract for the various bid items involved. If disagreement exists between the Contractor and the Engineer as to the accuracy of the plan quantities, either party shall, before any work is started which would affect the measurement, have the right to request in writing and thereby cause the quantities involved to be measured. If measured quantities do not reveal a discrepancy when compared to plan quantities, the Contractor must pay for the cost of the Engineer to perform measurements and calculations of quantities.

D. Embankment of the various types, as specified, will be measured by the unit or fraction thereof furnished and completed in accordance with the Contract Documents and as measured by the Engineer. The quantities as contained on the Schedule of Quantities and Prices, or approved schedule of values, as applicable, as derived from the Plans will be used as the basis for this measurement. Embankment will be measured in the space occupied within the limits of lines and slopes described in the typical sections and cross sections as defined in the plans and contract documents. No payment will be made for the volume of material bladed off the top of roadway embankments outside of the roadbed limits. No allowance for shrinkage or compaction will be made. If disagreement exists between the Contractor and the Engineer as to the accuracy of the plan quantities, either party shall, before any work is started which would affect the measurement have the right to request in writing and thereby cause the quantities to be measured. If measured quantities requested by the Contractor do not differ from plan quantities, then the Contractor must pay the Engineer's costs to verify measurements of quantities.

E. When, in the judgment of the Engineer, it is impracticable, because of mixture of materials, to measure the actual unit content of each kind of material the Contractor and the Engineer shall agree upon payment provisions prior to proceeding with work. The Engineer will, from time to time, make such measurements as will best aid him in arriving at a just and equitable conclusion as to the proper percentage of the materials of the different classifications in the entire excavation, and he will so separate and classify the different materials.

F. Structural Excavation, Structure Backfill and Pervious Backfill material will be measured by the unit or fraction thereof furnished and completed in accordance with the Contract Documents and as measured by the Engineer. The quantities as contained on the Schedule of Quantities and Prices, or approved schedule of values, as applicable, as derived from the Plans will be used as the basis for this measurement.

G. Slope Preparation will be measured by the unit or fraction thereof furnished and completed in accordance with the Contract Documents and as measured by the Engineer. The quantities as contained on the Schedule of Quantities and Prices, or approved schedule of values, as applicable, as derived from the Plans will be used as the basis for this measurement.

4.2 PAYMENT

A. Structural Excavation, Excavation and Unclassified Excavation will be paid for at the contract unit price, as listed on the Schedule of Quantities and Prices, of excavation of proper classification within the limits of lines and slopes described in the typical sections and cross sections as defined in the plans and Contract Documents. This price shall be full compensation for furnishing all labor, materials, tools, equipment, supplies, supervision, and incidentals necessary for excavating, loading, transporting, and depositing materials in embankment, spoil bank, stockpile, or other designated location by whatever method is adopted, including all permission/permitting for haul operations. Payment for shoring operations due to any type of excavation shall be included in the payment for Structural Excavation, Excavation and Unclassified Excavation.

Embankments will be paid for at the contract unit price, as listed on the Schedule of Quantities and Prices, of embankment of proper type within the limits of lines

and slopes described in the typical sections and cross sections as defined in the plans and Contract Documents. This price shall be full compensation for furnishing all labor, materials, tools, equipment, supplies, water for compaction, supervision, and incidentals necessary for excavating, loading, transporting, and depositing borrow material when required; loading, transporting, and depositing select material from stockpile when required; loading, transporting, and distributing water; spreading, aerating if necessary, and compacting the embankment material; and finishing the embankment sections to the designated line and grades.

B. Structural backfill and pervious backfill material will be paid for at the contract unit price, as listed on the Schedule of Quantities and Prices, of material within the limits of lines and slopes described in the typical section and cross sections as defined in the Plans and Contract Documents. This priced shall be full compensation for furnishing all labor, material, tools, equipment, supplies water for compaction, supervision and tools necessary for backfilling structures in accordance with these Specifications and the designated lines and grades in the Plans.

C. Removal of unsuitable material and backfill with approved suitable material will be paid for at the contract unit price per unit of material within the limits of lines and slopes agreed upon by the Contractor and Engineer and measured as applicable. This price shall be full compensation for furnishing all labor, material, tools, equipment, supplies water for compaction, supervision and tools necessary for excavating and backfilling areas of unsuitable material in accordance with these Specifications.

D. Slope Preparation will be paid for at the contract unit price, as listed on the Schedule of Quantities and Prices, of material within the limits of lines and slopes described in the typical section and cross sections as defined in the Plans and Contract Documents. This priced shall be full compensation for furnishing all labor, material, tools, equipment, supervision and tools necessary for Slope Preparation in accordance with these Specifications and the designated areas as shown in the Plans.

END OF SECTION

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SECTION 31 35 19

GEOSYTHETIC SLOPE PROTECTION

PART 1 GENERAL

1.1 SUMMARY

A. Work Included: This section includes providing all material, labor, tools and equipment for installation of Cellular Confinement System as shown in the Contract Documents and as specified in this section.

B. The Cellular Confinement System shall be used for slope protection.

1.2 RELATED SECTIONS AND DIVISIONS

A. The applicable provisions of the General Conditions shall govern the work in this Section.

B. Division 00 – Bidding Requirements, Contract Form, and Conditions of the Contract.

C. Division 01 – General Requirements

D. Section 01 33 00 – Submittal Procedures

E. Section 31 11 00 – Site Clearing

F. Section 31 20 00 – Earthwork

G. Section 31 50 00 – Excavation Support

1.3 REFERENCES

A. American Association of State Highway and Transportation Officials (AASHTO)
   1. AASHTO M 288 - Geotextile Specification for Highway Applications

B. American Society of Testing and Materials (ASTM)
   1. ASTM D 1505 - Density of Plastics by the Density-Gradient Technique.
   2. ASTM D 1603 – Standard Test for Carbon Black in Olefin Plastics
   3. ASTM D 1693 – Environmental Stress-Cracking of Ethylene Plastics.
   4. ASTM D 5199 – Measuring Nominal Thickness of Geotextiles and Geomembranes.
   5. ASTM E 41 – Terminology Relating to Conditioning.

1.4 SUBMITTALS

A. Submit manufacturer's shop drawings in accordance with Section 01 33 00, submittals including Manufacturer’s product data, samples and section layout.

B. Design Calculations and Drawings. Provide a complete set of design calculations including a description of the static analysis performed to determine the slope and crest anchorage requirements.

1. The calculations shall be submitted at the time of bid.

2. Minimum overall design factor of safety shall be 1.4.

3. At a minimum; include design conditions, slope stability calculations, calculated factors of safety, friction angles and type of anchorage (anchors, tendons, earth anchors, etc).

4. If required, provide type (crest burial, pipe deadman, concrete deadman, earth anchors, etc.) and calculations for the recommended crest anchorage system.

5. If tendons are required, a submittal shall be included for the load transfer device including third party testing showing pull through testing exceeding 420 pounds.

6. The stability calculations shall be in Microsoft Excel converted to Adobe PDF format.

7. Cross section drawings shall be in AutoCAD converted to Adobe PDF format.

C. Manufacturer's Certificate of Analysis: Manufacturer shall supply certificate of analysis containing the following test results for the cellular confinement material used for project: Base Resin Lot Number(s), Resin Density per ASTM-1505, Production Lot Number(s), Material Thickness, Short Term Seam Peel Strength, and percentage of Carbon Black. Submit qualifications certifying the installer is experienced in the installation of the specified products.

D. Submit qualifications certifying the installer is experienced in the installation of the specified products.

E. Submit qualifications of Manufacturer's field representative certifying the field representative is experienced in the installation of the specified products.

F. No material will be considered as an equivalent to the cellular confinement system material specified herein unless it meets all requirements of this specification. Manufacturers seeking to supply what they represent as equivalent material must submit records, data, independent test results, samples, certifications, and documentation deemed necessary by the Engineer or Authority per Division 01 of these specifications to prove equivalency. The Engineer or Authority shall approve or disapprove other Manufacturers’ materials in accordance with the General Conditions after all information is submitted and reviewed. Any substitute materials submitted shall be subject to independent lab testing at the contractor’s expense.

1.5 QUALITY ASSURANCE AND CONTROL

A. The cellular confinement system material shall be provided from a single Manufacturer for the entire project.

B. The Manufacturer's Quality Management System shall be certified and in accordance with ISO 9001:2008 and CE certification. Any substitute materials submitted shall provide a certification that their cellular confinement manufacturing process is part of an ISO program and a certification will be required specifically stating that their testing facility is certified and in accordance with ISO. An ISO certification for the substitute material will not be acceptable unless it is proven it pertains specifically to the geocell manufacturing operations.

C. The Manufacturer shall provide certification of compliance to all applicable testing procedures and related specifications upon the customer's written request. Request for certification shall be submitted no later than the date of order placement.

D. Pre-Installation Meeting: Prior to installation of any materials, conduct a pre-installation meeting to discuss the scope of work and review installation requirements. The pre-installation meeting shall be attended by all parties involved in the installation of the cellular confinement system.

E. Manufacturer's Field Representative Qualifications:

1. Manufacturer shall provide a qualified field representative on site at the start of construction to ensure the system is installed in accordance with the Contract Documents.

2. Manufacturer of any substitute materials to be used shall certify that a representative can meet the above criteria and will be on site for initial construction start up.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials to site in Manufacturer's original, unopened containers and packaging, with labels clearly identifying product name and Manufacturer.

B. The materials shall be stored in accordance with Manufacturer's instructions. The materials shall be protected from damage and away from direct sunlight.

C. The materials shall be delivered, unloaded and installed in a manner to prevent and minimize damage.

1.7 WARRANTY

A. The Manufacturer shall warrant each section that it ships to be free from defects in materials and workmanship at the time of manufacture. The Manufacturer’s exclusive liability under this warranty or otherwise will be to furnish without charge to the original f.o.b. point a replacement for any section which proves to be defective under normal use and service during the 10-year period which begins on the date of shipment. The Manufacturer reserves the right to inspect any allegedly defective section in order to verify the defect and ascertain its cause.

B. This warranty shall not cover defects attributable to causes or occurrences beyond the Manufacturer’s control and unrelated to the manufacturing process, including, but not limited to,

abuse, misuse, mishandling, neglect, improper storage, improper installation, improper alteration or improper application.

C. In no event shall the Manufacturer be liable for any special, indirect, incidental or consequential damages for the breach of any express or implied warranty or for any other reason, including negligence, in connection with the cellular confinement system.

PART 2 PRODUCTS

2.1 ACCEPTABLE MANUFACTURER

A. Presto Geosystems, PO Box 2399, Appleton, Wisconsin 54912-2399.
Toll Free: (800) 548-3424. Phone: (920) 738-1328. Fax: (920) 738-1222.
E-Mail: info@prestogeo.com. Website: www.prestogeo.com.

B Engineer or Authority approved equal.

2.2 GEOWEB CELLULAR CONFINEMENT SYSTEM

A. Manufacturing Certification

1. The Manufacturer shall have earned a certificate of registration, which demonstrates that its quality-management system for its cellular confinement system is currently registered to the ISO 9001:2008 and CE quality standards.

B. Base Materials

1. Polyethylene Stabilized with Carbon Black

   a. Density shall be 58.4 to 60.2 pound/ft3 (0.935 to 0.965 g/cm3) in accordance with ASTM D 1505.

   b. Environmental Stress Crack Resistance (ESCR) shall be 5000 hours in accordance with ASTM D 1693.

   c. Ultra-Violet light stabilization with carbon black.

   d. Carbon Black content shall be 1.5 to 2 percent by weight, through addition of a carrier with certified carbon black content.

   e. Carbon black shall be homogeneously distributed throughout material.

   f. The manufacturer must have an in-place quality control to prevent irregularities in strip material.

2. Or approved equal.

C. Cell Properties

1. Individual cells shall be uniform in shape and size when expanded.

2. Individual cell dimensions (nominal) shall be dimensions ± 10%.

3. GW20V-Cell
   a. Length shall be 8.8 inches (224 mm).
   b. Width shall be 10.2 inches (259 mm).
   c. Nominal area shall be 44.8 in2 (289 cm2) plus or minus 1%.
   d. Nominal depth shall be 8 inches (200 mm), 6 inches (150 mm), 4 inches (100 mm) or 3 inches (75 mm) per design calculations.
   e. Or approved equal.

4. GW30V-Cell
   a. Length shall be 11.3 inches (287 mm).
   b. Width shall be 12.6 inches (320 mm).
   c. Nominal area shall be 71.3 in2 (460 cm2) plus or minus 1%.
   d. Nominal depth shall be 8 inches (200 mm), 6 inches (150 mm), 4 inches (100 mm) or 3 inches (75 mm) per design calculations.
   e. Or approved equal.

5. GW40V-Cell
   a. Length shall be 18.7 inches (475 mm).
   b. Width shall be 20.0 inches (508 mm).
   c. Nominal area shall be 187.0 in2 (1206 cm2) plus or minus 1%.
   d. Nominal depth shall be 8 inches (200 mm), 6 inches (150 mm), 4 inches (100 mm) or 3 inches (75 mm) per design calculations.
   e. Or approved equal.

D. Strip Properties and Assembly
   1. Perforated Textured Strip/Cell
      a. Strip sheet thickness shall be 50 mil (1.27 mm), minus 5 percent, plus 10 percent in accordance with ASTM D 5199. Determine thickness flat, before surface disruption.

b. Polyethylene strips shall be textured surface with a multitude of rhomboidal (diamond shape) indentations.

c. Textured sheet thickness shall be 60 mil plus or minus 6 mil (1.52 mm plus or minus 0.15 mm).

d. Indentation surface density shall be 140 to 200 per in2 (22 to 31 per cm2).

e. Perforated with horizontal rows of 0.4 inch (10 mm) diameter holes.

f. Perforations within each row shall be 0.75 inches (19 mm) on-center.

g. Horizontal rows shall be staggered and separated 0.50 inches (12 mm) relative to hole centers.

h. Edge of strip to nearest edge of perforation shall be a minimum of 0.3 inches (8 mm).

i. Centerline of spot weld to nearest edge of perforation shall be a minimum of 0.7 inches (18 mm).

j. A slot with a dimension of 3/8 inch x 1-3/8 inch (10 mm x 35 mm) is standard in the center of the non-perforated areas and at the center of each weld.

2. Assembly of Cell Sections
   a. Fabricate using strips of sheet polyethylene each with a length of 142 inches (3.61 m) and a width equal to cell depth.

   b. Connect strips using full depth ultrasonic spot-welds aligned perpendicular to the longitudinal axis of strip.

   c. Ultrasonic weld melt-pool width shall be 1.0 inch (25 mm) maximum.

   d. Weld spacing for GW20V cell sections shall be 14.0 inches plus or minus 0.10 inch (356 mm plus or minus 2.5 mm).

   e. Weld spacing for GW30V-cell sections shall be 17.5 inches plus or minus 0.10 inch (445 mm plus or minus 2.5 mm).

   f. Weld spacing for GW40V-cell sections shall be: 28.0 inches plus or minus 0.10 inch (771 mm plus or minus 2.5 mm).

E. Cell Seam Strength Tests
   1. Minimum seam strengths are required by design and shall be reported in test results. Materials submitted with average or typical values will not be accepted. Written certification of minimum strengths must be supplied to the engineer at the time of submittals.

2. Short-Term Seam Peel-Strength Test (See Attachment A)
   a. Cell seam strength shall be uniform over full depth of cell.
   b. Minimum seam peel strength shall be 640 lbf (2,840 N) for 8 inch (200 mm) depth, 480 lbf (2,130 N) for 6 inch (150 mm) depth, 320 lbf (1,420 N) for 4 inch (100 mm) depth or 240 lbf (1060 N) for 3 inch (75 mm) depth.
   c. Or approved equal.
3. Long-Term Seam Peel-Strength Test (See Attachment B)
   a. Conditions: Minimum of 7 days in a temperature-controlled environment that undergoes change on a 1-hour cycle from room temperature to 130 °F (54 °C).
   b. Room temperature shall be in accordance with ASTM E41.
   c. Test samples shall consist of two, four-inch (100 mm) wide strips welded together.
   d. Test sample consisting of two carbon black stabilized strips shall support a 160 pound (72.5 kg) load for test period.
4. 10,000-hour Seam Peel Strength Certification

   Presto Geosystems shall provide data showing that the high-density polyethylene resin used to produce the Geoweb sections has been tested using an appropriate number of seam samples and varying loads to generate data indicating that the seam peel strength shall survive a loading of at least 209 lbf (95 kg) for a minimum of 10,000 hours. Or approved equal.

2.3 INTEGRAL COMPONENTS

A. Tendon
   1. See 2.5 Tendon Anchorage.

B. ATRA® Tendon Clip
   1. The ATRA Tendon Clip is a molded, high-strength polyethylene device with a locking member and post with minimum pull-through of 420 lbs (191 kg).
   2. The ATRA Tendon Clip is the anchorage connection method for securing sections with tendons and transferring the driving gravity forces to the cell wall.
   3. Or approved equivalent tendon clip devices.

C. ATRA® Stake Clip
   1. The ATRA Stake Clip is a molded, high-strength polyethylene device available in standard

(0.5 inch) and metric (10–12 mm) versions.

2. ATRA Stake Clips can be installed as an end cap on standard (0.5 inch) and metric (10–12 mm) steel reinforcing rods to form ATRA Anchors.

3. Or approved equivalent stake clip device.

D. ATRA® Key

1. ATRA keys shall be constructed of polyethylene and provide a high strength connection with minimum pull-through of 275 lbs (125 kg).

2. ATRA keys shall be used to connect sections together at each interleaf and end to end connection.

3. Or approved equivalent cellular confinement connection device

2.4 STAKE ANCHORAGE

A. ATRA® Anchors

1. ATRA Anchors shall consist of standard (0.5 inch) or metric (10–12 mm) steel reinforcing rod with an ATRA® Stake Clip attached as an end cap.

2. ATRA anchors shall be assembled by inserting the ATRA Stake Clip onto the reinforcing rod so that the end is flush with the top of the ATRA Stake Clip. Prior to attaching the ATRA Stake Clip, the reinforcing rod shall be beveled and free from all burrs.

3. The anchor length and placement shall be as shown in the Contract Documents.

4. Or approved equivalent anchor device.

B. ATRA® Glass Fiber Reinforced Polymer (GFRP) Anchors

1. ATRA GFRP Anchors shall be pre-assembled units consisting of the ATRA Stake Clip inserted onto a GFRP stake.

2. The glass reinforcement content shall be 75% minimum by weight and shall be continuous longitudinal filament.

3. Polymer shall be vinyl ester, isophthalic polyester or other matrix material.

4. The outer surface shall be sand coated and deformed by a helical wrap of glass.

5. The minimum compressive strength shall be 95 kips (655 MPa) in accordance with ASTM D 638.

6. The anchor shall be non-magnetic, non-conducting and corrosion resistant.

7. The anchor length and placement shall be as shown in the Contract Documents.

8. Or approved equivalent anchor device.

2.5 TENDON ANCHORAGE

A. Tendon Types (per manufacturer's design calculations and recommendations)

1. Woven Polypropylene - TPP-55

   a. Material shall be bright yellow, high-tenacity, industrial-continuous-filament, polypropylene yarn woven into a braided strap.

   b. Minimum break strength shall be 1250 lbf (5.56 kN)

2. Woven Polyester - TP-67 or TP-93

   a. Material shall be bright, high-tenacity, industrial-continuous-filament, polyester yarn woven into a braided strap.

   b. Elongation shall be 9 to 15 percent at break.

   c. Minimum break strength shall be 1506 lbf (6.70 kN) for TP-67 and 2090 lbf (9.30 kN) for TP-93.

3. Woven Kevlar - TK-89, TK-133, or TK-178

   a. Material shall be Kevlar® Aramid material woven into a strap.

   b. Minimum break strength shall be 2000 lbf (8.90 kN) for TK-89, 3000 lbf (13.34 kN) for TK-133 and 4000 lbf (17.8 kN) for TK-178.

B. Types of Tendon Anchorage

1. Tendons, ATRA Tendon Clips (or equivalent tendon clip device) and Geosythentic slope protection system buried at Crest.

2. Tendons, ATRA Tendon Clips (or equivalent tendon clip device) and ATRA Anchors (or equivalent anchor devices).

3. Tendons, ATRA Tendon Clips (or equivalent tendon clip device) and ATRA GFRP Anchors (or equivalent anchor devices).

4. Tendons, ATRA Tendon Clips (or equivalent tendon clip device) and Deadman Pipe Anchorage.

5. Tendons, ATRA Tendon Clips (or equivalent tendon clip device) and Earth Anchors.

2.6 CELL INFILL MATERIALS

A. Cell infill material shall be gravel, crushed aggregate or stone with a maximum particle size of one-third cell depth.

B. Infill material shall be free of any foreign material.

C. Infill material shall be free-flowing when placed in the sections.

2.7 ADDITIONAL COMPONENTS

A. Geotextile

1. The geotextile separation layer shall be as specified in the Contract Documents.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify site conditions are as indicated on the drawings. Notify the Engineer if site conditions are not acceptable. Do not begin preparation or installation until unacceptable conditions have been corrected.

B. Verify layout of structure is as indicated on the drawings. Notify the Engineer if layout of structure is not acceptable. Do not begin preparation or installation until unacceptable conditions have been corrected.

3.2 INSTALLATION OF THE SLOPE PROTECTION SYSTEM

A. Prepare sub grade and install protection system in accordance with Manufacturer's recommendations.

B. On-site time for installation assistance by the Manufacturer’s field representative shall be 4 day(s) (minimum, or as approved by Authority) with one trip. All travel and expense costs for Manufacturer’s field representative installation assistance shall be included in the base bid price.

C. Sub Grade Preparation:

1. Excavate or fill foundation soils so top of installed section is flush with or slightly lower than adjacent terrain or final grade as indicated on the drawings or as directed by the Engineer.

2. Install geotextile separation layer (if required per Geotechnical Engineer’s recommendation) on prepared surfaces ensuring required overlaps are maintained and outer edges of

geotextile are buried in accordance with the Manufacturer's recommendations.

3. Install geomembrane separation layer (if required per Geotechnical Engineer's recommendation) on prepared surfaces ensuring seams are welded and outer edges of geomembrane are buried in accordance with the Manufacturer's recommendations.

D. Section Anchorage

1. Anchorage requirements for the sections shall be as shown on the Contract Documents and as directed by the Manufacturer's calculations and recommendations.

2. Anchorage with ATRA Anchors (or equivalent anchor systems)

a. Position collapsed sections at the crest of the slope.

b. If required, excavate the anchor trench at the top of the slope to the depth as shown on the Contract Documents.

c. Drive ATRA anchors at the crest of the slope to secure the sections in place and allow expansion of the sections into position.

d. After the sections are expanded as desired, drive ATRA Anchors so the arm of the ATRA Stake Clip engages with the top of the cell wall.

e. Anchorage pattern and stake length shall be as indicated on the Contract Documents.

f. Fill the anchorage trench with the specified material and compact as required by the Contract Documents.

3. Anchorage with ATRA GFRP Anchors (or equivalent anchor systems)

a. Position collapsed sections at the crest of the slope.

b. If required, excavate the anchor trench at the top of the slope to the depth as shown on the Contract Documents.

c. Drive ATRA GFRP anchors at the crest of the slope to secure the sections in place and allow expansion of the sections into position.

d. After the sections are expanded as desired, drive ATRA GFRP Anchors so the arm of the ATRA Stake Clip engages with the top of the cell wall.

e. Anchorage pattern and stake length shall be as indicated on the Contract Documents.

f. Fill the anchorage trench with the specified material and compact as required by the Contract Documents.

4. Anchorage with Tendons, ATRA Tendon Clips (or equivalent tendon clip devices) and Buried at Crest

   Preferred Method – Top of Slope Installation

   a. Excavate the anchor trench at the top of the slope to the depth as shown on the Contract Documents.

   b. Position the collapsed sections at the crest of the slope.

   c. Measure and cut the tendon run lengths for each tendon location.

   d. Mark the tendons with a black permanent marker per the ATRA Tendon Clip Location Chart.

   e. Starting from the first cell, count the number of cells to the next ATRA Tendon Clip location and repeat along that cell row.

   f. Repeat this procedure for each additional cell row Tendon/ATRA Tendon Clip run.

   g. With all the ATRA Tendon Clips placed in the section, thread the tendons through the cell wall I-slots in the unexpanded section.

   h. Locate the corresponding mark on the tendon and position it in front of the cell wall. Hold the tendon and connect to the ATRA Tendon Clip. Refer to the Slope Installation Manual for ATRA Tendon Clip tie-off instructions.

   i. Leave the trailing length of the tendon on the upslope side of the section to allow connection to ATRA Tendon Clip.

   j. Repeat this process on each cell row Tendon/ATRA Tendon Clip run.

   k. Place the collapsed section in the anchor trench, secure with temporary stakes or ATRA Anchors and expand down the slope.

   l. Adjust the section (i.e. a shake or two of the expanded section works well for this) so that the section and tendons are uniformly taut.

   m. Terminate the bottom of the tendons with ATRA Tendon Clips.

   n. Fill the anchorage trench with the specified material and compact as required by the Contract Documents.

   Alternate Method – On Slope Installation

   a. Excavate the anchor trench at the top of the slope to the depth as shown on the Contract Documents.

b. Position collapsed sections at the crest of the slope.

c. Feed precut lengths of specified tendon material through the I-slots in cell walls before expanding individual sections into position. Number of tendons per section shall be per the Contract Documents. Leave the trailing length of the tendon on the upslope side of the section to allow for connection of the ATRA Tendon Clips.

d. Place the collapsed section in the anchor trench, secure with temporary stakes or ATRA Anchors and expand down the slope.

e. Install the ATRA Tendon Clips at the locations indicated on the Contract Documents.

f. Hold the tendon and connect to each ATRA Tendon Clip. Refer to the Slope Installation Manual for ATRA Tendon Clip tie-off instructions.

g. Adjust the section (i.e. a shake or two of the expanded section works well for this) so that the section and tendons are uniformly taut.

h. Terminate the bottom of the tendons with ATRA Tendon Clips.

i. Fill the anchorage trench with the specified material and compact as required by the Contract Documents.

5. Anchorage with Tendons, ATRA Tendon Clips (or equivalent tendon clip devices) and ATRA Anchors (or equivalent anchor devices)

   Preferred Method – Top of Slope Installation

   a. Excavate the anchor trench at the top of the slope to the depth as shown on the Contract Documents.

   b. Position the collapsed sections at the crest of the slope.

   c. Measure and cut the tendon run lengths for each tendon location.

   d. Mark the tendons with a black permanent marker per the ATRA Tendon Clip Location Chart.

   e. Thread the tendons through the unexpanded section.

   f. Starting from the first cell, count the number of cells to the next ATRA Tendon Clip location and repeat along that cell row.

   g. Repeat this procedure for each additional cell row Tendon/ATRA Tendon Clip run.

   h. With all the ATRA Tendon Clips placed in the section, thread the tendons through the

cell wall I-slots in the unexpanded section.

i. Locate the corresponding mark on the Tendon and position it in front of the cell wall. Hold the tendon and connect to the ATRA Tendon Clip. Refer to the Slope Installation Manual for ATRA Tendon Clip tie-off instructions.

j. Repeat this process on each cell row Tendon/ATRA Tendon Clip run.

k. Place the collapsed section in the anchor trench, drive ATRA Anchors in the first row of cells so the arm of the anchor engages with the top of the cell wall and expand down the slope. Number of anchors shall be per the Contract Documents.

l. Adjust the section (i.e. a shake or two of the expanded section works well for this) so that the section and tendons are uniformly taut.

m. After the sections are expanded, drive ATRA Anchors so the arm of the anchor engages with the top of the cell wall.

n. Anchorage pattern and stake length shall be as indicated on the Contract Documents.

o. Terminate the bottom of the tendons with ATRA Tendon Clips.

p. Fill the anchorage trench with the specified material and compact as required by the Contract Documents.

Alternate Method – On Slope Installation

a. Excavate the anchor trench at the top of the slope to the depth as shown on the Contract Documents.

b. Position collapsed sections at the crest of the slope.

c. Feed precut lengths of specified tendon material through the I-slots in the cell walls before expanding individual sections into position. Number of tendons per section shall be per the Contract Documents. Leave the trailing length of the tendon on the upslope side of the section to allow for connection of the ATRA Tendon Clips.

d. Place the collapsed section in the anchor trench, drive ATRA Anchors in the first row of cells so the arm of the anchor engages with the top of the cell wall and expand down the slope.

e. Install the ATRA Tendon Clips at the locations indicated on the Contract Documents.

f. Hold the tendon and connect to each ATRA Tendon Clip. Refer to the Slope Installation Manual for ATRA Tendon Clip tie-off instructions.

g. Adjust the section (i.e. a shake or two of the expanded section works well for this) so that the section and tendons are uniformly taut.

h. After the sections are expanded as desired, drive ATRA Anchors so the arm of the anchor engages with the top of the cell wall.

i. Anchorage pattern and stake length shall be as indicated on the Contract Documents.

j. Terminate the bottom of the tendons as required.

k. Fill the anchorage trench with the specified material and compact as required by the Contract Documents.

6. Anchorage with Tendons and ATRA GFRP Anchors (or equivalent anchor devices)

Preferred Method – Top of Slope Installation

a. Excavate the anchor trench at the top of the slope to the depth as shown on the Contract Documents.

b. Position the collapsed sections at the crest of the slope.

c. Measure and cut the tendon run lengths for each tendon location.

d. Mark the tendons with a black permanent marker per the ATRA Tendon Clip Location Chart.

e. Thread the tendons through the unexpanded section.

f. Starting from the first cell, count the number of cells to the next ATRA Tendon Clip location and repeat along that cell row.

g. Repeat this procedure for each additional cell row Tendon/ATRA Tendon Clip run.

h. With all the ATRA Tendon Clips placed in the section, thread the tendons through the cell wall I-slots in the unexpanded section.

i. Locate the corresponding mark on the Tendon and position it in front of the cell wall. Hold the tendon and connect to the ATRA Tendon Clip. Refer to the Slope Installation Manual for ATRA Tendon Clip tie-off instructions.

j. Repeat this process on each cell row Tendon/ATRA Tendon Clip run.

k. Place the collapsed section in the anchor trench, drive ATRA GFRP anchors in the first row of cells so the arm of the anchor engages with the top of the cell wall and expand down the slope. Number of anchors shall be per the Contract Documents.

l. Adjust the section (i.e. a shake or two of the expanded section works well for this) so that the section and tendons are uniformly taut.

m. After the sections are expanded, drive ATRA GFRP Anchors so the arm of the anchor engages with the top of the cell wall.

n. Anchorage pattern and stake length shall be as indicated on the Contract Documents.

o. Terminate the bottom of the tendons with ATRA Tendon Clips.

p. Fill the anchorage trench with the specified material and compact as required by the Contract Documents.

Alternate Method – On Slope Installation

a. Excavate the anchor trench at the top of the slope to the depth as shown on the Contract Documents.

b. Position collapsed sections at the crest of the slope.

c. Feed precut lengths of specified tendon material through the I-slots in the cell walls before expanding individual sections into position. Number of tendons per section shall be per the Contract Documents. Leave the trailing length of the tendon on the upslope side of the section to allow for connection of the ATRA Tendon Clips.

d. Place the collapsed section in the anchor trench, drive ATRA GFRP Anchors in the first row of cells so the arm of the anchor engages with the top of the cell wall and expand down the slope. Number of anchors shall be per Contract Documents.

e. Install the ATRA Tendon Clips at the locations indicated on the Contract Documents.

f. Hold the tendon and connect to each ATRA Tendon Clip. Refer to the Slope Installation Manual for ATRA Tendon Clip tie-off instructions.

g. Adjust the section (i.e. a shake or two of the expanded section works well for this) so that the section and tendons are uniformly taut.

h. After the sections are expanded as desired, drive ATRA GFRP Anchors so the arm of the anchor engages with the top of the cell wall.

i. Anchorage pattern and stake length shall be as indicated on the Contract Documents

j. Terminate the bottom of the tendons with ATRA Tendon Clips.

k. Fill the anchorage trench with the specified material and compact as required by the Contract Documents.

7. Anchorage with Tendons, ATRA Tendon Clips (or equivalent tendon clip devices) and Pipe Deadman Anchorage

Preferred Method – Top of Slope Installation

a. Excavate the anchor trench at the top of the slope to the depth as shown on the Contract Documents.

b. Install pipe Deadman in anchor trench. Pipe type, diameter and thickness shall be as shown on the Contract Documents.

c. Position the collapsed sections at the crest of the slope.

d. Measure and cut the tendon run lengths for each tendon location allowing extra length to connect to deadman anchor.

e. Mark the tendons with a black permanent marker per the ATRA Tendon Clip Location Chart.

f. Thread the tendons through the unexpanded section.

g. Starting from the first cell, count the number of cells to the next ATRA Tendon Clip location and repeat along that cell row.

h. Repeat this procedure for each additional cell row Tendon/ATRA Tendon Clip run.

i. With all the ATRA Tendon Clips placed in the section, thread the tendons through the cell wall I-slots in the unexpanded section.

j. Locate the corresponding mark on the Tendon and position it in front of the cell wall. Hold the tendon and connect to the ATRA Tendon Clip. Refer to the Slope Installation Manual for ATRA Tendon Clip tie-off instructions.

k. Repeat this process on each cell row Tendon/ATRA Tendon Clip run.

l. Place the collapsed section in the anchor trench, connect tendons to the deadman anchor and expand down the slope.

m. Adjust the section (i.e. a shake or two of the expanded section works well for this) so that the section and tendons are uniformly taut.

n. Terminate the bottom of the tendons with ATRA Tendon Clips.

o. Fill the anchorage trench with the specified material and compact as required by the Contract Documents.

Alternate Method – On Slope Installation

a. Excavate the anchor trench at the top of the slope to the depth as shown on the Contract Documents.

b. Install pipe Deadman in anchor trench. Pipe type, diameter and thickness shall be as shown on the Contract Documents.

c. Position collapsed sections at the crest of the slope.

d. Feed precut lengths of specified tendon material through the I-slots in cell walls before expanding individual sections into position. Number of tendons per section shall be per the Contract Documents. Leave the trailing length of the tendon on the upslope side of the section to allow for connection to deadman anchor.

e. Place the collapsed section in the anchor trench, connect tendon to deadman anchor and expand down the slope.

f. Install the ATRA Tendon Clips at the locations indicated on the Contract Documents.

g. Hold the tendon and connect to each ATRA Tendon Clip. Refer to the Slope Installation Manual for ATRA Tendon Clip tie-off instructions.

h. Adjust the section (i.e. a shake or two of the expanded section works well for this) so that the section and tendons are uniformly taut.

i. Terminate the bottom of the tendons with ATRA Tendon Clips.

j. Fill the anchorage trench with the specified material and compact as required by the Contract Documents.

8. Anchorage with Tendons and Earth Anchors

Preferred Method – Top of Slope Installation

a. Excavate the anchor trench at the top of the slope to the depth as shown on the Contract Documents.

b. Position the collapsed sections at the crest of the slope.

c. Measure and cut the tendon run lengths for each tendon location allowing extra length to connect to earth anchor.

d. Mark the tendons with a black permanent marker per the ATRA Tendon Clip Location Chart.

e. Thread the tendons through the unexpanded section.

f. Starting from the first cell, count the number of cells to the next ATRA Tendon Clip location and repeat along that cell row.

g. Repeat this procedure for each additional cell row Tendon/ATRA Tendon Clip run.

h. With all the ATRA Tendon Clips placed in the section, thread the tendons through the I-slots in the unexpanded section.

i. Locate the corresponding mark on the Tendon and position it in front of the cell wall. Hold the tendon and connect to the ATRA Tendon Clip. Refer to the Slope Installation Manual for ATRA Tendon Clip tie-off instructions.

j. Repeat this process on each cell row Tendon/ATRA Tendon Clip run.

k. Install earth anchors in accordance with Manufacturer's recommendations and instructions. Earth anchor type and strength shall be as shown on the Contract Documents.

l. Place the collapsed section in the anchor trench, secure tendons to earth anchors and expand down the slope.

m. Adjust the section (i.e. a shake or two of the expanded section works well for this) so that the section and tendons are uniformly taut.

n. Terminate the bottom of the tendons with ATRA Tendon Clips.

o. Fill the anchorage trench with the specified material and compact as required by the Contract Documents.

Alternate Method – On Slope Installation

a. Excavate the anchor trench at the top of the slope to the depth as shown on the Contract Documents.

b. Position collapsed sections at the crest of the slope.

c. Feed precut lengths of specified tendon material through the I-slots in the cell walls before expanding individual sections into position. Number of tendons per section shall be per the Contract Documents. Leave the trailing length of the tendon on the upslope side of the section to allow for connection of the ATRA Tendon Clips.

d. Install earth anchors in accordance with Manufacturer's recommendations and instructions. Earth anchor type and strength shall be as shown on the Contract Documents.

e. Place the collapsed section in the anchor trench, secure tendons to earth anchors, and expand down the slope.

f. Install the ATRA Tendon Clips at the locations indicated on the Contract Documents.

g. Hold the tendon and attach to the ATRA Tendon Clips. Refer to the Slope Installation Manual for ATRA Tendon Clip tie-off instructions.

h. Adjust the section (i.e. a shake or two of the expanded section works well for this) so that the section and tendons are uniformly taut.

i. Terminate the bottom of the tendons with ATRA Tendon Clips.

j. Fill the anchorage trench with the specified material and compact as required by the Contract Documents.

E. Section Placement and Connection

1. Verify all sections are expanded uniformly to required dimensions and that outer cells of each section are correctly aligned. Interleaf or overlap edges of adjacent sections. Ensure upper surfaces of adjoining sections are flush at joint and adjoining cells are fully aligned at the cell wall slot.

2. Connect the sections with ATRA keys at each interleaf and end to end connection. Insert the ATRA key through the cell wall I-slot before inserting through the adjacent cell. Turn the ATRA key 90 degrees to lock the sections together.

F. Aggregate Infill Placement

1. Place specified infill in expanded cells with suitable material handling equipment, such as a backhoe, front-end loader, conveyor, or crane-mounted skip.

2. Limit drop height to a maximum of 3 feet (1 m) to prevent panel distortion.

3. Fill sections from the crest of the slope to toe or in accordance with Engineer’s direction.

4. Infill material shall be free-flowing and not frozen when placed into the sections.

5. Evenly spread infill and ensure the infill is flush with the cell walls.

PART 4 – MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

A. Geosynthetic Cellular Confinement Soil Stabilization System will be measured by the unit or fraction thereof furnished and completed in accordance with the Contract Documents and as measured by the Engineer. The quantities as contained on the Schedule of Quantities and Prices, or approved schedule of values, as applicable, as derived from the Plans will be used as the basis of measurement.

4.2 PAYMENT

A. Geosynthetic Cellular Confinement Soil Stabilization System furnished and completed in accordance with the Contract Documents will be paid for at the Contract Unit Price, as listed on the Schedule of Quantities and Prices. This price shall include

full compensation for furnishing all labor, Materials, tools, equipment, supplies, supervision, and incidentals, and doing all work, as shown on the Plans, and as specified in these Specifications, and as directed by the Engineer.

END OF SECTION

Attachment A

Short-Term Seam Strength Test Procedure

Frequency of Test

The short-term seam peel strength test (referred to as the 'test' in this section) shall be performed on a geocell section randomly taken directly from the production line each two hours.

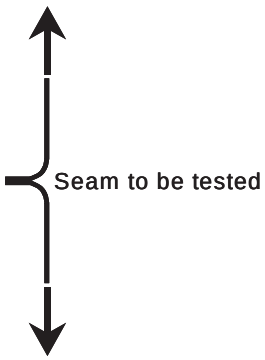

Figure A1

Test Sample Preparation

Randomly choose 10 welds within the selected section and cut those welds from the section such that 10 cm (4 in) of material exist on each side of the weld. The test sample shall have a general appearance as illustrated in Figure A1. Prior to testing, the test samples shall have air cool for a minimum of 30 minutes from the time the selected geocell section was manufactured.

Short-term Seam Peel Strength Test

The apparatus used for testing the short-term seam peel strength shall be of such configuration that the jaws of the clamp shall not over stress the sample during the test period. Load shall be applied at a rate of 12 in (300 mm) per minute and be applied for adequate time to determine the maximum load. The date, time and load shall be recorded.

Short-term seam peel strength shall be defined as the maximum load applied to the test sample. Minimum required short-term seam peel strength shall be:

- 640 lbf (2840 N) for 8 in (200 mm) depth cell
- 480 lbf (2130 N) for 6 in (150 mm) depth cell
- 320 lbf (1420 N) for 4 in (100 mm) depth cell
- 240 lbf (1060 N) for 3 in (75 mm) depth cell.

Definition of Pass / Failure

Two methods shall be used to determine acceptability of the manufactured geocell sections. The successful passing of the short-term seam peel test shall not be used to determine acceptable of the polyethylene for use in manufacturing of the geocell sections. Acceptability of the polyethylene shall be determined through tests conducted in Appendix B.

The Tested Value

If more than one of the tested seam samples fails to meet the minimum peel strength, all sections manufactured after the previously successful test shall be rejected.

If all tested seam samples meet the minimum peel strength, all geocell sections manufactured since the last successful test shall be considered to have passed the test.

When one of the tested seam samples fails to meet the minimum peel strength, another 10 samples shall be randomly selected and cut from the previously selected section. If more than one of these samples fails, all sections manufactured after the previously successful test shall be rejected. Otherwise, all geocell sections manufactured since the last successful test shall be considered to have passed the test.

Visual Failure Mode

After each sample is tested, the seam shall be examined to determine the failure mode. Two failure modes are possible.

- Material failure within and adjacent to the weld indicated by material strain and
- Weld failure resulting in complete separation of the seam and shows little or no material strain.

Upon examination, when the failure mode results in complete separation of the seam and indicates little or no material strain, product manufactured shall be rejected.

Attachment B

Long-Term Seam-Strength Test Procedure

Frequency of Test

Figure B1

The long-term seam peel strength test (referred to as the 'test' in this section) shall be performed:

1. on each new resin lot number if the geocell manufacturer extrudes the sheet or strip used to produce the geocell material.
2. on each new order of sheet and/or strip if the geocell manufacturer does not extrude the sheet and/or strip used to produce the geocell material.

Test Sample Preparation

A test sample shall be made using two sets of two strips meeting all aspects of the material portion of this specification. Testing shall be done on non-perforated samples to obtain the true seam strength of the bond. One set of two strips are to be welded in welder position "A" and the other set of two strips are to be welded in welder position "B" producing two 1-cell long sections of geocell product. Welding should be done using a warm welder. The welded samples shall be labeled "A" and "B" and the weld seams of each sample shall be numbered consecutively from left to right starting with the number 1 (one) and corresponding to the welding head number.

The samples shall air cool for a minimum of 30 minutes. Randomly choose 10 welds from samples "A" and "B" and cut those welds from the geocell samples such that 4 in (10 cm) of material exist on each side of the weld. These samples shall be cut to a width of 4 in (10 cm). Properly identify each weld using the sample letter and weld seam number.

These samples are now ready to be tested.

Long-term Seam Peel Strength Test

The long-term seam peel strength test shall take place within an environmentally controlled chamber that undergoes temperature change on a 1-hour cycle from room temperature to 130°F (54°C). Room temperature shall be defined per ASTM E41.

Within the environmentally controlled chamber, one of the ends of the samples (10 samples in total) shall be secured to a stationary upper clamp. The jaws of the clamp shall be of such configuration that the grip does not over stress the sample during the test period. The sample shall be secured so that its axis is vertical and the welds being tested are horizontal as the sample hangs within the environmentally controlled chamber.

A weight of 160 lb (72.5 kg) shall be lifted via a hoist or lift platform and attached to the free lower end, of the sample. The weight shall be lowered in a way so that no impact load occurs on the sample being tested. The weight shall be sufficient distance from the floor of the chamber so that the weight will not touch the floor of the chamber as the sample undergoes creep during the test period. The date and hour the weight is applied shall be recorded.

The temperature cycle shall commence immediately within the environmentally controlled chamber. The test period for the applied load shall be 168 hours.

Definition of Pass / Failure

If any of the 10 seams fail prior to the end of the 168-hour (7-day) period, the date and hour of the failure shall be recorded and the polyethylene resin and strip material shall be considered unsuitable for geocell manufacturing.

END OF SECTION

SECTION 31 41 00

TIMBER LAGGING

PART 1 - GENERAL

A. This Section includes general specifications for Timber Lagging.

1.1 DEFINITIONS

A. Hardware: Bolts with necessary nuts and washers, timber connectors, drift pins, dowels, nails, screws, spikes, wire rope for wrapping, lag screws, and other metal fastenings.

B. Structural metal: Structural shapes, eyebars, castings, rods with necessary nuts and washers, metal shoes, and plates, but not including hardware.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Deliver, store, and handling of timber lagging as follows:

1. Store in piles at the job site unless it is to be placed in the structure immediately
2. Stack neatly on dunnage above ground so that it can be readily inspected
3. Store and handle such that injury and breakage are avoided
4. Protect from the sun to prevent warping

B. Structural Metal

1. Structural metal must comply with Section 05 50 00.
2. Hot-dip galvanize structural metal under Section 05 50 00.

C. Hardware

1. Hardware must comply with Section 75.
2. Except for malleable iron washers, hot-dip galvanize hardware under Section 05 50 00. Bolts and nuts must comply with ASTM A307.

2.2 WOOD STRUCTURES

A. Structural Timber Lagging

1. Structural timber lagging must be one of the species shown in the following table:

Type	Species
Douglas fir	*Pseudotsuga menziesii*
Hem-Fir	*Abies magnifica, Abies grandis, Abies procera, Abies amabillis, Abies concolor, Tsuga heterophylla*

2. Structural timber lagging must be inspected and grade marked under the rules and specifications shown in the following table:

Timber and Lumber Grading

Type	Rules/specifications and publisher
Douglas fir and Hem-Fir	*Standard No. 17 Grading Rules for West Coast Lumber* published by West Coast Lumber Inspection Bureau, or *Western Lumber Grading Rules* published by Western Wood Products Association

3. Stress-graded lumber must comply with the following:
   a. Wood must be sound and free from decay.
   b. Green timber must be protected from uneven seasoning during transit.
   c. Douglas fir must be end coated with a protective coating during manufacturing to retard checking.

4. For all stress grades, the sizes described for timber lagging are nominal sizes under American Softwood Lumber Standard, PS 20, published by NIST.

2.3 Handling

A. Handle and care for pressure-treated wood materials under AWPA Standard M4.

B. Handle treated timber with rope slings. Do not use cant hooks, peaveys, or other sharp instruments to handle treated timber.

2.4 TIMBER LAGGING

A. Timber members must be (1) preservative-treated Douglas fir and (2) full sawn to the dimensions shown.

B. Timber Lagging shall be treated with Chromated Copper Arsenate Per APWA Specifications.

PART 3 – EXECUTION

3.1 TIMBER LAGGING

A. If no concrete facing is shown:
   1. Install lagging members 4 inches thick or less with a 3/8-inch gap between members
   2. Install lagging members greater than 4 inches thick with a 1/2-inch gap between members

B. If a concrete facing is shown, install lagging members with mortar-tight joints.

3.2 FASTNER BORE HOLES

A. Timber and lumber must be accurately cut and framed to a close fit and must have even bearing over the entire contact surface. Do not use shimming in making joints.

B. Bore fastener holes as shown in the following table:

Fastener Bore Holes

Fastener type	Member type	Boring requirement
Drift pin or dowel	Untreated timber	Hole diameter a minimum of 1/16 inch less than the pin or dowel diameter
	Treated timber	Hole diameter the same as the pin or dowel diameter
Bolt	All cases	Hole diameter a maximum of 1/16 inch larger than the bolt diameter
Lag screw	All cases	Bit diameter a maximum of the root diameter of the lag screw thread
Boat or wire spike	Small member, if necessary to prevent splitting	Bit diameter the same as the spike diameter or the smallest dimension of the spike

C. Fit each bolt 5/8 inch or less in diameter with a cut washer. Fit each bolt or lag screw over 5/8 inch in diameter with a cast or malleable iron washer.

D. Framed bents must comply with the following:

E. Mud sills must be firmly and evenly bedded in solid material.

F. Sills must have full, even bearing on the pedestals, mud sills, or piles.

G. Posts must be framed true and must have full bearing on pedestals, sills, and caps.

H. Align bents before placing bracing. Provide a minimum of 8 inches between the outside bolt and the end of the brace.

I. For bridge deck stringers, place the better edge down. After placing stringers, the tops of the stringers must not vary from a plane more than will allow bearing of the floor on all the stringers.

J. Wheel guards and railings must be accurately framed and aligned.

PART 4 – MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

A. Timber Lagging, including blocking, will be measured by the unit or fraction thereof furnished and completed in accordance with the Contract Documents and as measured by the Engineer. The quantities as contained on the Schedule of Quantities and Prices, or approved schedule of values, as applicable, as derived from the Plans will be used as the basis for this measurement.

4.2 PAYMENT

A. Timber Lagging, including blocking, furnished and completed in accordance with the Contract Documents will be paid for at the Contract Unit Price, as listed on the Schedule of Quantities and Prices. This price shall include full compensation for furnishing all labor, Materials, tools, equipment, supplies, supervision, and incidentals, and doing all work, as shown on the Plans, and as specified in these Specifications, and as directed by the Engineer.

END OF SECTION

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SECTION 31 50 00

EXCAVATION SUPPORT

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Minimum requirements for excavation and temporary excavation support adjacent to railroad tracks.

   a. Limitations on construction activities.

   b. Installation, monitoring and removal requirements for temporary excavation support systems.

   c. Design, submittal and review requirements for excavations and temporary excavation support.

B. Related Specification Sections include but are not necessarily limited to:

1. Division 00 - Bidding Requirements, Contract Forms, and Conditions of the Contract.

2. Division 01 - General Requirements.

3. Section 03 21 00 – Reinforcing Steel.

4. Section 03 31 00 – Structural Concrete.

5. Section 31 11 00 - Site Clearing.

6. Section 31 11 50 - Demolition, Cutting and Patching.

7. Section 31 20 00 - Earthwork.

8. Section 32 91 00 - Soil Erosion, Sediment Control, Topsoiling and Seeding.

9. Section 34 80 21 - Piling.

10. Section 32 12 00 - Hot Mix Asphalt (HMA).

11. Section 34 80 43 - Precast & Prestressed Concrete for Railroad Bridges.

12. Section 34 80 51 - Structural Steel for Railroad Bridges.

1.2 REFERENCES

A. SCRRA Excavation Support Guidelines.

1.3 SUBMITTALS

A. General:

1. Submittals must be made in accordance with Division 01 requirements.

B. Contractor's Superintendent:

1. The Contractor must submit the company, contact information (address, telephone and email), qualifications and record of relevant experience for the Superintendent in charge of the excavation support work to OCTA for review and acceptance at least 30 days prior to construction.

C. Contractor's Engineer:

1. Submit the name, company, contact information (address, telephone and email), qualifications and record of relevant experience for the proposed Contractor's Engineer to OCTA for review and acceptance at least 30 days prior to construction.

D. Design:

1. Unless otherwise approved by OCTA, all projects will include detailed design of excavations and temporary excavation support within the Contract Documents (Plans, Specifications and Estimates).

2. Where detailed design of excavations and temporary excavation support is included in the Contract Documents, design validation by the Contractor and submittal of design calculations will not be required for excavations and temporary excavation support constructed in conformance with the Contract Documents. The Contractor must submit a written affidavit stating that all aspects of the excavation and shoring will be constructed in accordance with the Contract Documents.

3. Any deviation or modification to the design, details or construction phasing of excavations and temporary excavation support from that shown in the Contract Documents shall require pre-approval prior to construction. Perform and submit design calculations in accordance with the OCTA Excavation Support Guidelines for any proposed deviation or modification to the Contract Documents.

4. For alternate design of excavations and temporary excavation support by the Contractor, perform design and provide all required submittals in conformance with the SCRRA Excavation Support Guidelines, including the SCRRA Shoring Submittal Design Checklist and the Design Exception Form, as applicable.

5. Where detailed design of excavations and temporary excavation support is not included in the Contract Documents, perform and submit design calculations in accordance with the SCRRA Excavation Support Guidelines.

E. Plans:

1. Prepare and submit detailed Plans of excavation limits, temporary excavation support system(s) and all construction phasing and structural details required for the Work. Clearly show any deviations or modifications of excavations and temporary excavation support from that shown in the Contract Documents. Plans must be provided in accordance with the SCRRA Excavation Support Guidelines.

F. Site Specific Work Plan (SSWP):

1. At least 30 days prior to construction, submit a complete SSWP in accordance with the SCRRA Excavation Support Guidelines and Section 01 14 00, Work Restrictions, including, but not necessarily limited to:

a. Required Work Windows.

b. Construction procedures, materials, equipment and crews).

c. Construction schedule.

d. Contingency plans.

G. Construction Verification:

1. The Contractor must submit a letter to OCTA confirming that the excavation and temporary shoring system has been inspected and verified to conform with the Contract Documents, approved working Plans and accepted field modifications and design variances in accordance with the SCRRA Excavation Support Guidelines. The letter must be signed and sealed by the Contractor's Engineer who is a licensed Professional Engineer in the State of California.

H. Track Monitoring Plan:

1. The Contractor must submit a detailed monitoring plan, including Plans and procedures for inspection and surveying. The monitoring plan shall comply with the Contract Documents, approved working Plans and the SCRRA Excavation Support Guidelines.

1.4 QUALITY ASSURANCE

A. Engineer in Responsible Charge:

1. Excavations and temporary excavation support shall be designed by a licensed Professional Engineer in the State of California, civil or structural, with the requisite qualifications described in the SCRRA Excavation Support Guidelines.

2. Review and acceptance of submittals by OCTA will not relieve the Engineer in Responsible Charge of responsibility for the safe design of the temporary shoring system, including responsibility for errors and omissions in submittals.

B. Contractor:

1. Qualifications of the Contractor's Superintendent who will be responsible for excavation support system installation and removal must exceed the minimum experience record described in the SCRRA Excavation Support Guidelines. The Superintendent's qualifications will be subject to review and acceptance by OCTA.

2. Excavation or construction of excavation support systems shall not proceed until the Contractor meets SCRRA safety training requirements, obtains a Right-of-Entry agreement (for construction by third parties), and gains acceptance of a Site Specific Work Plan (SSWP) from SCRRA.

3. The Contractor must retain a Contractor's Engineer to verify construction of excavations and temporary excavation support in conformance with the Contract Documents and approved Working Plans. The Contractor's Engineer must be a licensed Professional Engineer in the State of California, civil or structural, and meet the same qualifications described in the SCRRA Excavation Support Guidelines as the Engineer in Responsible Charge for design of the excavation support system.

4. Review and acceptance of submittals by OCTA will not relieve the Contractor of responsibility for the safe design and construction of the temporary shoring system, including responsibility for errors and omissions in submittals and construction deviations from accepted design plans. Excavation safety shall be the responsibility of the Contractor performing the shoring installation and excavation.

1.5 SITE CONDITIONS

A. Contractor must execute Work under this Specification in such a manner as to minimize impact to the daily operation of the rail, vehicular and pedestrian traffic.

B. The Contractor must barricade open excavations and post with warning lights those excavations occurring on property adjacent to or within public access areas and along the tracks in accordance with the SCRRA Excavation Support Guidelines. Operate warning lights during hours from dusk to dawn each day and as otherwise required. Warning lights shall be located to avoid shining directly into Locomotive Engineer's eyes in oncoming trains.

C. The Contractor must protect utilities, structures and facilities designated to be protected in place from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by excavation and backfill operations.

D. The Work shall allow rainfall to drain freely at all times in accordance with project environmental requirements and permit conditions in accordance with Division 01 requirements.

1.6 ENVIRONMENTAL CONDITIONS

A. The Contractor must protect against erosion and uncontrolled run-off within and adjacent to right-of-way in accordance with the Project's Storm Water Pollution Prevention Plan and the approved National Pollution Discharge Elimination System (NPDES) Permit in accordance with Division 01 requirements and Supplemental Specification Section 31 11 00 1.2.C.1.

B. The Contractor must obtain all required permits for dewatering and legally dispose of water from dewatering operations.

1. Comply with requirements of permits and agencies having jurisdiction over the project site in accordance with Division 01 requirements.

C. Cleanliness, Sweeping and Dust Control shall be in accordance with Division 01 requirements.

D. Contractor must provide noise abatement as required by environmental permits or local agency requirements in accordance with Division 01 requirements.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Soil and rock materials for fill, backfill or subgrade preparation shall be in accordance with Section 31 20 00 or as specified by the Engineer in Responsible Charge.

B. Hot Mix Asphalt (HMA) pavement shall meet the requirements of Section 32 12 00.

C. Protective Dividers: See Contract Documents and SCRRA Excavation Support Guidelines.

D. Handrails and Walkways: See Contract Documents and SCRRA Excavation Support Guidelines.

E. Materials used in the excavation support system shall be new unless otherwise approved by OCTA. Structural materials that compose the excavation support system shall meet the requirements for the applicable material type as listed, unless specified otherwise by the Engineer in Responsible Charge in the Contract Documents or approved Working Plans:

1. Structural steel: Section 03 21 00 for steel soldier piling and steel sheet piling and Section 34 80 51 for all other structural steel members.

2. Structural metals other than steel: See Contract Documents.

3. Precast and prestressed concrete, including prestressing steel strand: Section 34 80 43.

4. Structural concrete: Section 03 31 00.

5. Reinforcing steel: Section 03 21 00.

6. Timber lagging: See Contract Documents and SCRRA Excavation Support Guidelines.

7. Soil tiebacks and rock anchors: See Contract Documents and SCRRA Excavation Support Guidelines.

PART 3 - EXECUTION

3.1 CONTRACTOR RESPONSIBILITIES

A. Prior to ordering materials or commencing any work:

1. Examine the Contract Documents, inspect the site, obtain all available Record Plans of existing structures and utilities and note all conditions and limitations that may influence excavation and temporary excavation support at the site.

2. Verify dimensions, elevations, extent of excavations and limits of excavation support required for construction and notify OCTA of any discrepancies or omissions.

3. Assess the constructability of temporary excavation support systems specified in the Contract Documents and the applicability of any proposed method of support for the intended purpose.

B. Provide safe and stable excavations and maintain the integrity of excavations throughout the duration of construction.

C. Perform excavation and provide excavation support as required for construction in conformance with applicable laws, codes, ordinances, and regulations of federal, state and local authorities.

3.2 ALTERNATE DESIGN

A. The Contractor will be allowed to propose and submit alternate methods, designs and details for excavations and temporary excavation support. Only alternates that comply with the SCRRA Excavation Support Guidelines and satisfy the contract requirements will be considered for acceptance. Acceptance of alternates will be at OCTA's sole discretion.

B. For alternate design submittal requirements, see 01 33 00 Submittals.

C. For alternate designs, the Contractor must retain a Contractor's Design Engineer who will be the Engineer in Responsible Charge for the excavation and will act as the Contractor's Engineer to verify construction in accordance with the design and approved working Plans and specifications prepared by said Engineer.

D. Review time by OCTA as indicated in the SCRRA Excavation Support Guidelines must be considered in the construction schedule. Impacts to the construction schedule stemming from review time or rejection of modifications, substitutions or alternate designs shall not be cause for additional compensation for delay time or extension of contract time for performance.

E. The Contractor agrees, upon and at such a time that an alternate design is submitted to OCTA, to compensate OCTA for the full cost of reviewing the alternate design. This compensation shall include the initial review and any subsequent review of additional submittals or re-submittals to address previous OCTA comments and must be paid regardless of the final disposition (acceptance or rejection) of the alternate design.

3.3 INSTALLATION

A. Preparation:

1. Initiate track monitoring program according to the approved Track Monitoring Plan.

2. Protect existing surface and subsurface features on-site and adjacent to site as required in Section 31 20 00 before excavating or installing temporary excavation support systems.

3. Install protective divider and/or fencing adjacent to active tracks as required in the SCRRA Excavation Support Guidelines.

4. Provide HMA track underlay for active tracks adjacent to proposed excavations as required in the SCRRA Excavation Support Guidelines.

    a. Install HMA in accordance with Section 32 12 00.

5. Perform site clearing in accordance with Section 31 11 00.

6. Perform demolition and removals in accordance with Section 31 11 50.

B. Operational Constraints:

1. Excavations and temporary excavation support systems shall be installed, maintained, removed and backfilled without interference to rail operations unless otherwise approved in advance by SCRRA.

2. Contractor operations will be constrained according to the approved SSWP and as needed to avoid interference with railroad operations.

3. Contractor must complete installation and removal of excavation support systems that require Work Windows within the approved time limits in the SSWP and as directed by the SCRRA Flagman or Employee-in-Charge.

4. Reference the SCRRA Excavation Support Guidelines for limitations to Contractor's operations.

C. Excavations and Temporary Excavation Support:

1. Follow all requirements of the Contract Documents, approved working Plans, and SCRRA Excavation Support Guidelines for excavations and temporary excavation support.

2. Install temporary excavation support systems in a manner that maintains stability and integrity of the existing track, embankment and structures.

3. Perform excavation in accordance with Section 31 20 00 and in a manner that maintains stability and integrity of any temporary excavation support and the existing track, embankment and structures.

4. Temporary excavation support systems shall allow for permanent construction without movement or settlement of adjacent track, embankment or structures under all conditions and imposed loads for the duration of construction.

5. Dewater excavations as required and maintain water levels that prevent heave or piping.

6. Direct surface drainage away from existing tracks, structures, excavation support systems and open excavations, slope base of excavation away from support systems, and protect excavations and soil slopes from erosion.

7. Remove temporary excavation support systems in a manner that maintains stability and integrity of any remaining temporary excavation support and the existing track, embankment and structures.

8. Perform backfilling in accordance with Section 31 20 00.

9. Remove rubbish and spoil piles and return the area to a condition equal to or better than original and in accordance with Section 32 91 00 Soil Erosion, Sediment Control, Topsoiling and Seeding.

D. Excavation Safety:

1. Perform excavation work in accordance with all applicable safety regulations including, but not limited to, SCRRA, Federal OSHA, Cal/OSHA, FRA and CPUC. See the SCRRA Excavation Support Guidelines for complete references.

2. Excavation safety shall be the responsibility of the Contractor.

3. Contractor must immediately comply with orders from SCRRA to stop work or perform immediate backfilling of open excavations or other emergency remedial work when SCRRA, at its sole discretion, determines that the safety of trains, passengers and SCRRA employees may be in peril.

E. Schedule:

1. Include excavation and temporary excavation support installation, use and removal in the overall construction schedule and perform all work within the schedule presented in the approved construction plan. See Division 01.

3.4 FIELD QUALITY CONTROLIQUALITY ASSURANCE

A. Construction Verification:

1. The Contractor's Engineer must inspect the as-built excavation support system to verify that the system is constructed in accordance with the Contract Documents and working Plans that have been reviewed and accepted by OCTA.

a. The number of site visits and the stage or stages of construction at which an inspection shall be performed will be determined as a condition of acceptance of the temporary shoring design to provide oversight by the Contractor’s Engineer at critical construction stages.

2. The Contractor must prepare a letter and submit to OCTA confirming that the shoring system has been inspected and verified. The letter must be signed and sealed by the Contractor's Engineer who is a licensed Professional Engineer in the State of California.

a. Any field changes must be noted and the effect of those changes must be evaluated and reported by the Contractor's Engineer. Any deficiencies noted must be corrected by the Contractor. Deficiencies and corrections must be noted in the letter with verification of adequate correction by the Contractor's Engineer.

B. Track Monitoring:

1. Monitor the excavation and the supported track in accordance with the approved Track Monitoring Plan, as described in the SCRRA Excavation Support Guidelines, and as directed by SCRRA.

2. Track monitoring data shall be delivered to SCRRA in a format similar to that shown in the SCRRA Excavation Support Guidelines no later than one working day after survey readings are taken.

3.5 ACCEPTANCE

A. Inspections:

1. Request, schedule and provide the means and access for inspection of the installed excavation support system and finished excavation by SCRRA before proceeding with construction.

2. Once the excavation is no longer required for construction activities, request, schedule, and provide the means and access for inspection of the excavation support system by SCRRA before proceeding with removal and backfilling operations.

B. Final Acceptance:

1. Apply for and obtain final acceptance from SCRRA, with or without inspection at the sole discretion of SCRRA, upon submittal of the final track monitoring data.

a. Final track monitoring data shall be collected at the specified number of days following the completion of removal and backfilling operations per the approved Track Monitoring Plan.

PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

A. No separate measurement and payment will be made to the Contractor for Work of this Section. Work of this section shall include furnishing all labor, materials, tools, equipment, supplies, supervision, and incidentals, and doing all work, as shown on the Plans, and as specified in these Specifications, and as directed by the Engineer.

B. Measurement and Payment for excavation support will be incidental items to Section 31 20 00, Earthwork.

C. Submittals, working Plans, design modifications, structural detail changes, alternate design, review of alternate design, SSWP, inspections, verifications and track monitoring are incidental to Section 31 20 00 and no additional payment will be made therefore.

D. Any required testing and sacrificial test elements are incidental to Section 31 20 00 and no additional payment will be made therefore.

END OF SECTION

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SECTION 32 32 16

GRAVITY BLOCK RETAINING WALLS

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work involves furnishing all labor, materials and equipment necessary and incidental to constructing gravity block retaining walls to the limits and at the locations shown on the Contract Drawings and as modified by the Engineer. This work consists of furnishing and constructing gravity block retaining walls of prefabricated modular units at locations shown or as directed by the engineer, and in close conformity to the lines, grades, and dimensions shown or established.

B. Sections include but are not necessarily limited to:

1. Section 03 21 00 - Reinforcing Steel
2. Section 03 31 00 – Structural Concrete
3. Section 31 20 00 - Earthwork
4. Section 32 31 13 - Chain Link Fencing and Gates
5. Section 33 46 00 – Underdrains
6. Section 34 11 27 –Aggregate Base

1.2 SUBMITTALS

A. Shop drawing showing wall materials and construction details as provided by the supplier of the wall system. Drawings are to be certified by a qualified Engineer licensed in the State of California, and shall be suitable for obtaining City permits, as necessary.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Approved proprietary retaining wall systems, meeting these specifications are:

1. Enviro-Block by inter-Block Retaining Lock-Block Retaining Systems, San Marcos, CA. Telephone: 800-406-2066
2. Keystone Retaining Wall Systems, 4444 West 78th Street, Minneapolis, MN 55435 - Telephone 952-897-1040 or keystone@keystonewalls.com

3. Approved equal gravity retaining wall systems providing a pinned or interlocked type construction.

B. Blocks are to be standard grade, gray color with smooth face finish.

C. Blocks shall be sound and free of cracks or other defects that would interfere with the proper placement of the block or significantly impair construction of the wall.

D. Block face exposed to view shall be free of chips, cracks or other imperfections when viewed from a distance of 10 feet under diffused light.

E. Tolerance - Molded dimensions are not to differ more than 1/4 inch from the manufacturer's published dimensions, except height, which is not to differ more than 1/8 inch.

F. Geotextile fabric shall be Miraf "Filterweave 404" or approved equivalent.

2.2 ACCEPTANCE OF BLOCKS

A. Acceptability will be determined based on tolerances specified in 2.1 of this section and visual inspection. Any one of the following defects will be cause for rejection:

1. Concrete not suitable for common structural applications, Imperfect molding,

2. Honeycombed or open texture concrete,

3. Broken, cracked or chipped blocks, or

4. Extreme color variation on visible face of block.

PART 3 - EXECUTION

3.1 PREPARATION

A. Excavate existing material in accordance with Section 31 20 00 as needed to construct the wall as detailed on the plans.

B. Prepare the subgrade in accordance with Section 31 20 00 and suppliers recommendations.

3.2 ENVIROBLOCK WALL CONSTRUCTION

A. Place geotextile fabric over the full width and sides of the zone of unsuitable subgrade over excavation. Geotextile shall be laid smooth without wrinkles or folds in accordance with the manufacturer's directions. Joints or overlaps are not allowed along the width of the excavation. Adjacent rolls of geotextile shall have a minimum overlap of 40 inches in the longitudinal direction. There shall be no wheeled or tracked equipment permitted on the unprotected geotextile fabric.

B. The zone of over excavation shall be backfilled with Class 2 Crushed Aggregate Base conforming to Section 34 11 27. An initial 6 to 12 inches of CAB shall be uniformly placed over the geotextile fabric as a protective covering. This initial protective layer shall not be compacted. Once the Engineer has determined that a stable condition has been achieved, the remaining CAB shall be placed in 8 to 10 inch lifts and compacted to 95% relative compaction at optimum moisture content (ASTM D 1557). Wheeled or tracked compaction equipment shall not be used until 24 inches of CAP has been placed on top of the geotextile fabric. The geotextile fabric at the sides of the excavation shall be protected from damage throughout the placement and compaction of the CAB. Damaged geotextile shall be repaired at the direction of the Engineer at no cost to OCTA.

C. The top of the backfill shall be shaped to a slope to match the base of the lowest block. Each block shall be placed with full contact with the compacted base at the angle indicated on the approved submittal.

D. Block Installation and Backfill Placement - Blocks shall typically be placed in a running bond pattern unless placed perpendicular to the face of the wall. Place blocks so the final position is battered as shown. Place the first course of blocks on top of and in full contact with the prepared base pad surface.

E. Install drain pipe filter fabric and pervious rock in accordance with the plans and Section 33 46 00.

F. Closely follow erection of each course of blocks with placement of Embankment Fill (face opposite track) and drainage/subballast material (face on trackside). Remove excess backfill from the top of the blocks prior to installing the next course of blocks. Clean, free draining backfill and structural backfill to be as specified on the approved shop drawing.

G. During construction of the wall and placement of blocks maintain a vertical tolerance and tangent horizontal alignment tolerance not in excess of 1-1/8 inch when measured with a 10 foot straightedge. Check the batter and tolerances of each course of blocks before erecting the next course.

H. Form, install reinforcement and cast-in-place concrete curb with fence and gate post anchorage per Caltrans alternative anchorage detail on Standard Plan B11-7. Expansion joints in the curb shall be provided at 25 feet maximum to match running bond pattern. Reveals and chamfers shall be installed in the form to match the chamfered corners of the precast block and running bond pattern.

I. Remove forms, finish per Section 03 31 00, Structural Concrete. Clean exposed face of finished wall to remove all dirt, debris and marks caused during construction.

J. Grade embankment at top of wall in accordance with the plans.

K. Install fencing as indicated on the plans.

3.3 KEYSTONE WALL CONSTRUCTION

A. Walls shall be installed in accordance with manufacturer's shop drawings and standard details, with the addition of geotextile fabric as described above

B. Grade embankment at top of wall in accordance with the plans.

C. Install fencing as indicated on the plans.

PART 4 – MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

A. Gravity Block Retaining Wall will be measured by the unit or fraction thereof furnished and completed in accordance with the Contract Documents and as measured by the Engineer. The quantities as contained on the Schedule of Quantities and Prices, or approved schedule of values, as applicable, as derived from the plans will be used as the basis for this measurement.

B. Gravity Block Retaining Wall shall include excavation, shoring, subgrade preparation, aggregate base, geotextile fabric, pre cast blocks, reinforcing steel (including drilling and bonding of dowels), structural backfill and other appurtenances for the retaining wall.

C. Perforated underdrain, and permeable rock, are not included in payment for gravity retaining wall.

4.2 PAYMENT

A. Gravity Block Retaining Wall furnished and completed in accordance with the Contract Documents will be paid for at the Contract Unit Price, as listed on the Schedule of Quantities and Prices. This price shall be full compensation for furnishing all labor, Materials, tools, equipment, supplies, supervision, and incidentals necessary for Gravity Block Retaining Wall described by the Contract Documents.

END OF SECTION

SECTION 32 39 13

BOLLARDS

PART 1 – GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Metal bollards.

B. Related Requirements:
   1. Division 03 – Concrete; Section: 03 31 00 Structural Concrete.

1.2 REFERENCE STANDARDS

A. ASTM A53 – Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless

1.3 SUBMITTALS

A. Comply with Section 01 33 00 – Submittal Procedures.

B. Product Data: Provide for each type of bollard, component, finish, and accessory specified.

C. Setting Drawings: Show embedded items and cutouts required for work specified in other Sections.

1.4 QUALITY ASSURANCE

A. Comply with Section 01 40 00 – Quality Requirements

1.5 DELIVERY, STORAGE AND HANDLING

A. Comply with Section 01 60 00 – Product Requirements.

B. Protect bollards and accessories during delivery, storage, and handling.

1.6 WARRANTY

A. Comply with Section 01 74 00 – Warranties.

B. Provide manufacturer’s standard warranty against defects in materials and workmanship.

PART 2 – PRODUCTS

2.1 MANUFACTURERS

A. No premanufactured bollards will be allowed, construct bollards on site.

B. Substitutions: Comply with provisions of Section 01 25 00 Substitution Procedures for substitution procedures.

2.2 METAL BOLLARDS

A. MATERIAL

1. 4 inch diameter, 6 foot Galvanized pipe per ASTM A53.

2. Concrete fill per Section 03 31 00 Structural Concrete.

B. MOUNTING

1. Mounting per detail in Construction plan set.

PART 3 – EXECUTION

3.1 EXAMINATION

A. Examine paving or other substrates for compliance with manufacturer's requirements for placement and location of embedded items, condition of substrate, and other conditions affecting installation of bollards.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. General:

1. Center post in center of 15″ diameter hole, set post with Concrete specified in Section 03 31 00 Structural Concrete.

2. Fill with concrete per Section 03 31 00 Structural Concrete.

3. Construct rounded concrete cap

B. Damaged, cracked, chipped, deformed or marred bollards are not acceptable. Field touch-up minor imperfections in accordance with pipe manufacturer's instructions.

3.3 CLEANING & PROTECTION

A. Protect bollards against damage.

B. Immediately prior to Substantial Completion, clean bollards in accordance with manufacturer's instructions to remove dust, dirt, adhesives, and other foreign materials.

C. Touch up damaged finishes according to pipe manufacturer's instructions.

3.4 CLOSEOUT ACTIVITIES

A. Provide executed warranty.

PART 4 – MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

A. Bollards will be measured by the unit thereof furnished and completed in accordance with the Contract Documents and as measured by the Engineer. The quantities as contained on the Schedule of Quantities and Prices, or approved schedule of values, as applicable, as derived from the Plans will be used as the basis for this measurement.

4.2 PAYMENT

A. Bollards furnished and completed in accordance with the Contract Documents will be paid for at the Contract Unit Price, as listed on the Schedule of Quantities and Prices. This price shall include full compensation for furnishing all labor, Materials, tools, equipment, supplies, supervision, and incidentals, and doing all work, as shown on the Plans, and as specified in these Specifications, and as directed by the Engineer.

END OF SECTION

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SECTION 33 42 00

CULVERT AND DRAINAGE PIPE

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Culverts.
2. Storm drainage systems.
3. Storm drainage pipe.
4. Storm Drain Cleanouts.
5. Concrete Collars.
6. Brick and Mortar Plugs
7. Headwalls
8. Concrete Caps
9. Inlets, headwalls, flumes and flared end sections.

B. Related Specification Sections include but are not necessarily limited to:

1. Division 01 - General Requirements.
2. Section 31 11 00 - Site Clearing.
3. Section 31 11 50 - Demolition, Cutting and Patching.
4. Section 31 20 00 - Earthwork.
5. Section 31 50 00 – Excavation Support
6. Section 33 05 23 - Steel Casing.
7. Section 34 11 27 - Aggregate Base.
8. Section 34 80 32 - Adhered Elastomeric Waterproofing for Railroad Bridges.
9. Section 03 31 00 - Structural Concrete.

10. Section 34 80 43 - Precast and Prestressed Concrete for Railroad Bridges.

1.2 REFERENCES

A. American Association of State Highway and Transportation Officials (AASHTO):

1. M274, Steel Sheet, Aluminum Coated (Type 2), for corrugated steel pipe.

2. M252, Corrugated Polyethylene Drainage Pipe.

3. M294, Corrugated Polyethylene Pipe 1 to 5 feet Diameter.

B. ASTM International (ASTM):

1. A31, Standard Specifications for Steel, Rivets and Bars for Rivets, Pressure Vessels.

2. A48, Standard Specifications for Gray Iron Castings.

3. A164, Coating.

4. A760, Corrugated Steel Pipe, Metallic Coated for Sewers and Drains.

5. A761, Corrugated Steel Structural Plate, Zinc-Coated, for Field –Bolted Pipe, Pipe-Arches, and Arches.

6. A780, Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings.

7. C76, Standard Specification for Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe.

8. C150, Standard Specifications for Portland Cement.

9. C361, Standard Specification for Reinforced Concrete Low-Head Pressure Pipe.

10. C1784, Standard Specification for Polyvinyl Chloride (PVC) Plastic Pipe.

11. D2729, Standard Specification for Polyvinyl Chloride (PVC) Sewer Pipe and Fittings.

12. D3350, Standard Specification for Polyethylene Plastics Pipe and Fittings Material.

C. AREMA Manual for Railway Engineering

1. Chapter 1, Part 4, Section 4.3 Specifications for Prefabricated Corrugated Steel Pipe and Pipe Arches for Culverts, Storm Drains, and Underdrains.

2. Chapter 1, Part 4, Section 4.5, Standard Specification for Corrugated Aluminum Alloy Pipe.

3. Chapter 1 Part 4, Section 4.6, Specifications for Corrugated Structural Steel Plate Pipe, Pipe-Arches and Arches.

4. Chapter 8, Part 10, Reinforced Concrete Culvert Pipe.

5. Chapter 8, Part 16, Design and Construction of Reinforced Concrete Box Culverts.

D. Standard Plans for Public Works Construction (SPPWC) “Green Book”, Latest Edition.

E. Standard Specifications for Public Works Construction (SSPWC) “Green Book”, Latest Edition.

F. SCRRA Engineering Standards:

1. ES5001, ES6340, and ES6301 through ES6310.

G. State of California Department of Transportation “Caltrans” Standard Plans and Specifications, 2010.

1.2 SUBMITTALS

A. General:

1. Submittals shall be made in accordance with Division 01 requirements.

B. Plans and Procedures:

1. Layout Plans for approval by the Engineer.

2. Schedules of work.

3. Design calculations for culverts not constructed in accordance with SCRRA Engineering Standard Plans.

1. Calculations to be performed by a Professional Engineer licensed to practice in California.

4. Details for culverts and drainage structures and joints including Shop Drawings and installation procedures.

5. Proposed bedding test procedures.

C. Certificates:

1. Product technical data including:

1. Acknowledgement that products submitted meet requirements of standards referenced.

2. Certifications:

    1. Crushed Stone Bedding Material meeting gradation requirements of Section 34 11 27.

3. Test reports:

    1. Culvert and Drainage Pipe test reports from the fabricator.

4. Compaction testing in accordance with Section 31 20 00. Submit test results for density and compaction tests of culvert bedding and backfill performed by certified test laboratory hired by the Contactor and approved by the Engineer to perform and report testing.

        1) Test results submittal shall be on a form approved in advance by the Engineer.

        2) Test results shall be organized by culvert or drainage structure.

        3) 2. Other tests as required for cast-in-place concrete and precast concrete in accordance with Section 03 31 00 and Section 34 80 43 respectively.

5. Submit all tests and certification in a single coordinated submittal. Partial submittals will not be accepted.

D. Miscellaneous Submittals:

1. Verification documentation that Contractor requested DigAlert and SCRRA field location of underground utilities prior to starting any excavation work.

1.3 PROJECT SITE CONDITIONS

A. The Contractor shall barricade open excavations and post with warning lights those excavations occurring on property adjacent to or within public access areas and along tracks in accordance with Section 31 50 00. Operate warning lights during hours from dusk to dawn each day and as otherwise required. Warning lights shall not shine into the eyes of locomotive engineers on oncoming trains.

B. The Contractor shall protect utilities, structures and facilities designated as protect in place from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by excavation and backfill operations in accordance with Section 31 50 00 and Division 01. Damage to utilities designed to remain must be repaired by the Contractor to the satisfaction of the Engineer in accordance with these Specifications or replaced at no cost to the Authority.

C. Contractor shall dewater excavations as necessary to allow placement and compaction of bedding material, placement of culvert or drainage structure and placement and compaction of backfill in accordance with Section 31 20 00.

1.4 ENVIRONMENTAL CONDITIONS

A. The Contractor shall protect against erosion and uncontrolled run-off within and adjacent to right-of-way in accordance with Division 01.

B. The Contractor shall obtain all permits for and legally dispose of all water from water removal operations in accordance with Division 01.

C. Cleanliness, Sweeping and Dust Control:

1. Contractor shall maintain the construction site in accordance with Division 01.

D. Contractor must provide continuous noise abatement as required.

1. Prevent disturbances and nuisances to the public, workers and occupants of adjacent premises and surrounding areas in accordance with Division 01.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS OF JOINT SEALING MATERIAL

A. Subject to compliance with the Contract Documents, the following manufacturers are acceptable for joint sealing material between sections of precast reinforced concrete pipe or precast reinforce concrete box culverts when water tightness is not specified:

1. Preformed flexible pipe joint sealing compound:

1. RAM-NEK.

2. BIDCO C-56.

3. Approved equal.

B. Submit request for substitution in accordance with Division 01.

2.2 MATERIALS

A. Reinforced Concrete Pipe (RCP):

1. When used for storm drainage pipe or culverts and not placed under the track. If placed under the track, the pipe shall be cased per SCRRA ES5001 or ES5002, whichever governs.

2. Reinforced concrete culvert, storm drain and sewer pipe: RCP Joint Sealer:

1. Rubber gasket: ASTM C361 when water tight joints indicated in the Plans.

2. Joint sealing material per Article 2.01 above for other joints of concrete pipe.

3. Flared End Sections:

1. Shall be as shown in the Plans.

4. Jointing: Same as pipe.

B. Corrugated Metal Pipe (CMP) and Structural Plate Pipe (SPP):

1. CMP and Structural Plate Pipe may be used in all culvert or storm drainage applications.

2. CMP shall be either Class 1, annular rings with riveted seams or Class 2, helical rings with lock seams or welded seams per the AREMA Manual Chapter 1, Part 4, Section 4.3 Specifications for Prefabricated Corrugated Steel Pipe and Pipe Arches for Culverts, Storm Drains, and Underdrains. In addition to these requirements, CMP culverts shall meet the following:

1. Minimum cover and gage shall be per the SCRRA Engineering Standards.

2. CMP shall be coated in accordance with AASHTO M274, Steel Sheet, Aluminum Coated (Type 2), for corrugated metal pipe.

3. CMP over 48 inches dia. shall be fabricated with a 5 percent elongation in the vertical direction.

4. CMP Class 1 Culvert Riveted Seams:

    1) CMP Class 1 culverts shall have riveted longitudinal seams with one rivet in each corrugation valley for all pipes 24 inches in diameter and smaller. Longitudinal seams shall be riveted with two rivets in each corrugation valley for all pipes larger than 24 inches. Circumferential seams shall be riveted with two rivets in each corrugation valley for all pipes larger than 24 inches. Circumferential seams shall be riveted with a maximum rivet spacing of 2 inches.

    2) CMP Class I culverts shall have all 14 gage pipe with at least 5/16 IN DIA rivets. CMP Class I culverts shall have all 12 gage and thicker pipe with at least 7/16" dia. rivets.

    3) All rivets shall be cold driven in a workmanlike manner to completely fill the hole without bending.

    4) Rivets shall conform to ASTM A31, Grade A and shall be electroplated in accordance with the Specifications of ASTM A164, Type RS.

5. CMP Class 2 Culvert Seams:

    1) Lock Seams shall be either continuous welded in accordance with ASTM A 760 or lock seams in accordance with ASTM A 760 and the AREMA Manual for Railway Engineering, Chapter 1, Part 4.5.3.6.

3. Structural Plate Pipe:

    1. Structural Plate Pipe shall meet the requirements of AREMA Manual for Railway Engineering Chapter 1, Part 4.6.

        1) Base metal shall be in accordance with ASTM A761.

        2) Structural Steel Plates shall be coated in accordance with AASHTO M274, Aluminum Coated (Type 2) for corrugated steel pipe with thickness of coating in accordance with ASTM A761.

        3) Thickness shall conform to gage shown in table contained in the SCRRA Engineering Standards.

4. Jointing and End Finish:

    1. Corrugated connecting bands of same base metal, corrugations and finish coating as pipe.

    2. Connection bands shall conform to Section 66-1.02D of the Caltrans Standard Specifications.

3. Thickness shall conform to gage shown in Table 2 – Round Corrugated Steel Pipe (CSP) contained on the SCRRA Engineering Standards.

4. CMP Class 2, Helical, Culvert Joints shall be made by rerolling the ends of individual pipe sections at least four corrugations from the pipe end or 14 inches to meet the connection band requirements.

5. CMP Joint Sealer when culvert is under pressure or is used in an irrigation application:

1. Cold applied asphalt joint compound.

2. Preformed flexible pipe joint sealing compound.

6. Perforated CMP shall have perforations meeting requirements of ASTM A760 for Class 1 Perforations.

7. Concrete and Reinforcement for Inlets, Headwalls, Flumes and End Sections:

1. Comply with Section 34 80 32.

2. Concrete and Reinforcement for Inlets, Headwalls, Flumes and End Sections shall conform to SCRRA Engineering Standards ES6301 through ES6310.

C. Corrugated High-Density Polyethylene Drainage Pipe:

1. Corrugated High Density Polyethylene Drainage Pipe may be used for under drains or other storm drainage not subject to railroad live loading.

1. It must be installed in a steel casing meeting requirements of Specification Section 33 05 23 and SCRRA ES5001 if placed under the track.

2. Pipe and fittings shall be a high-density polyethylene meeting ASTM D3350 minimum cell classification 325420C.

3. Sizes less than 1 foot dia. shall meet requirements of AASHTO M252, Corrugated Polyethylene Drainage Pipe.

4. Sizes 1 foot up to 5 feet in diameter shall meet requirements of AASHTO M294, Corrugated Polyethylene Pipe 1 to 5 feet diameter.

D. Smooth Steel Pipe:

1. Smooth Steel Pipe may be used for all culvert or storm drainage applications.

2. Smooth Steel Pipe shall meet the requirements contained in Specification Section 33 05 23.

E. PVC Pipe:

1. PVC may be used for under drains and storm drainage applications. When subjected to railroad live loading, Schedule 80 PVC pipe shall be used.

2. PVC Pipe shall meet the requirements of ASTM D1784, Standard Specification for Polyvinyl Chloride (PVC) Plastic Pipe, Schedules 40 and80. All fittings shall meet ASTM D2729.

3. Perforated PVC pipe shall have perforations meeting the requirements of ASTM D1784. Perforations shall be 3/8" dia.

F. Reinforced Concrete Box Culvert (Cast-in-Place or Precast) (RCB):

1. RCB may be used in all culvert or storm drainage applications.

2. Design shall be per AREMA Manual for Railway Engineering, Chapter 8, Part 16, Design and Construction of Reinforced Concrete Box Culverts.

3. Concrete and Reinforcing Steel shall meet the requirements of Section 03 31 00 for Structural Concrete, Section 34 80 43 for precast concrete and Section 03 21 00for Reinforcing Steel.

4. Concrete Strength, reinforcing steel quantities and other culvert details shall be per SCRRA Engineering Standards ES4700 sheets 1-4.

G. Crushed Stone Bedding Material:

1. Crushed Stone Bedding Material shall meet the requirements of Sub-ballast contained in Section 34 11 27.

PART 3 - EXECUTION

3.1 PREPARATION

A. The site including the drainage facilities shall be prepared in accordance with Section 31 11 50 and Section 31 11 00.

B. It shall be the Contractor's responsibility to verify the actual locations (horizontal and vertical) of all utilities prior to beginning trench excavation. If utilities are to remain in place, provide protection from damage during construction operations.

3.2 HANDLING OF MATERIAL

A. Pipe, fittings and supplementary items shall be handled in such a manner as not to damage the Material. All dirt and trash shall be removed from the pipe prior to installation. Damage to the pipe, pipe lining or coating, if any, shall be repaired to the satisfaction of the Engineer in accordance with these Specifications or replaced at no additional cost to SCRRA.

1. Repairs to damaged coating on CMP shall be made in accordance with ASTM A780 except the repaired area coating shall be modified for aluminum-zinc coated material.

B. Pipes or structural steel plate materials shall not be dropped to or dragged over the ground, but shall be handled with rolling slings on skids or with cranes.

C. Bent or otherwise damaged pipe Materials shall not be used.

D. Distribute pipe and other Materials along the line of Work and outside the trench as near as practical to the point of placement. Do not deposit site Materials on or against pipe.

E. Protect pipe ends until the pipe is placed in its final position.

3.3 INSTALLATION

A. Foundation Preparation

1. Excavate as necessary, prepare pipe bed pre-rolling and removing any unacceptable soil, place and compact Crushed Stone Bedding Material in accordance with the SCRRA Engineering Standards for CMP, SPP and Smooth Steel Pipe when not using jacking and boring installation methods, and SCRRA Engineering Standards ES4700 for Reinforced Concrete Box Culverts.

    1. Other drainage pipes use bedding material as shown in the Plans.

    2. Refer to SCRRA Standard Specification Section 31 20 00 for additional general excavation requirements.

2. The foundation shall be a smoothed and compacted surface conforming to bottom of pipe grade or camber and will hereafter be referred to as the foundation line. The foundation bed shall be free of boulders, tree stumps, cut-off piling, and other projections. Suitable camber to allow for settlement of pipe due to consolidation of embankment material will be provided when required in accordance with the SCRRA Engineering Standards. Shaping to pipe contour is not required.

3. When acceptable foundation material is present, the width of the foundation line shall be a minimum of 4 feet plus the pipe diameter or pipe-arch span. For multiple pipes the above width shall be increased by the sum of the distances between pipe or pipe-arch centers.

4. Where there is solid rock or other unsuitable material, such as boulders, or unstable material that may deform the pipe during minor settlement, at the foundation line, it will be necessary to provide suitable bedding for pipes. Such work will only be undertaken at the specified direction of the Engineer.

5. The width of excavation and bedding backfill shall be the pipe diameter or pipe-arch span in solid rock and boulders, and in other unsuitable material, the width shall be three pipe diameters or pipe-arch spans for single pipes, and for multiple pipes, this width shall be increased by the distances between pipe or pipe-arch centers.

6. Soft, spongy or otherwise unsuitable material encountered at the established and approved grade shall be removed and backfilled with granular material as directed by the Engineer in accordance with Section 31 20 00. Excavation of unsuitable soils will be made in accordance with the unit price for excavation. Payment for backfilling and compacting with suitable soils will be made at the contract unit price for embankment.

7. The Contractor must by diversion ditches, dikes, or other means, keep the foundations free of water at all times after the work is started, and until the embankment is placed over the pipe. Any channel work necessary to allow free flow through the pipe shall be completed before the embankment is placed. This work is incidental to installation of the culvert or drainage pipe.

B. Install Smooth Steel Pipe, if using jacking and boring method, in accordance with Section 33 05 23.

C. Placing Culvert or Drain Pipe:

1. General:

1. No pipe shall be laid until it has been inspected and approved. All pipes shall be laid upgrade beginning at the lower end of the line. Pipe shall be laid accurately to line and grade. Ensure that the pipe has a full solid bearing along its entire length. When pipe has been checked for line and grade, the body of the pipe shall be sufficiently backfilled and compacted in accordance with Section 31 20 00 on both sides to hold the pipe firmly in position.

2. All adjustments to line and grade of the pipe laid on earth foundation shall be done by removal or filling of the bedding under the pipe and not by blocking or wedging.

3. Where two or more pipes are used, there shall be a minimum of 3 feet, or 1/2 pipe diameter or pipe-arch span, clear distance apart, whichever is greater. Where practicable, in the opinion of the Engineer, a space of 10 feet may be provided between pipes to facilitate the compaction of fill material around the pipes with heavy equipment.

2. Placing CMP:

1. Pipe having riveted seams shall be laid with outside laps of circumferential joints pointing upstream, longitudinal laps on the sides and, when shown in the Project Plans, asphalt paving on the flow line.

2. Pipe sections shall be firmly joined together with connecting bands. All dirt or other foreign materials must be kept out from between pipe and band. Outside connecting bands should be slipped over the end of one section, and the adjoining section brought within 1 inch of the first. Band shall be made to fit snugly and equally on each pipe section and bolted to produce a tight joint. The lower half of two-piece connecting bands for pipe having riveted seams may be furnished already connected to one of the pipe sections, and in such cases the end having the fixed half band shall be placed downstream. Band couplers and ends of pipe under the bands may be lubricated with oil or solvent, which has been approved by the Engineer. Excess asphalt at joints may be removed by an application of heat, if necessary. Where corrugated pipe is to be placed in an irrigation ditch, continuous waterway or spring area, rubber gaskets shall be placed around the first re-rolled corrugation at each end of the pipe before the band is placed to keep the joint watertight.

3. At locations where the existing corrugated pipe is to be extended with new pipe, the joining end of the existing pipe shall be free of breaks, cracks or other defects. If in the judgment of the Engineer the end of the existing corrugated pipe is not suitable for making a proper joint, the Contractor must, as directed by the Engineer, remove or trim the amount of pipe necessary to allow making of an approved joint. Such removal and trimming will be considered incidental to the cost of the pipe and no direct payment will be made therefore.

4. Pipe-arches shall not be strutted.

5. Identification tag, supplied by manufacturer, shall be attached near top of and inside of pipe at upstream end.

6. Field strutting of corrugated pipe:

    1) When the distance from base of rail to the top of pipe will be less than the dimensions given in Table 1, corrugated pipes must be field strutted by the Contractor using Contractor supplied material.

TABLE 1

CMP Pipe Diameter - Inches	Base of Tie to Top of Pipe - Feet
48	3.5
54 to 66, incl.	4.0
72 to 96, incl.	4.5
102 to 108, incl.	5.0

CMP Pipe Diameter - Inches	Base of Tie to Top of Pipe - Feet
114 to 120, incl.	5.5

7. Struts shall be placed after embankment is compacted to top of corrugated pipe but before any embankment is placed over the pipe. No equipment shall pass over the corrugated pipe until struts are in place and 3 feet of embankment is in place over the pipe.

8. Struts shall consist of 6 by 6 inches longitudinal timbers at the invert and top of corrugated pipe separated by 6 by 6 inches timber posts at 3 feet centers. Struts shall be shimmed tight using hard wood wedges nailed securely in position. Placement of struts shall be limited to the portion of corrugated pipe located within 12 feet of centerline of tracks.

9. Unless otherwise directed by the Engineer, struts shall be left in place until track laying is completed after which the struts shall be removed.

10. The furnishing and placing of field strutting material shall be considered incidental to pipe placement.

11. Reinforced Concrete Pipe.

12. Installation shall be in accordance with AREMA Manual For Railway Engineering Chapter 8, Part 10.4, Installation.

13. Gaskets out of position or loaded with dirt or other foreign material shall be removed, cleaned, and replaced before the joint is made.

3. Polyethylene and PVC Pipe:

1. Install in accordance with the manufacturer's written recommendations and as shown in the Plans.

4. Structural Plate Pipe:

1. Structural plate pipe shall be erected at the site, in accordance with detailed plans or instructions of the Engineer.

2. Where two or more structural plate pipes are used, they shall be a minimum of 1/2 pipe diameter or one-third of pipe-arch span apart. Where practicable, in the opinion of the Engineer, a space of 10 feet may be provided between pipes to facilitate compacting fill material around the pipe with heavy equipment.

3. Structural plate pipes may be made up of corrugated plates of variable gages. The invert plate may be two gages heavier than the plates for the sides and top of the pipe section, and heavier gage plates may be used in the center sections than at the end sections of the pipe. An erection diagram will be provided and must be followed without exception.

4. Strutting of structural plate pipe, if required, shall be as shown in the Installation Procedures or Erection Diagram.

5. Structural plate pipes are to be assembled at the site with as few bolts as possible until all plates are in place. Three or four untightened bolts near the center of each plate along the longitudinal and circumferential seams are sufficient, and after several rings have been assembled the remaining bolts can be inserted, the corner bolts being the last. Bolts are to be tightened progressively from one end of the structure to the other after assembly has been completed, and shall be check-tightened in the same manner to be sure none is left loose. All bolts shall be tightened with proper tools, either hand or power wrenches, initially to a minimum of 100 ft-lbs. and a maximum of 300 ft-lbs of torque. After backfilling is complete, bolts are to be checked for tightness and re-tightened if no longer torqued within these parameters.

6. Where heavy camber is necessary, erection procedures may be modified, but only as specifically approved by the Engineer for each such case.

7. At locations where the existing structural plate pipe is to be extended with new plates, the joining end of the existing pipe shall be free of breaks, cracks or other defects. The Contractor must remove any existing damaged and beveled plates so that extension can be made using standard plates. Such removal will be considered incidental to the cost of the pipe, and no direct payment will be made therefore.

8. Identification tag, supplied by manufacturer, shall be attached near top of and inside of pipe at upstream end.

9. End plates must be removed and remaining plates and bolts inspected for reuse by the contractor prior to ordering the extension culvert material. Existing bolt holes shall be reused for the extension connection.

10. In stock and vehicular underpasses which are to receive concrete invert paving, the area to be covered by concrete shall be clean and dry. Wire mesh reinforcement may be tack welded to bolts.

D. Backfill and Embankment:

1. General:

    1. When the pipe foundation line is below natural ground, compacted backfill, placed in accordance with SCRRA Standard Specification 31 20 00 shall be placed around the pipe in the area within the limits of the embankment section which was removed as channel excavation. The upper limit of this backfill shall be the top of pipe elevation or the elevation of natural ground surface as it existed before any excavation was made, whichever is lower.

    2. Embankment above natural ground shall be placed in accordance with SCRRA Standard Specification 31 20 00. When the upper limit of backfill is the top of pipe elevation, three (3) feet depth of material shall be placed above the pipe without compaction. This material shall be compacted in accordance with Section 31 20 00 at the time the roadbed receives its final finish.

2. Placing and Compacting Backfill and Embankment:

    1. The placing of embankment around pipes is to be started with the approval of the Engineer only after assembly and erection work has been completed in every detail. Embankment material to be placed around pipe must be approved by the Engineer in accordance with Section 31 20 00.

    2. Embankment under the haunches, along each side for a minimum width equal to the pipe diameter, and over the pipe is to receive special handling both as to placing and as to compaction. Except as modified by the provisions of Section 31 20 00, embankment shall be hand tamped directly under the haunches throughout the width beyond the reach of machine compacting equipment.

    3. All material, except that noted to be left non-compacted until the roadbed is completed on top of the culvert, shall be compacted to the full amount required by Section 31 20 00. Compaction methods and equipment shall be approved in advance by SCRRA.

    4. If the Engineer permits the clear distance between multiple pipes, or the clear distance between pipe and cut face, to be less than 3 feet, lean concrete slurry shall be used to fill under the haunches and to a minimum depth of the spring lines of the pipe installation. The concrete slurry mix shall be approved by the Engineer. Care shall be taken to ensure that the concrete slurry does not float the pipes above their intended elevation.

    5. The embankment directly above the pipe for a distance of one-third pipe diameter, but not less than 3 feet is to be placed without compaction.

6. Where the distance from subgrade to top of pipe is less than 3 feet, the excess material shall be left in place until the roadbed receives its final finish. At this time the material over the pipe to a depth of 1 foot below subgrade elevation shall be compacted to the full amount required by Section 31 20 00.

7. Care must be taken to prevent water from leaking through the fill or along the side of the pipe. When granular materials have been used for bedding or backfill, the ends of such material must be sealed against infiltration. This can be done by using impervious embankment material for 3 feet at both ends of the pipe.

E. Headwalls and Connection Structures:

1. Reinforced concrete headwalls and connection structures shall be constructed in accordance with the details indicated on the Contract Plans and the appropriate SCRRA Engineering Standards, ES6301 through ES6310 for the type of culvert or drain pipe placed and Section 03 31 00 or Section 34 80 43.

2. Prefabricated concrete or steel headwalls shall be constructed in accordance with the details indicated on the Contract Plans and in accordance with the manufacturer's instructions for the products called out thereon.

3. Seal all joints at headwalls and connection structures to ensure water tightness.

F. Installation Finalization:

1. The Contractor must remove all waste materials, including unacceptable excavated material, trash, and debris from the worksite and legally dispose of it off site at no additional cost to SCRRA.

2. At the conclusion of the Work, the Contractor must thoroughly clean the entire length of all the installed, extended or modified culvert by flushing with water or other means to remove all dirt, stones, pieces of wood, or other material, which may have entered the culvert during the construction period. Debris cleaned from the lines shall be removed from the Worksite. If there are any remaining obstructions after such cleaning, such obstructions must be physically removed by the Contractor.

3. Contractor must provide Engineer 48 hours advance notice to perform final inspection and acceptance of culvert installation.

PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

A. Culvert Pipe will be measured by the type and size of the pipe, and the unit or

fraction thereof furnished and installed in accordance with the Contract Documents and as measured by the Engineer. The quantities as contained on the Schedule of Quantities and Prices, or approved Schedule of Values, as applicable, as derived from the plans will be used as the basis for this measurement.

B. All material, work and services furnished for excavation and backfill, structural fill, crushed aggregate bedding material, structural concrete and reinforcing steel, stormwater Diversion Box, Concrete for connection structures between existing and new culverts and headwalls, wingwalls and precast concrete will be included in this Section and are considered incidental to work under this Section and will be measured by the unit or fraction thereof furnished and completed in accordance with the Contract Documents and as measured by the Engineer.

4.2 PAYMENT

A. Culvert and drain pipe furnished and installed in accordance with the Contract Documents will be paid for at the contract unit price for each type and size of pipe, as listed on the Schedule of Quantities and Prices. This price shall be full compensation for furnishing all labor, materials, tools, equipment, supplies, supervision, and incidentals necessary for culvert and drain pipe described by the Contract Documents.

B. Full compensation for excavation and backfill, structural fill, crushed aggregate bedding material, structural concrete and reinforcing steel, stormwater Diversion Box, Concrete for connection structures between existing and new culverts and headwalls, wingwalls and precast concrete shall be considered as included as listed on the Schedule of Quantities and Prices.

END OF SECTION

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SECTION 33 46 00

UNDERDRAINS

PART 1 - GENERAL

1.1 SUMMARY

A. The Work in this Section consists of furnishing all labor, materials and equipment necessary and incidental to providing underdrains, and subsurface drainage Materials behind foundations, piers, retaining walls and along track bed. The Work includes connecting system to existing or new storm drains as indicated on the Contract Plans.

B. Related Specification Sections include but are not necessarily limited to:

1. Division 00 - Bidding Requirements, Contract Forms, and Conditions of the Contract.

2. Division 01 - General Requirements.

3. Section 31 20 00 - Earthwork.

4. Section 31 50 00 - Excavation Support and Protection.

5. Section 34 80 23 - Subdrainage System for Railroad Bridges and Retaining Walls.

6. Section 33 42 00 - Culvert and Drainage Pipe

1.2 REFERENCES

A. American Railway Engineering and Maintenance of Way Association (AREMA) – Manual for Railway Engineering.

B. American Association of State Highway and Transportation Officials (AASHTO)

1. M294 Corrugated Polyethylene Pipe

C. ASTM International (ASTM)

1. D2323 - Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications.

D. Caltrans: State of California Department of Transportation Standard Plans and Specifications, 2010 Sections 19, 51, 68, and 88.

E. Standard Plans for public Works Construction (SPPWC) “Green Book”, Latest Edition.

F. SCRRA: Engineering Standards.

1.3 DEFINITIONS

A. The term “underdrain” pipe is in reference to any perforated plastic underdrain pipe as indicated in the Contract Plans.

B. The term “plastic” as it relates to pipe and fittings is in reverence to high-density polyethylene (HDPE).

C. The term “permeable rock” as it relates to bedding is in reference to Aggregate Base Material as indicated in the Materials section of this Specification.

1.4 SYSTEM DESCRIPTION

A. Underdrain: Underdrain shall consist of furnishing and placing under-drain pipe adjacent to the tracks as detailed on the Contract Plans.

B. Permeable Backfill Material: Permeable backfill Material shall consist of furnishing and placing permeable backfill material around underdrains in accordance with details shown on the Contract Plans and this Section.

C. Trenching and Backfilling for the underdrain as shown on the Contract Plans or other Referenced Standard.

1.5 SUBMITTALS

A. Submit, under the provisions of Division 01 the following information:

1. Submit Product Data, certifications and samples for each Material used in this Section. Samples of permeable rock shall be no less than 150 lbs and shall be accompanied with Supplier’s certified test data.

PART 2 - PRODUCTS

2.1 BEDDING MATERIALS

A. Sand bedding shall conform to Caltrans Section 19-3.025B.

2.2 PERFORATED AND SOLID DRAIN PIPE

A. Plastic, corrugated, smooth interior to conform to AASHTO Designation M252 (HDPE), OR M294 (HDPE) Type S with Class1 perforations or M304 (PVC).

B. Fittings for plastic pipe shall be of the same material and from the same manufacturer as the plastic pipe.

C. Corrugated metal pipe: Polymeric Coated Corrugated Galvanized Steel Pipe conforming to AREMA Manual, Volume 1, Chapter 1, Section 4.4.2. Perforations, where indicated, shall be per Chapter 1, Section 4.3.3.2 of the AREMA manual.

2.3 OUTLETS RISERS AND CLEANOUTS

A. Outlets, risers and cleanouts shall be of the same materials as the perforated pipe and shall be supplied from the same manufacturer. Riser cover shall be as detailed on the Contract Drawing.

2.4 GEOTEXTILE

A. Geotextile shall conform to Caltrans Standard Specifications Section 88-1.03.

2.5 STRUCTURAL BACKFILL

A. Structural backfill shall be Class B.

PART 3 - EXECUTION

3.1 PREPARATION

A. Preparation of site for the installation of underdrains shall be in accordance to Part 3.01 of Section 33 42 00 of these Specifications.

3.2 HANDLING OF MATERIAL

A. Handling of underdrain materials shall be in accordance to Part 3.02 of Section 33 42 00 of these Specifications.

3.3 EXCAVATION AND EXCAVATION SUPPORT

Excavation and excavation support shall be in accordance with Section 31 50 00 and Section 31 20 00.

A. Subgrade for drainage installation shall be free of rock, rubble, debris, or stones larger than 1.5 inches. If this condition is present, excavate an additional 4 inches, and place 4 inches of sand bedding material at no additional cost to SCRRA.

3.4 UNDERDRAIN INSTALLATION

A. Place the filter fabric as indicated. Place the long axis of the fabric parallel with long axis of the pipe. Filter fabric sections shall be overlapped a minimum of 12 inches.

B. Place 6 inches of permeable rock on the filter fabric. Grade the rock to the line and grade indicated for the perforated drainpipe.

C. Install aggregate filter material above the bottom of the trench and below the pipe to the depths as indicated on the Contract Plans. The depth aggregate filter material above and around the pipe shall also be as indicated on the Contract plans.

D. Installation of ballast material as for bedding material should be per the limits as shown in the Contract Plans.

E. Place the perforated or slotted drain pipe with the perforations or slots facing down in a semi-circular seat prepared in the permeable rock. Connect sections of pipe in accordance with the manufacturer's instructions.

F. Continue placing permeable rock in 4 inches layers under the sides and to the spring line of the pipe. Tamp material to provide thorough compaction under and on each side of the pipe. Successive layers of permeable rock may be placed in 8 inches layers and thoroughly compacted to the indicated depth shown on the Contract Plans. Exercise caution not to damage the filter fabric. Torn or punctured areas of filter fabric shall be repaired by placing a piece of fabric that is large enough to cover the damaged area plus 12 inches of overlap on all sides.

G. Complete permeable rock backfill as indicated and close the filter fabric at the top of this backfill with 12 inches lap per the detail shown on the Contract Drawing.

H. Place and compact structural backfill in accordance with Section 31 20 00. Exercise caution not to damage the filter fabric and sheet drain material.

PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

A. Underdrains will be measured by the lineal foot furnished and installed in accordance with the Contract Documents and as measured by the Engineer. The quantities for each item included in the Schedule of Quantities and Prices or approved Schedule of Values as derived from the Contract Plans will be used as the basis for this measurement.

B. Underdrain connections are incidental to the items listed above and will not be measured separately for payment.

4.2 PAYMENT

A. Underdrains constructed in accordance with the Contract Documents shall be paid for at the contract unit price as listed in the Schedule of Quantities and Prices. This price shall be full compensation for furnishing all labor, materials, tools, equipment, supplies, supervision, and incidentals necessary for all

underdrains described by the Contract Documents.

B. Underdrain connections are incidental to the items listed above and will be included in prices of the underdrain pipe listed above.

END OF SECTION

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SECTION 34 11 27

AGGREGATE BASE

PART 1 - GENERAL

1.1 SUMMARY

A. This Section specifies the material requirements for aggregate base and crushed rock filter layer to be furnished and placed to the lines, grades, and dimensions in accordance with the Contract Drawings, Specifications, and directions of the Engineer.

B. Related Specification Sections include but are not necessarily limited to:

1. Division 00 - Bidding Requirements, Contract Forms, and Conditions of the Contract.

2. Division 01 - General Requirements.

1.2 REFERENCES

A. Reference Standards:

1. American Railway Engineering and Maintenance of Way Association (AREMA):

a. Manual for Railway Engineering.

2. Caltrans Specifications: Section 26 – Aggregate Bases.

B. Quality Control:

1. Provide and install materials in compliance with applicable sections of reference standards.

2. Establish and maintain required grade lines and elevations.

1.3 SUBMITTALS

A. Submit the following in accordance with Division 01:

1. Compliance: Supplier's certification that material delivered to the site is in compliance with the Specifications.

2. Samples: As required by the Engineer samples of not less than 150 lbs. Samples shall be furnished by the Contractor or may be obtained independently by the Engineer's representative for testing to determine whether the material delivered to the site is in compliance with the Specifications.

3. Equipment: A list of all equipment used for placing and compacting sub-ballast.

PART 2 - PRODUCTS

2.1 MATERIAL REQUIREMENTS

A. Aggregate base shall conform to the gradation and quality requirements for Caltrans Specifications Section 26-1.02A, Class 2 Crushed Aggregate Base, 3/4" Maximum. In addition, the aggregate shall consist entirely of crushed rock with a minimum of 75 percent of the material having at least two fractured faces. No reclaimed asphalt or concrete shall be included in this material.

PART 3 - EXECUTION

3.1 AGGREGATE BASE

A. Aggregate base shall not be spread until the Engineer has approved the subgrade.

B. Spread and compact aggregate base in conformance with the requirements of Caltrans Specifications Section 26-1.03: Subgrade; Section 26- 1.035: Adding Water; Section 26-1.04: Spreading; Section 26-1.05: Compacting. Compaction shall be to a minimum of 95 percent relative density of modified proctor ASTM D1557. Maximum lift shall be 6 inches.

C. The surface of the aggregate base shall be stable to permit follow-on stages of construction without rutting.

D. Aggregate base shall be finished to within 0.05 feet of the lines and grades indicated on the Contract Drawings.

E. Aggregate base shall be maintained during construction, free of deformation, rutting, or inclusion of fines and within lines and grades listed above in a condition acceptable to the Engineer until work has been placed and approved, at no additional cost to the Authority.

PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

A. Aggregate base and crushed rock filter layer will be measured by the cubic yard furnished and installed in accordance with the Contract Documents and as measured by the Engineer. The quantities for each item included in the Schedule of Quantities and Prices or approved Schedule of Values as derived from the Contract Plans will be used as the basis for this measurement.

4.2 PAYMENT

A. Aggregate base and crushed rock filter layer constructed in accordance with the Contract Documents shall be paid for at the contract unit price as listed in the Schedule of Quantities and Prices. This price shall be full compensation for furnishing all labor, materials, tools, equipment, supplies, supervision, and incidentals necessary for construction described by the Contract Documents.

END OF SECTION

SECTION 34 80 11

STONE REVETMENT (RIPRAP)

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Stone revetment (riprap) for protection of slopes and drainage ways against erosion.

a. Drainage outflow area.

b. Slope riprap.

c. Geotextile and filter material base.

d. Rip-Rap Check Dams

e. Other areas indicated and shown on the Drawings.

B. Related Sections include but are not necessarily limited to:

1. Division 00 - Bidding Requirements, Contract Forms, and Conditions of the Contract.

2. Division 01 - General Requirements.

3. Section 31 20 00 - Earthwork.

1.2 REFERENCES

A. Reference Standards:

1. American Association of State Highway and Transportation Officials (AASHTO):

a. M228, Standard Specification for Geotextile Specification for Highway Applications.

b. T103, Soundness of Aggregates by Freezing and Thawing.

2. ASTM International (ASTM):

a. C88, Standard Test Method for Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate.

b. C127, Standard Test Method for Density, Relative Density (Specific Gravity), and Absorption of Coarse Aggregate.

c. C1116, Standard Specification for Fiber-Reinforced Concrete and Shotcrete.

3. Corps of Engineers (COE):

a. CRD-C100, Method of Sampling Concrete Aggregate and Aggregate Sources, and Selection of Material for Testing.

1.3 SUBMITTALS

A. Shop Drawings:

1. See Division 01 for requirements for the mechanics and administration of the submittal process.

2. Product technical data including:

a. Acknowledgement that products submitted meet requirements of standards referenced.

3. Certifications.

4. Test reports.

5. Submit all tests and certification in a single coordinated submittal. Partial submittals will not be accepted.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Stone:

1. Durable broken quarry run stone Apparent Specific Gravity minimum 2.50 ASTM C127.

2. Does not disintegrate on exposure to water or weathering.

3. Free from structural fractures and defects.

4. Not containing shale, unsound sandstone, or other material which will disintegrate.

5. Graded within limits specified.

6. Breadth and thickness of any stone: Not less than one-third of its length.

7. Ensure that dirt and fines accumulated from interledge layers or from blasting or handling operation is less than 2 percent by weight.

8. Gradation of the material:

   a. Ungrouted riprap to be loaded and quarried shall conform to the following limitations unless otherwise specified:

RIPRAP CLASS	AVERAGE WEIGHT PER STONE (LBS)	DIMENSION (IN)	MINIMUM LAYER THICKNESS
I	50 to 200	9 to 14	1' - 6 "
II	200 to 1000	14 to 24	2' - 0"
III	1000 to 4000	24 to 38	3' - 0"
IV	> 4000	> 38	4' - 0"

   b. Grouted riprap shall have the following gradation:

NOMINAL STONE SIZE (INCHES)	% OF MIX SMALLER THAN GIVEN SIZE (BY WEIGHT)
21	70 to 100
18	50 to 70
12	0 to 5

9. The following allowances shall be acceptable to produce the required ungrouted riprap protection:

   a. Riprap Class I - No allowances permitted.

   b. Riprap Class II - 15 percent of riprap Class I.

   c. Riprap Class III - 15 percent of riprap Class I and 15 percent of Class II.

   d. Riprap Class IV - 15 percent of riprap Class I, 15 percent of Class II, and 15 percent of Class III.

10. Grouted riprap:

   a. Riprap shall be angular (not rounded), each rock having its greatest dimension not greater than 3 times its least dimension. Elongated rocks shall be hand adjusted to a vertical verses horizontal position.

   b. The specific gravity of the riprap rock shall be 2.5 or greater.

   c. Broken concrete or asphalt pavement shall not be acceptable for use in the work.

d. Riprap and grout colors may be limited by local flood control districts or other regulatory entities. Contractor is responsible for ascertaining and complying with any such requirements.

B. Geotextile filter fabric:

1. Geotextile filter fabric shall be GeoTex 801 or equivalent in accordance with AASHTO M288 with an AOS of 70.

C. Filter Material:

1. Filter material shall conform with the following table:

Sieve Size	% Passing by Weight
1-1/2″	100
3/4"	90 to 100
1/4"	75 to 100
No. 8	65 to 92
No. 30	20 to 65
No. 50	5 to 20
No. 100	0 to 2
(by wet sieving)	(non-plastic)

D. Grout:

1. Concrete for the grout shall be an approved batch meeting the following requirements:

a. All concrete shall develop 3,000 psi compressive strength within 28 days, the cement shall be Type II modified or Type V, the stone aggregate shall have a maximum diameter of ½”, and the slump shall be within a range of 3 to 6 inches.

b. The water/cement ratio shall not exceed 0.48.

c. Add 1.5 lbs of synthetic fiber-reinforcing per cy of grout per manufacturer's instructions.

E. Synthetic Fiber-Reinforcing:

1. 100 percent virgin polypropylene, fibrillated fibers containing no reprocessed olefin materials and specifically manufactured for use in concrete.

2. Physical characteristics:

a. Specific gravity: 0.91.

b. Fiber length: ¾”.

c. Provide in accordance with ASTM C1116.

d. Acceptable manufacturers:

1) Fibermesh.

2) Grace Construction Products.

2.2 SOURCE QUALITY CONTROL

A. Perform all tests at an approved independent laboratory.

B. Obtain samples in conformance with COE CRD-C100.

C. Source Tests:

1. Supply certified tests and service records to determine acceptability and application of stone materials.

2. In event suitable test reports or a service record that is satisfactory are not available, as in case of newly operated sources, subject material to tests necessary to determine its acceptability for use.

3. Tests to which materials to be subjected include:

a. Specific gravity.

b. Soundness in magnesium sulfate.

c. Soundness in freezing and thawing.

D. Material Acceptability Tests:

1. Initial test: On material from each ledge sampled prior to start of construction.

a. Specific gravity.

b. Soundness in magnesium sulfate.

c. Soundness in freezing and thawing.

2. Control tests:

a. Perform control tests including one specific gravity, one soundness in magnesium sulfate, and one soundness in freezing and thawing for each type of stone revetment material for every 100 tons of material.

E. Specific Gravity Test:

1. Conform with ASTM C127.

2. Not less than 2.40 minimum.

F. Soundness in Magnesium Sulfate:

1. Conform with ASTM C88, except maintain samples immersed in solution at a temperature of 80˚ F (26˚ C) +2˚ F.

2. Not more than 12 percent loss at five cycles.

G. Soundness of Aggregates in Freezing and Thawing:

1. Conform with AASHTO T103 method as modified herein.

2. Ensure loss at 12 cycles of not more than 10 percent.

3. Maintain temperature of cold liquid in range of -5 to 0 deg. F (-20 to -18 deg. C).

4. Maintain thaw fluid temperature in range of 45 to 50 deg. F (7 to 10 deg. C).

5. Permit length of freezing and of thawing cycles of 2 hours with 1 hour of freezing following by 1 hour of thawing.

6. Perform thawing by circulating thaw fluid around pan containing stone immersed in a depth of ¼" rather than by total immersion.

PART 3 - EXECUTION

3.1 PREPARATION

A. Trim and dress all areas to required cross sections.

B. Bring areas that are below allowable minus tolerance limit to grade by filling with material similar to adjacent material.

C. Compact base to density specified for backfill in accordance with Section 31 20 00.

D. Do not place any stone material on prepared base prior to inspection by Engineer.

3.2 PLACING

A. Ungrouted Riprap:

1. Where indicated on Drawings, place geotextile on prepared foundation within limits indicated.

a. Geotextile overlaps shall be a minimum of 1' – 0".

b. Geotextile shall be secured to slope per the manufacturer's recommendation.

2. Where indicated on Drawings, place filter material within limits indicated.

a. Filter material shall be per Section 2.1 C. Filter Material..
b. Depth of filter material shall be as shown on the plans.

3. Place stone revetment material on prepared base within limits indicated.

4. Place on prepared base to produce a well-graded mass of stone with minimum percentage of voids.

5. Place to required thickness and grades.

6. Place to full thickness in a single operation to avoid displacing the underlying material.

7. Distribute entire mass to conform to gradation specified.

   a. Do not place stone by dumping into chutes or by similar method likely to cause segregation.

8. Keep finished stone revetment free from objectionable pockets of small stones or clusters of larger stone.

   a. Hand place as necessary to obtain a well-graded distribution.

9. Ensure a final tolerance of within 3 inches from indicated slope and grade lines.

10. Place stone revetment in conjunction with embankment construction to prevent mixture of embankment and stone revetment materials.

11. Maintain stone revetment until accepted.

12. Replace any displaced material to lines and grades shown.

B. Grouted Riprap:

1. The Contractor must notify the SCRRA a minimum of five working days of his intent to perform any grouting activities prior to placement of any grout to allow scheduling of inspection activities. Grout operation shall not proceed without the approval of the SCRRA.

2. Contractor must clean with a water blast operation faces and edges of any existing to-remain structural elements such as wingwalls or abutments to which the grouted riprap will come in contact.

3. Riprap shall be placed prior to grouting. It is desirable that elongated stones along the top layer of riprap have a vertical orientation.

4. Dewatering shall be implemented to guarantee that the grout will not be placed in water or be exposed to stream flows for a period of 24 hours after the grout has been placed.

5. Contractor must keep riprap, boulders and concrete walls that are to receive grout wet at all times prior to injecting grout.

6. The concrete grout shall be placed by injection methods by pumping under low pressure, positive displacement methods, through a 2 inches maximum diameter hose to ensure complete penetration of the grout into the rock layer.

7. The voids at the surface of the riprap will not be grouted. The depth of grout measured from the prepared subgrade bed shall be 18 inches. Operator shall be able to stop the flow of grout when required, and will place grout in the voids and not on the surface of the riprap.

8. A "pencil" vibrator will be used to make sure all voids are filled between and under the riprap. The intent is to fill all voids from the subgrade level around the riprap for a minimum depth of 18 inches. In all cases, grout must penetrate to the subgrade of the riprap. The pencil vibrator may be used to smooth the appearance of the surface, but the Contractor must use a wood float to smooth and grade the grout to drain. When placing grout, it shall be placed between the riprap and against earth, rock, or concrete excavated sidewalls.

9. Contractor must clean and wash any spillage before the grout sets. The visible surfaces of the riprap will be free of grout to provide a clean natural appearance.

PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

A. Ungrouted Riprap:

1. Ungrouted riprap of the various classifications will be measured by the unit or fraction thereof furnished and completed in accordance with the Contract Documents and as measured by the Engineer. The quantities as contained on the Schedule of Quantities and Prices, or approved schedule of values, as applicable, as derived from the Plans will be used as the basis for this measurement.

B. Grouted Riprap:

1. Grouted riprap of the various gradations will be measured by the unit or fraction thereof furnished and completed in accordance with the Contract Documents and as measured by the Engineer. The quantities as contained on the Schedule of Quantities and Prices, or approved schedule of values, as applicable, as derived from the Plans will be used as the basis for this measurement.

4.2 PAYMENT

A. Ungrouted Riprap:

1. Ungrouted riprap furnished and completed in accordance with the Contract Documents will be paid for at the Contract Unit Price, as listed on the Schedule of Quantities and Prices. This price shall include full compensation for furnishing all labor, Materials, tools, equipment, supplies, supervision, and incidentals, and doing all work, as shown on the Plans, and as specified in these Specifications, and as directed by the Engineer.

2. The contract price paid unit of ungrouted riprap for each classification shall include compensation to the Contractor for furnishing riprap, all labor, materials, equipment and any other incidentals to place riprap complete-in-place, including haul from the suppliers source, necessary stockpiling at the job site, reloading for placement, placement, overestimates of salvageable boulders, disposing of any rejected riprap, excavation and removal of material, over-excavation for construction, backfilling, and any other miscellaneous items and work shown or reasonable implied on the Plans, in the Specifications for this work, and elsewhere in the Contract Documents.

3. Geotextile and sand base and other associated materials and incidentals and installation thereof shall be considered part of the riprap and full compensation therefore shall be considered as included in the contract unit price paid for ungrouted riprap.

B. Grouted Riprap:

1. Grouted riprap furnished and completed in accordance with the Contract Documents will be paid for at the Contract Unit Price, as listed on the Schedule of Quantities and Prices. This price shall include full compensation for furnishing all labor, Materials, tools, equipment, supplies, supervision, and incidentals, and doing all work, as shown on the Plans, and as specified in these Specifications, and as directed by the Engineer.

2. The contract price paid per unit of grouted riprap for each classification shall include compensation to the Contractor for furnishing riprap, all labor, materials, equipment and any other incidentals to place riprap complete-in-place, including haul from the suppliers source, necessary stockpiling at the job site, reloading for placement, placement, overestimates of salvageable boulders, disposing of any rejected riprap, excavation and removal of material, over-excavation for construction, backfilling, and any other miscellaneous items and work shown or reasonable implied on the Plans, in the Specifications for this work, and elsewhere in the Contract Documents.

3. Geotextile and sand base and other associated materials and incidentals and installation thereof shall be considered part of the riprap and full compensation therefore shall be considered as included in the contract unit price paid for grouted riprap.

END OF SECTION

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SECTION 34 80 21

PILING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Driven piling indicated in the Contract Documents.

B. Description:

1. Piles:

a. These Specifications shall govern the furnishing, driving, building up and cutting off of steel pipe piles and sheet piles in accordance with the lines, grades, and locations shown on the plans or as directed by the Engineer.

2. Settlement of embankment fill shall be substantially complete prior to the driving of piling unless otherwise shown on the plans.

3. Foundation piling shall not be driven until the excavation is complete.

C. Related Specifications Sections include but are not necessarily limited to:

1. Division 00 - Bidding Requirements, Contract Forms, and Conditions of the Contract.

2. Division 01 - General Requirements.

3. Section 03 21 00 – Reinforcing Steel.

4. Section 03 31 00 - Structural Concrete.

5. Section 31 20 00 - Earthwork.

1.2 REFERENCES

A. American Institute of Steel Construction (AISC):

1. Manual of Steel Construction.

B. ASTM International (ASTM):

1. A36, Standard Specification for Carbon Structure Steel.

2. A252, Standard Specification for Welded and Seamless Steel Pipe Piles.

3. A328, Standard Specification for Steel Sheet Piling.

4. A588, Standard Specification for High-Strength Low Alloy Structural Steel

C. American Welding Society (AWS):

1. D1.5, Bridge Welding Code.

D. American Railway Engineering and Maintenance-of-Way Association (AREMA):

1. AREMA Manual for Railway Engineering.

E. Southern California Railroad Authority (SCRRA) Standards.

F. In case of conflict between SCRRA Standards and AREMA, SCRRA Standards takes precedence; use in lieu of conflicting portions.

1.3 DEFINITIONS

A. Certified Welder: Meeting the qualification requirements of AWS D1.5.

B. Welding Procedure Specification: AWS D1.5.

1.4 SUBMITTALS

A. Shop Drawings:

1. See Division 01 for requirements for the mechanics and administration of the submittal process.

2. Product technical data including:

a. Steel pile type, size, dimensions and grade of steel.

b. Pile tip protection/closure device.

c. Manufacturer and type of pile splicing device.

d. Load test equipment description with calibration charts.

B. The Contractor shall provide to the Engineer a description of all pile driving equipment to be employed in the work, prior to commencement of pile installation. This shall include details including weights of pile hammer, power plant, leads, pile cushion, cap block and helmet.

C. The Contractor shall visit the site and review the Geotechnical Report and test borings prior to selecting the pile driving hammer.

D. The Contractor shall provide to the Engineer Plans demonstrating compliance of driving equipment and steel casing with Contract Documents. Plans shall include shop and erection details, casing details, and enclosures, splices, driving helmets, and reinforcement.

E. The Contractor shall perform and submit the results of wave equation analysis for proposed installation equipment and piling material.

1. Calculations shall be performed and sealed by a Professional Civil Engineer licensed in the State of California.

2. Pile compressive stresses must be limited to allowable values during installation in accordance with the AREMA Manual for Railway Engineering, Chapter 8, Part 4.

3. The results of the wave equation analysis shall demonstrate that the pile stresses are higher at the top of the pile compared to the tip, that the piles can achieve the required penetration into the hard strata without damaging the pile, and that an excessive number of blows per foot are not needed to achieve the required penetration and capacities.

4. The recommended pile driving criteria for the driving of piles (chart with bearing as a function of ram fall and blow count) shall be submitted for review.

F. Welder's certification and Welding Procedure Specification (WPS).

G. Pile reports shall be submitted by the Contractor to the Engineer within 3 working days of completion of driving. The pile record shall be completed per Section 3.6.A of this specification.

H. As-built pile location Drawing(s):

1. Sealed by licensed land surveyor registered in the State of California.

2. Include deviations beyond acceptable tolerances from specified locations.

1.5 QUALITY ASSURANCE

A. Qualifications:

1. Welders and welding processes to be qualified in accordance with AWS D1.5 requirements.

a. Welders to have been qualified during the 12 month period prior to commencement of welding.

1.6 PROJECT CONDITIONS

A. Do not begin pile installation until the earthwork in the area where piles are to be driven has been completed, to the extent possible, as shown in the Contract Documents.

B. Jetting or predrilling of piling will not be permitted unless shown on the plans.

C. The use of followers shall only be permissible if driving pile through the existing bridge deck.

1. If followers are used, their use shall be incorporated into the Contractor's wave equation analysis.

D. All work shall comply with these Specifications, the AREMA Manual for Railway Engineering, and the SCRAA standards.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Submit pile manufacturer information to the Engineer for review and approval prior to ordering and fabricating material.

2.2 MATERIALS

A. Steel Piles:

1. Steel Bearing Piles: Steel bearing piles shall be of the section shown on the plans and shall be structural steel, containing no less than 0.2 percent copper, conforming to ASTM A588. Piles shall not be painted before driving.

B. Storing and Handling:

1. Piles to be stored shall be placed on skids above ground and a sufficient number used to prevent visible deflection in the stored piles. Piles shall be kept clean and fully drained at all times. The method of handling shall be such that no damage will result to the piles.

2.3 PILE CAPACITY

A. The driven compressive capacity of piles shall be equal or greater than the allowable working compressive load capacity, if provided and as stated on the Contract Plans.

2.4 FABRICATION

A. Ends of piles to be machine cut and square making an angle of 90 degrees with the longitudinal axis of the pile.

B. Tolerances:

1. HP piles: Conform to requirements for "HP" shapes as indicated in AISC Manual of Steel Construction.

PART 3 - EXECUTION

3.1 INSPECTION

A. Such services shall be arranged and contracted by the Contractor.

B. Payment to be included in the lump sum price.

3.2 LINES AND LEVELS

A. Complete necessary excavation and furnish lines and levels as required to install piles at their indicated locations.

3.3 DRIVING PILES

A. Driving Equipment:

1. Piles shall be driven with air, hydraulic or diesel powered hammers approved by the Engineer prior to use. The use of drop hammers will not be permitted. The use of steam hammers are not permitted unless approved by the OCTA. The weight of the ram of the hammer shall not exceed 7000 lbs unless approved in writing by the Engineer. The hammer to be used shall have the approval of the Engineer. Steel sheet piles and steel H piles may be driven with vibratory hammers if approved by the Engineer.

2. The hammer shall be operated at all times at pressures and speeds recommended by the manufacturer. If steam or air hammers are used, air compressor capacity shall be adequate to maintain full rated pressure throughout the driving period of any pile. The air compressor shall be equipped with an accurate pressure gage at all times.

3. Pile drivers shall be equipped with leads which are constructed in such a manner as to afford freedom of movement of the hammer and to provide adequate support of the pile during driving. The longitudinal axis of the leads and hammer shall coincide with the longitudinal axis of the pile. Except where piles are driven through water, the leads shall be long enough so that a follower will not be necessary. Where a follower is required for driving piles underwater, one pile in each group of ten shall be long enough to permit driving without a follower. This pile shall be used as a test pile for proper correlation of the follower-driven piles bearing capacity. This pile shall be paid for as a permanent pile and not as a "test pile."

B. Driving Tolerances:

1. Piles for bent construction shall be driven with a degree of accuracy that will permit framing into bents with a minimum of pulling or jacking. Under ordinary conditions, pipe piles, after driving and before framing, shall not vary from the vertical or from the required batter by more than 1/8 inches per foot of pile above finished ground, except that under ordinary conditions, the maximum deviation of the top of the pile from the plan location shall be 2 inches in the direction of the structure centerline and 4 inches in the direction along the centerline of the bend.

2. Foundation piles shall be driven to the vertical or batter line shown on the plans and the top of the completed pile shall not be more than 4 inches in any direction from the position shown on the plans. The center of gravity of the completed pile group shall not vary by more than 3 inches from the center of gravity determined from plan location.

3. If necessary to meet the required tolerances, pilot holes or guide templates may be used. Generally, the diameter of pilot hole shall be as specified in Article 3.3.F.1.

C. Protection of Pile Heads:

1. A steel driving head suitable for the type and size of piles being driven shall be used. Steel bearing piles and steel sheet piles shall be driven with a driving head compatible with the specific pile shape driven.

2. For concrete piles, a cushion block shall be provided between the driving head and the top of the pile. Wood cushion blocks, wire rope mat, belting, or other suitable material shall be used, subject to the approval of the Engineer, to prevent damage to the pile. Cushion blocks shall be changed as necessary to maintain an effective cushion.

D. Pile Damage and Misalignment:

1. Care shall be exercised to avoid damage to piles from overdriving. Any pile that is damaged to the extent that it will not perform its design function; any pile that is driven off location or alignment beyond the allowable tolerances; or cut off below ground line. The Contractor shall cease driving and as directed by the Engineer. If the defective pile condition is due to Contractor's negligence, the cost of replacement and redriving shall be borne by the Contractor.

E. Pile Penetration:

1. All piles shall be the length shown on plans and driven to a depth of penetration that equates to the pile top being the distance shown on the plans below the top of rail.

2. When test piles are required by the contract, the pile lengths and penetration required will be established by the Engineer on the basis of the test pile data. These lengths and elevation of pile tips shall supersede requirements shown on the plans.

F. Pilot Holes:

1. If piles cannot be driven to the required penetration and the material is not suitable for jetting, the Engineer may permit pilot holes to be drilled to facilitate driving. The Engineer will designate the diameter and depth of the drilled hole. Ordinarily, a drill diameter of 12 inches will be satisfactory for timber piles and typically a drill diameter 4 inches less than the diagonal of square piles, 2 inches less than the diagonal of octagonal piles, and 1 inch less than the diameter of round piles will be satisfactory for steel pipe and concrete piles.

2. Where pilot holes are required in granular material which cannot be sealed off by ordinary "mudding" drilling methods, a casing pipe of sufficient diameter shall be placed around the boring device. The casing shall be of sufficient length to extend through the loose materials and shall be held in position until the pilot hole is completed and the pile placed ready for driving.

3. If the hard material extends below the desired penetration, the drilling shall be stopped 1 foot above that level and the pile driven the remaining distance if it is possible to do so without damaging the pile. If the pile does not completely fill the pilot hole, the space between the pile and the wall of the hole shall be filled with dry granular material prior to driving as directed by the Engineer.

4. Pilot holes shall be considered as incidental to piles and no direct payment will be made for this work.

G. Jetting:

1. If piles cannot be driven to the required penetration and the material is not suitable for pilot holes, the Engineer may permit jetting to facilitate drilling.

2. For jetting operations sufficient power shall be provided, in addition to that used for operating the hammer, to supply water volume and pressure sufficient to freely erode the material adjacent to the pile.

3. Jetting shall be stopped a minimum of 2 feet above the desired tip elevation and the final penetration obtained by driving without jetting. In silty soils it is possible that jetting may loosen the soil around piles already driven. If such a condition is considered possible, piles shall be redriven after all jetting within 25 feet has been completed.

4. Jetting shall be considered as incidental to piles, and no direct payment will be made for this work.

H. Shooting Pilot Holes:

1. The use of explosives for drilling of pilot holes will not be permitted.

3.4 OBSTRUCTIONS

A. Should any obstruction including but not limited to boulders, rocks, rubble, fill, existing foundations or timbers be encountered which prevent driving of pile to its required tip elevation or final driving resistance, threaten pile damage or cause pile to drift from required location horizontally or vertically, cease driving and take corrective action as directed by Engineer.

3.5 DAMAGED PILES

A. Replace damaged piles as directed by the Engineer at no additional expense to the SCRRA.

B. Each pile to be free from defects and damage due to construction, fabrication, delivery, installation or other causes.

C. Damaged piles include but not necessarily limited to piles bent, buckled, cracked, with fabrication tolerances beyond those indicated, or with any other defect as determined by the Engineer that would weaken the pile.

D. Should any pile as determined by the Engineer be damaged, be too short to develop required final driving resistance or to reach required tip elevation or otherwise not conform to this Specification Section, withdraw pile and drive another pile in its place.

1. If it is impossible to withdraw damaged or rejected pile, install another pile at location indicated by the Engineer.

2. Revise foundation as directed by the Engineer as required by new location of pile.

3. Additional pile and foundation to be at the Contractor's expense.

E. Correct to satisfaction of Engineer at no additional cost to the SCRRA any pile or other construction that has been damaged by pile installation.

3.6 PILE REPORT

A. Provide Engineer with a copy of a pile report for all driven pile providing the following information:

1. Pile location and number.

2. Date and time driven.

3. Weather.

4. Hammer (manufacturer, model, and serial number).

5. Hammer cushion and cap block.

6. Pile type.

7. Batter.

8. Length of pile (tip to cut off).

9. Description of piles that were rejected (pile number, location, reason for rejection).

10. Cut off elevation.

11. Pile tip elevation.

12. Ground elevation.

13. Length spliced on.

14. Length furnished.

15. Length cut off.

16. Hammer blow count and ram fall for each foot along full length of pile.

    a. Penetration of last foot of driving in blows per inch.

17. Final driving resistance and calculated bearing.

18. Stroke or hammer speed at final resistance.

19. Name of person recording information

20. Pile driving record (shown at the end of the specifications).

PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

A. Piles

1. General:

    a. Piles delivered of the various kinds, sizes, types, and weights will be measured by the lineal foot, except steel sheet piles will be measured by the square foot, of acceptable pile delivered at the site of work and furnished in accordance with the lengths specified on the plans.

    b. Piles driven of the various kinds, sizes, types, and weights will be measured to the nearest 1/10 lineal foot of net length of pile in place, except steel sheet piles will be measured by the square foot of acceptable pile in place, after all cut-offs and build-ups have been made.

c. That portion of piles driven below the elevation required by the plans and piles driven below the elevation at which the minimum penetration and bearing requirements were first obtained will not be measured for payment.

d. Determination of installed pile lengths:

1) Estimated lengths of steel piling shown on the Contract Plans shall be considered as approximate only and as having been determined for design and estimating purposes from the test borings taken at the site.

2) The Contractor shall be entirely responsible for furnishing piles of sufficient lengths to obtain the required penetration and specified bearing for each pile.

4.2 PAYMENT

A. Piles

1. Piles Delivered:

a. Piles delivered will be paid for at the contract unit price per lineal foot or square foot, as designated in Article 4.01, of the various kinds, sizes, types, and weights.

1) The contract unit price shall include full compensation for all work and costs involved for furnishing the piles, unless otherwise specified; unloading, storing, and transporting the piles.

2. Piles Driven:

a. Piles driven will be paid for at the contract unit price per lineal foot or square foot, as designated in Article 4.01, of the various kinds, sizes, types, and weights.

1) The contract unit price shall include full compensation for furnishing all labor, materials, tools, equipment, jetting, pilot holes, and incidentals necessary to drive and cut-off the piles and complete the work. The Contractor shall accept the contingencies of driving greater or lesser length of piles or other changes of features in construction which this may involve, all without modification of the unit price fixed by the Contract.

END OF SECTION

PILE DRIVING RECORD

PROJECT _____ DATE _____

PILE NO. LOCATION

CONTRACTOR _____

FOREMAN _____

OBSERVER

HAMMER TYPE/SIZE _____

CAP/HELMET/CUSION _____

RAM WEIGHT _____

THROTTLE SETTING

GROUND ELEVATION _____

PILE TIP ELEVATION _____

CUTOFF ELEVATION _____

PILE TYPE/SIZE _____

LENGTH _____

BATTER

Depth ft	Blows foot	Stroke	Depth ft	Blows foot	Stroke	Depth ft	Blows foot	Stroke	Depth ft	Blows foot	Stroke
0-1			25-26			50-51			75-76		
1-2			26-27			51-52			76-77		
2-3			27-28			52-53			77-78		
3-4			28-29			53-54			78-79		
4-5			29-30			54-55			79-80		
5-6			30-31			55-56			80-81		
6-7			31-32			56-57			81-82		
7-8			32-33			57-58			82-83		
8-9			33-34			58-59			83-84		
9-10			34-35			59-60			84-85		
10-11			35-36			60-61			85-86		
11-12			36-37			61-62			86-87		
12-13			37-38			62-63			87-88		
13-14			38-39			63-64			88-89		
14-15			39-40			64-65			89-90		
15-16			40-41			65-66			90-91		
16-17			41-42			66-67			91-92		
17-18			42-43			67-68			92-93		
18-19			43-44			68-69			93-94		
19-20			44-45			69-70			94-95		
20-21			45-46			70-71			95-96		
21-22			46-47			71-72			96-97		
22-23			47-48			72-73			97-98		
23-24			48-49			73-74			98-99		
24-25			49-50			74-75			99-100		

REMARKS: _____

TIME OF START _____ TIME OF STOP _____

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SECTION 34 80 23

SUBDRAINAGE SYSTEM FOR RAILROAD BRIDGES AND RETAINING WALLS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes Foundation Drainage System for retaining walls and gravity block retaining walls.

B. Related Specification Sections include but are not necessarily limited to:

1. Division 00 - Bidding Requirements, Contract Forms, and Conditions of the Contract.

2. Division 01 - General Requirements.

3. Section 31 20 00 - Earthwork.

1.2 REFERENCES

A. ASTM International (ASTM):

1. D3034, Standard Specification for Type PSM Poly (Vinyl Chloride) (PVC) Sewer Pipe and Fittings.

2. D3212, Standard Specification for Joints for Drain and Sewer Plastic Pipes Using Flexible Elastomeric Seals.

3. F405, Corrugated Polyethylene (PE) Tubing and Fittings.

4. F667, Large Diameter Corrugated Polyethylene Pipe and Fittings.

5. F758, Smooth-Wall Poly (Vinyl Chloride) (PVC) Plastic Underdrain Systems for Highway, Airport, and Similar Drainage.

6. F949, Poly (Vinyl Chloride) (PVC) Corrugated Sewer Pipe with a Smooth Interior and Fittings.

1.3 SYSTEM DESCRIPTION

A. Extent: Furnish and install foundation drainage as a complete system as shown.

B. Outlet Connections: Foundation pipe shall be terminated as shown on the Drawings.

C. Drainage Lines: Construct drainage lines of perforated pipe.

D. Outlet Line: Construct outlet lines of closed-joint non-perforated pipe.

1.4 SUBMITTALS

A. See Division 01 for requirements for the mechanics and administration of the submittal process.

B. Samples:

1. Materials:

a. Two randomly selected samples of each type of pipe and fitting, prior to delivery of materials to the site.

C. Certificates:

1. Materials:

a. Certifications from the manufacturers attesting that materials meet Specification requirements.

b. Certifications are required for drain pipe, drain tile, fittings and filter fabric.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Delivery and Storage:

1. Inspect materials delivered to site for damage; unload, and store with minimum handling.

2. Do not store materials directly on the ground.

3. The inside of pipes and fittings shall be free of dirt and debris.

4. Install plastic pipe within 6 months from the date of manufacture unless otherwise approved.

B. Handling:

1. Handle materials in such a manner as to deliver to the trench in sound undamaged condition.

2. Pipe shall be carried and not dragged to the trench.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Plastic Pipe: Plastic pipe shall contain ultraviolet inhibitor to provide protection from exposure to direct sunlight.

B. Polyvinyl Chloride (PVC) Pipe: ASTM F758, Type PS 46, ASTM D3034, or ASTM F949 with a minimum pipe stiffness of 46 psi.

C. Corrugated Polyethylene (PE) Pipe and Fittings:

1. Use ASTM F405 for pipes 3 to 6 inches in diameter inclusive, ASTM F667 for pipes 8 to 24 inches in diameter.

a. Fittings shall be manufacturer's standard pipe and shall conform to the indicated Specification.

D. Pipe Perforations:

1. Water inlet area shall be a minimum of 0.5 SQ in/lf.

2. Manufacturer's standard perforated pipe which essentially meets these requirements may be substituted with prior approval of the Engineer.

a. Circular Perforations in Plastic Pipe:

1) Circular holes shall be cleanly cut not more than 3/8 inches or less than 3/16 inches in diameter and arranged in rows parallel to the longitudinal axis of the pipe.

2) Perforations shall be approximately 3 inches OC along rows.

3) The rows shall be approximately 1-1/2 inches apart and arranged in a staggered pattern so that all perforations lie at the midpoint between perforations in adjacent rows.

4) The rows shall be spaced over not more than 155˚ of circumference.

5) The spigot or tongue end of the pipe shall not be perforated for a length equal to the depth of the socket, and perforations shall continue at uniform spacing over the entire length of the pipe.

b. Slotted Perforations in Plastic Pipe:

1) Circumferential slots shall be cleanly cut so as not to restrict the inflow of water and uniformly spaced along the length and circumference of the tubing.

2) Width of slots shall not exceed 1/8 inches nor be less than 1/32 inches.

3) The length of individual slots shall not exceed 1-1/4 inches on 3 inches dia. tubing, 10 percent of the tubing inside nominal circumference on 4 to 8 inches dia. tubing, and 2-1/2 inches on 10 inches dia. tubing.

4) Rows of slots shall be symmetrically spaced so that they are fully contained in 2 quadrants of the pipe.

5) Slots shall be centered in the valleys of the corrugations of profile wall pipe.

E. Fittings:

1. Fittings shall be of compatible materials for pipe, of corresponding weight and quality, and as specified herein.

F. Bedding and Pervious Backfill for Foundation Drains:

1. Bedding and pervious backfill shall be in accordance with Section 31 20 00.

G. Protective Covering for Pervious Backfill:

1. Protective covering shall be building paper.

H. Filter Fabric:

1. Nonwoven polypropylene fabric.

2. Not less than 4 oz/sy.

3. Resistant to the chemical actions of the soil and water and non-biodegradable.

4. Fabric to prevent the migration of soil particles into the subdrain while allowing the free flow of water from the subsoil to the subdrain pipe.

I. Geocomposite Wall Drain:

1. Geocomposite wall drain shall consist of a manufactured core not less than 0.25 inches thick nor more than 2 inches thick with one or both sides covered with a layer of filter fabric.

a. The drain shall produce a flow rate of at least 2.0 gal per minute per foot of width at a hydraulic gradient of 1.0 and a minimum externally applied pressure of 3,500 psf.

2. Filter Fabric for the geocomposite drain shall conform to the provisions for Filter Fabric in this Specification.

3. The manufactured core shall be either a preformed grid of embossed plastic, a mat of random shapes of plastic fibers, a drainage net consisting of a uniform pattern of polymeric strands forming 2 sets of continuous flow channels, or a system of plastic pillars and interconnections forming a semirigid mat.

4. The core material and filter fabric shall be capable of maintaining a drainage void for the entire height of the geocomposite drain.

   a. The filter fabric shall be integrally bonded to the core material.

   b. Core material manufactured from impermeable plastic sheeting having non-connecting corrugations shall be placed with the corrugations approximately perpendicular to the drainage collection system.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Trenching and Excavation:

1. Perform required trenching and excavation in accordance with Section 31 20 00.

   a. Keep trenches dry during installation of drainage system.

   b. Changes in direction of drain lines shall be made with 1/8 bends.

   c. Use wye fittings at intersections.

B. Bedding:

1. Place graded bedding, minimum 6 inches in depth, in the bottom of trench for its full width and length compacted as specified prior to laying of foundation drain pipe.

2. Each section shall rest firmly upon the bedding, through the entire length, with recesses formed for bell joints.

3. Except for recesses for bell joints, the bedding shall fully support the lower quadrant of the pipe.

C. Pipe Laying:

1. Lay drain lines to true grades and alignment with a continuous fall in the direction of flow.

2. Bells and grooves of pipe sections shall face upgrade.

3. Clean interior of pipe thoroughly before being laid.

4. When drain lines are left open for connection to discharge lines, the open ends shall be temporarily closed and the location marked with wooden stakes.

5. Perforated pipe shall be laid with perforations facing down.

6. Any length that has had its grade or joints disturbed shall be removed and relaid at no additional cost to the SCRRA.

7. Perforated corrugated polyethylene drainage tubing and plastic piping shall be installed in accordance with Manufacturer's Specifications and as specified herein.

8. Tubing and piping with physical imperfections shall not be installed.

D. Jointing:

1. Perforated pipe:

a. Perforated types of drain pipes shall be laid with closed joints.

2. Non-perforated Drain Tile:

a. Non-perforated and plain-end drain tile shall be laid with 1/8” to ¼” open joints.

b. Open joints shall be covered or wrapped.

c. Covered joints shall have one thickness of the cover material placed over the joint.

d. Material shall overlap the joint not less than 4 inches on each side and cover the tile for not less than the upper half or more than the upper two-thirds of the circumference of the tile.

e. Strips of wire cloth wrapping material 3 inches wide shall be used for wrapped joints, with ends fastened together.

3. PVC pipe:

a. PVC pipe joints shall be in accordance with ASTM D3034, ASTM D3212, or ASTM F949.

4. Perforated Corrugated Polyethylene Pipe:

a. Perforated corrugated polyethylene pipe shall be installed in accordance with Manufacturer's Specifications and specified herein.

b. No more than 5 percent stretch in a section will be permitted.

E. Outlet Lines:

1. The outlet end of drain lines connecting with an open gutter or outfall shall be covered with a removable wire basket of 16-mesh copper or bronze wire cloth fastened with brass or wire straps.

3.2 BACKFILLING

A. After joints and connections have been inspected and approved, place the specified pervious backfill material a minimum width of 6 inches on each side of the pipe and 12 inches above the top of the pipe.

1. Place the backfill preventing displacement of or injury to the pipe or tile.

2. Place a protective covering, as specified in Section 31 20 00, over the pervious backfill for the full width of the trench before regular backfill is placed.

3. Compact backfill as specified in Section 31 20 00.

3.3 TESTS

A. Pipe Tests:

1. Strength tests of pipe shall conform to field service test requirements of the ASTM Specification or AASHTO Specification covering the product (See paragraph 2.1. in this Specification Section).

PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

A. Subdrainage System for Retaining Walls, Concrete Retaining Wall, and Gravity block retaining wall will be measured by the unit or fraction thereof furnished and completed in accordance with the Contract Documents and as measured by the Engineer. The quantities as contained on the Schedule of Quantities and Prices, or approved schedule of values, as applicable, as derived from the plans will be used as the basis for this measurement.

4.2 PAYMENT

A. Subdrainage system for will be paid at the Linear Feet unit price.

1. The contract linear feet price paid for subdrainage system for Retaining Walls, Concrete Retaining Wall, and Gravity block retaining wall shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals, and for doing all work involved in constructing the subdrainage system, complete in place, as shown on the Drawings, as specified in this Specification Section, and as directed by the Engineer.

2. Perforated drain pipe, non-perforated drain pipes, all connections and closures, joints, elbows, cleanouts and outlet hardware, concrete drainage swale or gutter, utility excavation and backfill and other associated material and incidentals and installation thereof will be considered part of the subdrainage system and full compensation therefore will be considered as included in the contract unit price paid for subdrainage system.

END OF SECTION

ORANGE COUNTY TRANSPORTATION AUTHORITY

Construction of the Right of Way Slope Stabilization Project

Project Specifications

Volume 2 of 2

ORANGE COUNTY TRANSPORTATION AUTHORITY

LOSSAN ROW SLOPE STABILIZATION PROJECT

Exhibit B

SCRRA REFERENCE DOCUMENTS

- SCRRA Right of Way Encroachment Process
- General Safety Regulations for Third Party Construction and Utility Workers on SCRRA Property
- SCRRA FORM No. 5 “Indemnification and Assumption of Liability Agreement”
- SCRRA FORM No. 6 “Temporary Right-of-Entry Agreement”
- SCRRA Schedule of Fees
- SCRRA Track Maintenance, Right of Way and Structures, Engineering Instructions
- SCRRA FORM No. 37 “Rules and Requirements for Construction on SCRRA Property”
- Site Specific Work Plan (SSWP)
- SCRRA Excavation Support Guidelines
- Train Traffic Density Exhibit

METROLINK

SCRRA
RIGHT-OF-WAY ENCROACHMENT PROCESS

APRIL 2012

RIGHT-OF-WAY ENCROACHMENT PROCESS

1.0 General

All work activities within the SCRRA operating corridor and right-of-way, or work activities that affect the operation or safety of trains must be reviewed and approved by SCRRA. Typical work activities reviewed and approved by SCRRA include pipelines (water, sewer, gas, oil, stormwater), wirelines (electrical, traffic, fiber optic cables), surveying, filming, operation and maintenance activities, and house moving or movement of oversized loads across railroad tracks.

SCRRA instructions, standards and forms are available on its website at www.metrolinktrains.com (About Us, Engineering and Construction). Links has been provided for documents necessary for this application in Section 14.0, Application Links, Page 6.

2.0 System Map

SCRRA (aka Metrolink) is a five-county joint powers authority, created pursuant to California Public Utilities Code Section 130255 and California Government Code Section 6500 et seq., to plan, design, construct, and then maintain and administer the operation of the regional passenger rail lines serving the counties of Los Angeles, Orange, Riverside, San Bernardino, and Ventura. SCRRA plans, designs, builds, operates, and maintains a commuter rail system in the five-county area on rail rights-of-way owned by the member agencies. Two major freight rail carriers, BNSF Railway Company (BNSF) and Union Pacific Railroad (UPRR), and the inter-city passenger carrier Amtrak, operate on SCRRA tracks through shared track agreements. SCRRA in turn operates on tracks owned by BNSF, UPRR, and North County Transit District (NCTD). Figure 1 shows the Metrolink System including stations and connecting rail transit lines.

3.0 Submittal

The general application process is shown on the Encroachment and Right-of-Entry Submittal and Approval Process Chart, Table 1 and Encroachment and Right-of-Entry Procedures Flow-Chart, Table 2.

2.0 Application

The application package consist of a written statement, Application Form, plan and profile drawings, schedule, existing license agreement (if applicable), and application processing fees. The Applicant will submit these documents to SCRRA review and approval. SCRRA will review the submittal to make sure it meets all SCRRA requirements. SCRRA will send comments to Applicant if necessary to revise the application and drawings. Once the submittal is acceptable, SCRRA will either request a license agreement from Member Agencies for permanent facilities or ask the Applicant to submit construction related documents.

The Applicant will complete the interactive Application Form included on SCRRA's website. The Application Form can be directly sent to SCRRA representative by e-mail after completion.

3.0 Plans and Drawings

Plans and profiles will be submitted with each request. The plans should be clear, concise, and accurately reflect the design of the project that meets SCRRA standards and requirements.

Drawing submittals shall include typical sections, plans, key maps, profiles, and cross sections. Drawings will be prepared on 11" x 17" sheets and PDF files shall be submitted to SCRRA. Drawings scale shall be 1"=200' for developed and undeveloped areas, 1"=100' in constrained urban areas and 1'=50' for stations and crossings.

4.0 SCRRA Review and Fees

SCRRA reviews application and plans for compliance to technical and safety regulations, including location of work, horizontal and vertical clearances to tracks, shoring, jacking and false work, any issue determined to impact safety or railroad operations, maintainability, drainage impacts, access to member agency property, compatibility with future plans for rail improvements or use of rail roadway, and existing underground railroad facilities.

All encroachment requests require fees to be submitted by the Applicant. There are two types of fees. There is an initial non-refundable review fees which will be submitted for the review and approval of the initial submittal. The second is a deposit fees for signal and communication cable locations, safety training and flagging services. The construction services deposit will be an estimate only. The Applicant shall reimburse SCRRA the actual cost and expense incurred by SCRRA and its contractors and consultants for all services and work performed in connection with the project, including an allocated overhead representing SCRRA's costs for administration and management. Prior to approval of construction and prior to issuance of right-of-entry agreement, the Applicant will provide approximate number of days of construction and flagging services to SCRRA. SCRRA will estimate the deposit required from Applicant for signal and communication cable locations, safety training and flagging services.

Please refer to SCRRA's Schedule of Fees for detail on fee schedule. All fees payments are to be made by check payable to, "Southern California Regional Rail Authority".

SCRRA will charge the Applicant four hours minimum for the mandatory safety training class and for other services four hours or less in duration. SCRRA will charge the Applicant for eight hours minimum if the Applicant cancels SCRRA services after SCRRA Railroad Employee or SCRRA Safety Training Officer is on site on the day of the appointment.

5.0 Contacts

All submittals to SCRRA shall be addressed to the following:

Right-of-Way Encroachments Coordinator
Southern California Regional Rail Authority
279 E Arrow Hwy, Suite A
San Dimas, California 91773
Phone: (909) 394-3418

6.0 Process Time

The time period for review and approval of all encroachment activities is estimated as shown below. Every effort will be made to complete the process in a timely manner.

ITEM	TIME (DAYS)
Initial Application Process	
Application Processing	5-10
Review and Approval by SCRRA	10-30
Resubmittal by Applicant	10-20
Resubmittal Review and Approval by SCRRA	5-30
License Agreement Process	
Issuance of Real Estate Agreement by Member Agency	30-90
Construction Submittal Process	
Review and Approval by SCRRA	5-10

7.0 Licensing Process

Member Agency real estate department will review applications for use of the right-of way. Right-of-Entry agreement cannot be granted by SCRRA until Member Agency real estate agreement is complete.

Generally, agreement processing time will be between 30 - 90 days. Please allow sufficient time for document handling to desired construction date. Before construction begins, real estate agreements must be executed by the Applicant and the Member Agency. License fees will be submitted to the Member Agency directly. The application processing and construction services deposit does not include the license fees.

The member agency contacts are as shown below:

Member Agency	Contacts
Metro	Manager, Property Management Los Angeles County Metropolitan Transportation Agency (Metro) P. O. Box 194 (1 Gateway Plaza, 14th Floor) Los Angeles, CA 90053 Phone:(213) 922-2435
OCTA	Right of Way Administrator Orange County Transportation Authority (OCTA) P. O. Box 14184 (550 South Main Street) Santa Ana, CA 92613-1584 Phone:(714) 560-5737

RCTC	Assistant Director, Planning & Programming Riverside County Transportation Commission (RCTC) 3560 University Avenue, Suite 100 Riverside, CA 92501 (909) 787-7924
SANBAG	Deputy Executive Director San Bernardino Associated Governments (SANBAG) 420 N. Arrowhead Avenue San Bernardino, CA 92401 (909) 884-8276
VCTC	Executive Director Ventura County Transportation Commission (VCTC) 950 County Square, Suite 207 Ventura, CA 93003 (805) 642-1591

8.0 Insurance Requirements

SCRRA requires that insurance coverage be provided prior to any entry and/or work activity within the railroad corridor for permanent and temporary encroachments. The requirements and insurance limits are shown on the SCRA's Temporary Right-of-Entry Agreement, SCRRA Form No. 6. Railroad Protective Liability Insurance, in addition to general liability insurance is required for permanent and temporary encroachments in the right-of-way.

9.1 Flagging Services

The Applicant shall request and arrange for flagging services from SCRRA in the following circumstances:

a. When the work activities are within the right-of-way of SCRRA.
b. When the work activities are located over or under a track or tracks.
c. When cranes, pile drivers, drill rigs, concrete pumps, or similar equipment positioned outside of the right-of-way could foul the track in the event of tip-over or other catastrophic occurrence.
d. When any excavation is performed below the elevation of the track sub-grade, or track or other railroad facilities may be subject to movement or settlement.
e. When work in any way interferes with the safe operation of trains at timetable speeds.
f. When street construction and maintenance activities, located within the right-of-way or in the vicinity of the highway-rail grade crossing, requiring temporary work area traffic control, which may affect or create unsafe conditions for employees, public, trains and vehicles.

Flagging service cannot be provided by any personnel other than SCRRA authorized consultant/contractor. The Applicant will contact SCRRA's consultant/contractor for at (714) 920-9037 to arrange for flagging services after approval of construction agreement by SCRRA. Flagging service is dependent on the Employee-In-Charge (EIC) availability and may require a minimum of fifteen working days prior to beginning work. Prior notification of flagging services does not guarantee the availability of the EIC for the proposed date of work.

10.0 Safety Training

The Applicant and its contractors are required to attend a SCRRA Safety Orientation Class prior to receiving permission to enter the right-of-way. The Applicant shall notify SCRRA's consultant/contractor for safety and flagging services at 1-877-452-0205 to arrange for third party safety training. Allow 24 to 72 hours from the request for safety training to arrange the training. Upon completion of safety training, the Applicant shall notify SCRRA's consultant/contractor at (714) 920-9037 a minimum of fifteen (15) working days prior to beginning work on the Right-of-Way and secure any protection SCRRA deems necessary. This prior notification does not guarantee the availability of on track safety protection for the proposed date of construction.

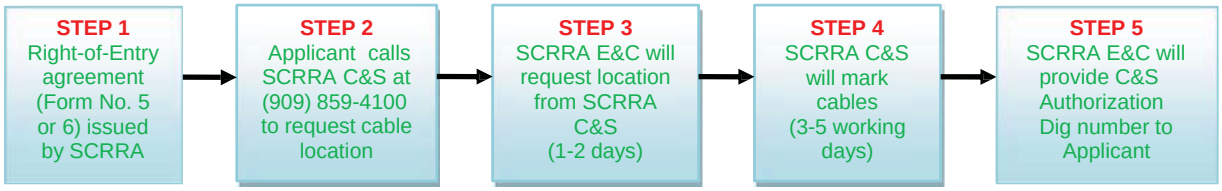
The Applicant and/or the Contractor shall follow SCRRA rules and regulations, addressed in "General Safety Regulations for Third Party Construction and Utility Workers on SCRRA Property" (available of SCRRA website).

11.0 SCRRA Cable Marking and Utilities

The Applicant or the Contractor is responsible for the location and protection of any and all surface, sub-surface, and overhead utilities and structures. Approval of application by SCRRA does not constitute a representation as to the accuracy of completeness of location or the existence or non-existence of any utilities or structures within the limits of this project.

Before excavating, the Applicant must determine whether any underground pipe lines, electric wires, or cables, including fiber optic cable systems, are present and located within the Project work area by calling the Southern California Underground Service Alert at 811. SCRRA is not a member of Underground Service Alert (DIGALERT) and SCRRA signal and communication lines must be located by contacting the SCRRA Signal Department.

SCRRA is not a member of DIGALERT. The Applicant shall call SCRRA's Signal Department at (909) 859-4100 a minimum of five days prior to beginning construction to mark signal and communication cables and conduits. To assure cables and conduits have been marked, no work may proceed until you have been provided with an SCRRA dig number. The process to mark SCRRA cables is shown below.



In case of signal emergencies or grade crossing problems, the Applicant shall call SCRRA's 24-hour signal emergency number 1-888-446-9721.

12.1 Construction

To comply with Federal requirements, the Applicant's person in charge must keep a copy of SCRRA's agreement at the job site at all times during the encroachment on the Property. Failure to provide necessary information and documents, failure to obtain and produce SCRRA agreements (including not having SCRRA agreement on the job site), or violation of SCRRA rules and regulations will result in the removal of the Applicant, the Contractor, their employees and equipments from the right-of-way.

The Applicant and/or the Contractor shall follow SCRRA rules and regulations, addressed in "Rules and Requirements for Construction on Railway Property".

All persons working on, over, or under the SCRRA right-of-way must be equipped with personal protective equipment meeting applicable OSHA and ANSI specifications. Employees, contractors, subcontractors, suppliers, agents or invitees of Applicant shall possess the personal protective equipment, including safety glasses with side shields, helmets (hard hats), safety shoes with hardened toes, high visibility ORANGE (and only orange) retro-reflective work wear, and SCRRA railroad safety training card.

12.2 Shoring

Shoring, cribbing and sheeting designed to support excavations or embankments shall be designed to support all lateral forces caused by the earth, vehicular traffic, construction equipment, temporary and permanent structures, and other surcharge loads in the vicinity of the excavation. Support or shoring located on the SCRRA right-of-way, or within the zone of influence from railroad loading, shall conform to the SCRRA Excavation Support Guidelines (available of SCRRA website). Designs for all temporary structures supporting tracks, or excavations adjacent to the tracks and within the zone of influence from railroad loading, shall include railway surcharge loading imposed by a Cooper E-80 live load. Any excavation adjacent to track must be covered and provide a uniform path and include with standard handrails when work is not actively underway.

12.3 Site Specific Work Plan (SSWP)

The details of each construction activity affecting the operations, facilities, or right-of-way of SCRRA, or the operations or facilities of other railroads using the right-of-way, must be described in a Site Specific Work Plan (SSWP) prepared by the Applicant and submitted for review by SCRRA. SSWP requirements are available on SCRRA website.

13.0 As-Built Drawings

The Applicant and/or the Contractor shall submit "AS-BUILT" drawings to SCRRA upon completion of the construction.

14.0 Application Links

Right-of-Way Encroachment Application Form

http://www.metrolinktrains.com/pdfs/EngineeringConstruction/Right_of_Way_Encroachment_Application.pdf

Schedule of Fees

http://www.metrolinktrains.com/pdfs/EngineeringConstruction/SCRRA_ROE_Schedule_of_Fees.pdf

SCRRA Form No. 4 – Agreement for Moving Oversize Loads

http://www.metrolinktrains.com/pdfs/EngineeringConstruction/SCRRA_Form_No_4.pdf

SCRRA Form No. 5 – Indemnity and Assumption of Liability Agreement

http://www.metrolinktrains.com/pdfs/EngineeringConstruction/SCRRA_Form_No_5.pdf

SCRRA Form No. 6 – Temporary Right-of-Entry Agreement

http://www.metrolinktrains.com/pdfs/EngineeringConstruction/SCRRA_Form_No_6_Exhibit.pdf

SCRRA Form No. 37 – Rules and Requirements for Construction

http://www.metrolinktrains.com/pdfs/EngineeringConstruction/SCRRA_Form_No_37.pdf

Site Specific Work Plan (SSWP)

http://www.metrolinktrains.com/pdfs/EngineeringConstruction/Site_Specific_Work_Plan.pdf

Train Traffic Density Exhibit

http://www.metrolinktrains.com/pdfs/EngineeringConstruction/Exhibit_24A_9_2009_Weekday_Train_Density.pdf

General Safety Regulations for Third Party Construction

http://www.metrolinktrains.com/pdfs/EngineeringConstruction/Rules_Regulations_Third_Party_Contractors_2009.pdf

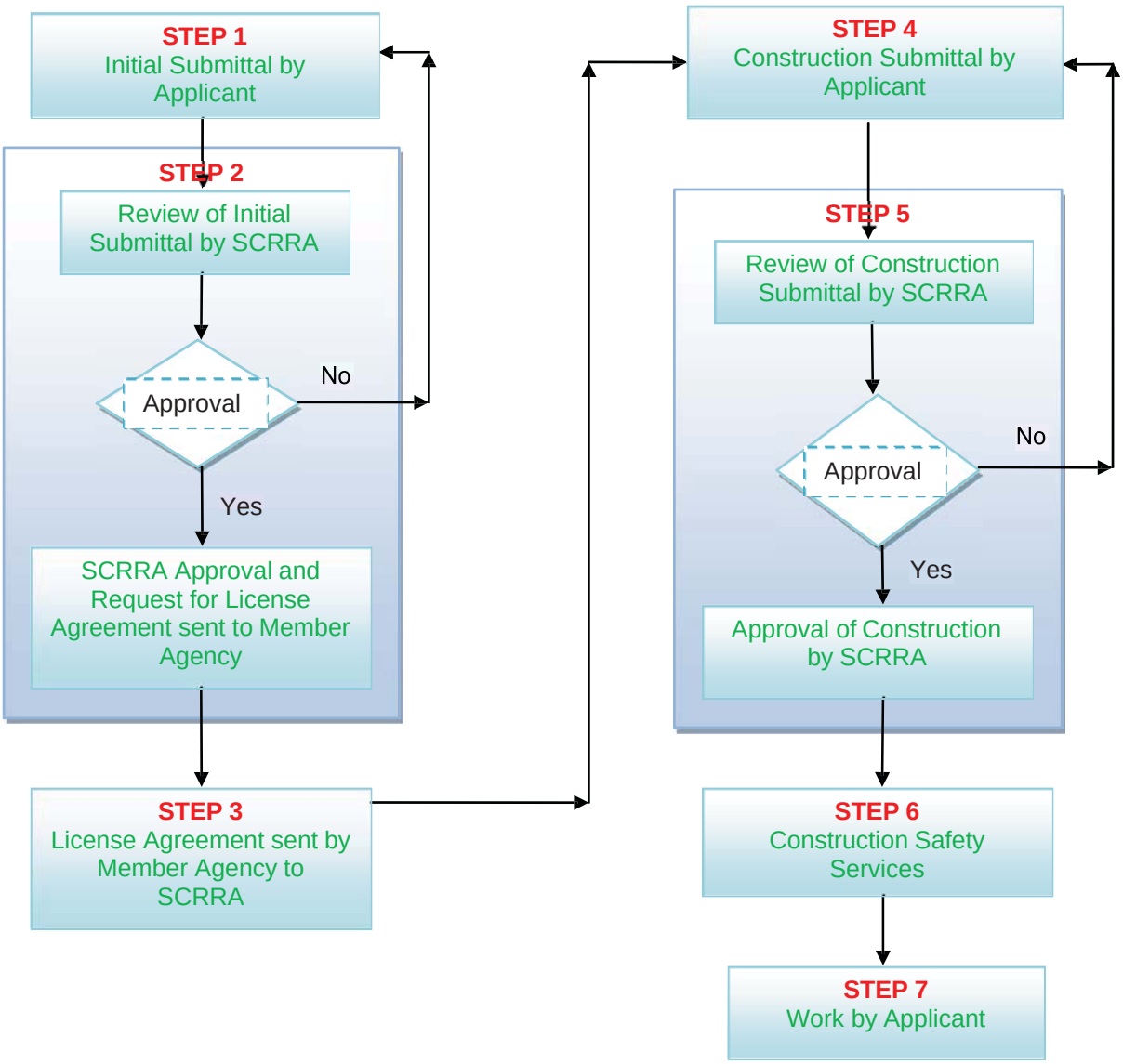
Metrolink System Map
Figure 1

Encroachment and Right-of-Entry Submittal and Approval Process Chart Table 1

Item Description	Permanent Facility	Temporary Encroachment	Survey and Filming	Operation & Maintenance	House Moving
Initial Submittal by Applicant					
A written statement stating reason, location and duration for encroachment	X	X	X	X	
SCRRA Application Form	X	X	X	X	
Plan and profile drawings	X	X	X	X	
Schedule	X	X	X	X	X
Existing License Agreement				X	
Application Processing Fee to SCRRA	X	X	X	X	X
Review and Approval of Initial Submittal by SCRRA					
File and Project Number by SCRRA	X	X	X	X	X
SCRRA will verify compliance with SCRRA Engineering Standards, Guidelines and Design Manuals Requirements	X	X	X	X	X
Comments will be provided to the applicant, if necessary	X	X	X	X	X
License Agreement by Member Agency					
SCRRA will notify the Applicant of SCRRA's approval	X				
SCRRA will notify the Member Agency to prepare a real estate agreement (license, lease, easement, or permit)	X				
Issuance of real estate agreement by Member Agency	X				
Construction Submittal by Applicant					
SCRRA Form No. 4					X
SCRRA Form No. 5			X		
SCRRA Form No. 6	X	X			
Insurance certificates as described in the Temporary Right-of-Entry agreement, SCRRA Form No. 6	X	X			
Site Specific Work Plan (SSWP)	X	X		X	
Temporary Traffic Control Plans	X	X		X	
Deposit Fees for Signal & Communication Cable Locations, Safety training, and flagging Services	X	X	X	X	X
Review and Approval of Construction Submittal by SCRRA					
Construction Safety Services					
Safety training request by Applicant	X	X	X	X	
SCRRA Dig Number is obtained by Applicant	X	X		X	
Signal and Communication Cable Locations	X	X		X	
Flagging Services	X	X	X	X	X
Work by Applicant					

Legend: X = Information to be provided by the Applicant

Encroachment and Right-of-Entry
Procedures Flow-Chart
Table 2



Emergency Information Form

Work Location (Subdivision & Milepost)

_____

_____

Nearest highway-grade crossing or if inaccessible from roadway nearest city and directions._____

_____

Nearby hospital and directions from job site_____

_____

Nearest Emergency Services:

Ambulance: _____

Fire: _____

Police: _____

Notify SCRRA Contact: _____

Contact Number: _____

Emergency Number

Grade Crossing Hotline
Metrolink Operations Center (MOC)
Signals Emergency **888-446-9721**

METROLINK

General Safety Regulations for Third Party Construction and Utility Workers on SCRRA Property

2009

Acknowledgement of Receipt

General Safety Regulations for Third Party Construction and Utility Workers on SCRRA Property

Southern California Regional Rail Authority (SCRRA) is a joint powers authority of five county transportation authorities, organized under the provisions of the Joint Powers Act, Section 6500 et seq. of the California Government Code and Section 130255 of the California Public Utilities Code. SCRRA builds, maintains, and operates the Metrolink commuter railway system within Los Angeles, Orange, Riverside, San Bernardino and Ventura Counties.

The rules published herein are for the benefit of third party contractor personnel.

Third party contractor employees must be knowledgeable of and obey these rules and instructions at all times. If in doubt as to the meaning or intent, the employee is responsible for asking for an explanation from the supervisor or SCRRA. Violation of any of these safety rules subjects the third party contractor to work stoppage until compliance is reached.

These rules and instructions supersede any previous safety rules and regulations governing third party contractors working on SCRRA property.

The intention of these rules is to advise third party contractor personnel working on or adjacent to the SCRRA property on non railroad work that safety is of the utmost importance. For this reason all third party contractor personnel working on or about SCRRA property must participate in Third Party Construction and Utility Workers Safety Training Program and pass a post test with 80% or better prior to beginning work. In addition, all Third Party Construction and Utility Workers must have a copy of the "General Safety Regulations for Third Party Construction and Utility Workers on SCRRA Property" and understand their application.

Have a copy of these rules and regulations in their possession while on SCRRA property.

Immediately call to the attention of a supervisor any action not in compliance with these rules and regulations.

Attend job briefings prior to beginning work, change in work, and/or fouling the track. A job briefing will be considered complete when each employee has acknowledged understanding of the On-Track Safety Procedures and instructions by signing the Job Briefing Form.

SCRRA will regularly make observations and advise the contractor to take necessary action(s) to ensure compliance with the "General Safety Regulations for Third Party Construction and Utility Workers on SCRRA Property".

_____

Chief of Safety and Security Officer

This is to certify that I have a copy of "General Safety Regulations for Third Party Construction and Utility Workers on SCRRA Property" and I understand and agree to abide by the Rules and Regulations outlined above.

Print Employee_____ **Signature**_____

Company_____ **Date**_____ **Sticker**_____

The rules and regulations published herein are for the benefit of third party contractor personnel and others working on or adjacent to the SCRRA property on non railroad work.

Prior to beginning work all third party contractor personnel working on or about SCRRA property must participate in a Third Party Construction and Utility Workers Safety Training Program and pass the post test with a score of 80% or better.

These “General Safety Regulations for Third Party Construction and Utility Workers on SCRRA Property” must be in your possession any time you are on the right of way.

Third Party Contractor’s Safety Training can be requested and scheduled by dialing the toll free number at (877) 452-0205.

Table of Contents

General Responsibilities and Safety

Overview
These safety regulations govern activities while on SCRRA property whether on or off duty. Any work performed without obtaining proper authorization or in non-compliance with these rules will permanently jeopardize your ability to access railroad right-of-way.

Employee in Charge (EIC)
Duties and Responsibilities: On-Track Safety

SCRRA EICs are trained and qualified and are knowledgeable about the unique characteristics of SCRRA territory. No work may begin until the EIC or Watchman is present at work site and proper protection is being provided.

The EIC will provide job briefings and protection to assure the contractor a safe work environment and the safe passage of trains. The SCRRA EIC has the authority to temporarily or permanently halt work or to remove contractor employee(s) from the right-of-way in order to assure the work is conducted safely. In all cases the contractors' employees must comply immediately with the instructions of the EIC.

Appeals: Right to Challenge
Third party contractor employees may, during the job briefing process, request clarification of the protection against trains being provided by the EIC, unless under watchman protection you may challenge the role of the watchman. If the third party contractor employee does not believe that the protection against trains is sufficient, the employee may at any time, in good faith, challenge the EIC's form of protection and must remain clear of all tracks until the challenge is resolved. The EIC, Contractor Supervisor and the SCRRA Supervisor must resolve the challenge before work can begin.

Appeals: EIC Decisions
If the third party contractor has concerns about instructions from the EIC, the contractor and contractor employees must immediately comply with the EIC's instructions. After employees are clear of tracks, the contractor may contact the EIC's supervisor to resolve any concerns. In other words, "comply, and then complain."

Third Party Training Program

Annually thousands of workers access the SCRRA rights-of-way. Each worker must be qualified in "General Safety Regulations for Third Party Construction and Utility Workers on SCRRA Property" each year.

Upon completion of the program and passing of the post test, each student will be given a sticker to be placed on their hard hat. The hard hat sticker will expire on December 31st of the calendar year following your training. You must take the Third Party Construction and Utility Worker Safety Training Program course once a year in order to remain a qualified Third Party Contractor on SCRRA property. The hard hat sticker is a proof of training; it is not a right of entry permit.

Permission to enter the SCRRA right-of-way must be obtained through contact with SCRRA staff. These rules apply to all types of work INCLUDING pre-plan work. All third party contractors working on or adjacent to SCRRA property must have, the SCRRA right-of-entry approved forms, a current SCRRA safety sticker on their hard hat, and an approved picture ID, such as current valid driver license, and/or other employer issued ID with them at all times when on property.

Additionally, all individuals working or otherwise entering SCRRA rights-of-way must have a current copy of General Safety Regulations for Third Party Construction and Utility Workers on SCRRA Property.

Personal Protective Equipment (PPE)

All employees working on SCRRA property are required to wear the following protective equipment (except in offices and motor vehicles):

1. Hard hats that meet the requirements of ANSI Z89.1 or ANSI Z89.2, as specified by CAL/OSHA and /or Fed/OSHA must be worn. Metallic hard hats shall not be worn on any SCRRA project

2. Eye protection that meets the requirements of ANSI Z87.1 is required on SCRRA property. Eye protection with side shields which meets the requirements of ANSI Z89.1 is required for those employees or contractors falling under 49CFR 214.

3. Safety vest with retro-reflective tape for night work or at railroad crossing must be worn. A safety T-shirt, sweatshirt or jacket may be worn during the day.

Proper attire includes:

- Employees must wear a suitable shirt that provides protection from sun insects, abrasions or scratches. Shirts must have a least quarter-length sleeves and cover the back, shoulders, chest and abdomen. Clothing must not interfere with vision or hearing and must allow free use of hands and feet. Long pants are a must on SCRRA property.

PPE continued

- Loose or ragged clothing must not be worn at anytime.
- Jewelry must not be worn when wearing of such objects presents a hazard.

Appropriate footwear includes:

- Safety boots; soles must give good traction on ballast and be puncture resistant.
- Open toed, lounging or jogging-type shoes, unlaced shoes or unbuckled overshoes, badly worn with loose sole shoes must not be worn on SCRRA property.

Job Briefings

Job briefings are meetings among all of the employees who are involved or will be involved in a particular task or job at the same work site. The EIC or watchman is responsible for conducting a job briefing before any task is performed.

All information related to On-Track-Safety must be given in the job briefing to any worker who will enter railroad property. The minimum On-Track Safety information at each job briefing must include:

- Designation of the EIC or Watchman
- Type of track protection provided by the EIC
- Time and limits of the protection
- Track(s) that may be fouled
- Status of other track(s) at worksite,
- A designated place of safety where workers clear for trains
- A designated assembly place in case of an emergency
- Designated work zones
- Specific job(s) to be done or equipment moves(s) to be made
- Responsibilities of each worker
- Method of notification of the approach of trains (i.e. air horn, “hot rail”.)
- Further instructions may include an unusual or a specific reminder due to a hazardous condition or unusual practice.

Additional job briefings will be given when:

- Working conditions or procedures change,
- Workers arrive late or new workers enter working limits
- The main track protection or time allowed to foul the track changes
- Visitor(s) enter the work site.

A job briefing will be considered complete when each employee has acknowledged understanding of the On-Track Safety procedures and instructions by signing the Job Briefing Form.

General Safety

SAFETY IS PARAMOUNT AND ALWAYS TOP PRIORITY. Safety takes precedence over deadlines, production schedules, and all other considerations. When uncertainty arises, take the safest course. Remember that accidents are a result of carelessness, unsafe practices, and lack of attention or complacency. All accidents can be avoided.

Please be aware of the following rules at all times:

- Using, possessing, or working under the influence of alcohol and /or drugs is not permitted anywhere on railroad property. This includes prescription drugs that cause drowsiness or otherwise impair one's ability to perform their assigned task.
- The use or possession of unauthorized radio equipment is forbidden. Use of personal radios (i.e. IPods', MP3 players), and cell phone ear pieces while working is prohibited.
- When using cellular phones you must remain at least 25-feet from the nearest rail.
- Horseplay, physical altercations, running or jumping is forbidden.
- Firearms or other deadly weapons, including knives with a blade in excess of three (3) inches are prohibited on SCRRA property.
- Work on public streets, roadway crossings, and highway bridges should be performed with due regard for the convenience and safety of the public.
- Only authorized employees are allowed on engines, cars, cabooses, track cars or other railroad equipment**.**

Right of Way Safety

When on or near the tracks, the following precautions must be taken:

- Keep clear of all tracks unless the SCRRA EIC indicates that they are protected. No work must begin until the EIC is present at work site and a job briefing has been conducted.
- Always look both ways before crossing tracks.
- Always expect a train on any track at any time. Expect movement of locomotives, railroad cars or on-track equipment in either direction at any time. (Remember, there could be an uncontrolled movement.)

Right of Way Safety continued

- Always step over the rails when crossing the tracks. Never walk, stand, or sit on the rails. The rail surface can be extremely slippery.
- Always face the direction from which the train or on-track equipment is approaching.
- Avoid track switches. The switch points can move unexpectedly and with enough force to crush ballast rock! Stand 150 feet from track switches when trains are approaching. Stay away from any other railroad device of which you are not familiar.
- Always walk single file when crossing the tracks in a group.
- Never stand between adjacent tracks in multiple track territory when a train is passing.
- Always cross at least 20 feet away from the end of equipment: i.e. engines, railroad cars, or on-track equipment
- Do not pass between standing locomotives, railroad cars or on- track equipment when there is less than 50 feet between the equipment.
- Never cross tracks by going underneath, over or through cars, engines or on-track equipment.
- Work is not allowed within 50 feet of the track centerline while trains are passing the work site. Always stand as far back as possible to prevent injury from flying debris or loose rigging.
- Always visually inspect all passing trains. If you detect a dangerous condition, inform your EIC or watchman immediately. The EIC or watchman will notify the train crew.
- Always stop equipment while a train is passing through your working limits. No movement will be allowed toward an approaching train that would cause the engineer to believe the track might be fouled.
- Trains travel faster than they appear and are relatively quiet. Trains may operate with cab car forward. You should not rely on past experiences to determine train schedule. Train schedules are unpredictable and are subject to changes and/or delays.

No job is so urgent it can't be done safely.

Housekeeping

The following housekeeping rules apply to everyone.

1. California Public Utilities Commission (CPUC) General Order 26-D and 118 require that lateral and vertical clearance around a railroad track and a safe walkway parallel to both sides of the track be maintained. The EIC will observe construction and material storage activities and may direct contractor employee(s) to correct conditions not in compliance with the CPUC General Orders.

2. Material must not be stored closer than 20 feet of the closest rail.

3. Contractor employee(s) must cover areas with spilled oil or grease by applying sand or an equivalent approved material to minimize slipping hazards.

4. Contractor employees are responsible for the removal of all unused materials and debris created by the construction project.

5. Clear site immediately of all tripping hazards such as wire, loose material, etc.

6. Flammable materials, petroleum products, paints, caustics, acids and solvents must be stored in designated areas and in containers which are provided for them.

7. Contractor is responsible for restoring the property to its previous condition or better. This includes making repairs to drainage facilities, fences, gates, or buildings damaged or removed by the Contractor or its forces.

Electrical

It is the responsibility of every employee to exercise care to avoid injury to themselves or to others. The following rules are for the safety of everyone:

1. Electric wires must be considered live at all times. Employees shall not depend on the insulation of wires for their safety. Employees avoid all overhead and underground wires they may come in contact with.

2. When using temporary power cords, cords must never be placed over the rails. The EIC will work with the contractor for proper placement.

3. Employees must not place any metal objects across rails.

4. Signal cables/conduits may be encountered while excavating along the right-of-way. Excavation is not permitted until:

   ✓ Dig Alert (USA) – identification is complete 1(800) 227-2600

- ✓ SCRRA Signals Department has been notified and has identified signal conduits. (909) 859-4100.

Railroad signals are not covered by Dig Alert (USA) and the railroad signals department must be notified.

Emergency Situations

Prior to starting work, the EIC will have these emergency phone numbers available on site; Ambulance, SCRRA and/or its operating contractor's representative, Metrolink Operation Center (MOC) Signals emergency number and the police. In emergency situations the following apply:

- When an injury occurs stop working and ensure everything possible is done for the injured person.
- If equipment was involved in the injury, it must be examined to ensure the equipment was in proper working condition. Any defective tools, machinery and equipment are prohibited from use on SCRRA property.
- Immediately report to the EIC any accidents; personal injuries; defects in tracks, bridges, signals utilities or communication facilities; or, any unusual condition that may affect the safe operation of the railroad.
- Contractor employees must exercise care to prevent injury to themselves or others. Employees must be alert and attentive at all times when performing their work.
- In case of personal injury, loss of life, or damage to property, the EIC must immediately document the names, addresses and occupation of all persons involved, including all persons at the scene regardless of whether these persons give a statement about the incident. This information should be included in the incident reports.
- If an incident causes personal injury or death, all tools, machinery and other equipment involved, including premises where such accident occurred must be promptly inspected by the EIC. Tools, equipment and machinery must be secured until SCRRA EIC or Watchman, Safety Officer, or other competent inspector has completed an inspection. A report of such inspection, stating the conditions found and names of persons making the inspection must be promptly forwarded to SCRRA and the supervising officer of person making the inspection.
- Information concerning incidents or personal injuries occurring to persons who are not employees, must not be given to anyone except authorized representatives of the SCRRA or an officer of the law.

Heavy Equipment

When working on or around heavy equipment the following precautions must be taken:

1. Equipment operators must be properly trained and qualified before operating equipment on SCRRA right-of-way, and must operate equipment in a safe, skillful and reliable manner.

2. Operators are responsible for verifying their machines are in safe, operating condition before starting and must assure that proper protection is being afforded their operations. The appropriate equipment must be used and operated for each task according the manufacturer's instructions.

3. Never engage in the reckless operations of vehicles on the SCRRA right-of-way. The speed limit on the right-of-way is not more than 15 mph and may be lowered if conditions warrant. Offenders may be asked to leave the SCRRA right-of-way by any SCRRA employee or representative observing unsafe behavior.

4. Audible backup warning devices are required on all heavy equipment, at all times.

5. Operator must have the equipment manual on their machine.

6. While trains, engines or on-track equipment pass, operators must ensure that:
   - Machines are stopped
   - Vehicles are stopped
   - Brakes are set
   - Buckets and shovels or clams are lowered to rest position and machine without buckets must have their load line tightened to prevent movement

7. Unauthorized persons cannot be carried on equipment. Persons qualified to be on equipment must be properly positioned before movement is made. Never transport passengers in truck beds or on heavy equipment.

8. Never allow employees in or on loaders and backhoe buckets.

9. Operators of equipment must be aware of the locations of overhead and underground utilities. Operator must have a clear understanding of how to protect utility lines before operating machinery.

10. NEVER move equipment across the tracks except at established road crossings. Tracked or rubber tire equipment will require the supervision of an SCRRA EIC any time railroad tracks are crossed.

11. NEVER move tracked or rubber tire equipment across railroad bridges or through tunnels

12. When heavy equipment is left unattended:

- Motor must be stopped and ignition must be locked
- Parking or hand brake must be securely set
- Keys must be in possession of operator or authorized employee, not left on the vehicle
- Wheels must be securely blocked on grades
- Equipment must be secured in a highly visible area

Railroad FlaggingIProtection

The third party contractor's foreman working on the right of way is responsible for the safety of their crews and must guard their crews against impending danger or injury. They shall bear in mind that safety is the first and most important consideration.

No work can begin until an SCRRA representative is on site and proper protection is being afforded.

The third party contractor must request and arrange for flagging services a minimum of five (5) working days before the work begins.

An SCRRA EIC or Watchman is required for your protection any time you are on SCRRA property (except for utility workers providing short term routine maintenance).

On-track protection must be provided by an SCRRA EIC when the following work is being performed, but not limited to:

- When any part of equipment is standing or being operated within 20 feet of the nearest track or has the **potential to foul** the track.
- When any construction activities are in progress within 20 feet of the nearest track, regardless of elevation above or below track.
- For any excavation in or around the tracks that may subject the tracks or other property to settlement or movement.
- Any clearing, grubbing, or demolition in proximity to the SCRRA property which, in the opinion of SCRRA, may endanger the property or operation.
- For any street construction and maintenance activities requiring temporary work area traffic control. All activities that change the flow of traffic across a railroad crossing, (i.e. traffic cones, lane closures, etc.), must be protected: SCRRA engineering department **must** approve traffic control plans before work can begin.

Good communication between the contractor and the EIC is imperative! The EIC is responsible for verifying all workers and/or equipment near or on the main track have moved at least 20 feet from the nearest rail before allowing a train to pass the work site.

Two Methods of On-Track Safety (OTS)

Keeping Us Away From Trains- This method does not physically separate the operation of trains and equipment from the third party contractor employee. Clearing the track before the arrival of the train protects the third party contractor employee.

TAW -Train Approach Warning

- Employs a Watchman to visually identify a train or on-track equipment and provide warning to a work group in time to occupy a place of safety 20 seconds prior to train arrival.

Keeping Trains Away From Us- This method of OTS physically separates the operation of trains from the activities of the third party contractor employee.

- Working limits are used to keep trains away from work groups.
- Working limits are established to afford third party contractor employee the separation.
- Working limits are a segment of track with definite boundaries upon which trains or equipment move only authorized by the EIC.
- Only a qualified EIC designated by SCRRA may establish or have control over working limits for the purpose of establishing OTS

Form B- Gives the EIC control of a segment of track for a given period of time. This method of OTS allows trains and equipment to pass through the working limits with the permission of the EIC. Trains and equipment are required to pass through the working limits at a speed established by the EIC.

Track & Time-The dispatcher will authorize men or equipment to occupy a track or tracks within specified limits for a certain time period. Only a qualified EIC may establish track & time or joint track & time for a work group of third party contractors.

Railroad Terms

The following definitions apply to all Third Party Contractors entering the SCRRA right of way**.**

Ballast – The rock that supports the track and ties. This rock is groomed to keep the track in place, drain water away from the track, and to distribute the weight of trains to surrounding soil. DO NOT DISTURB or place soil, sand, or debris on it.

California Public Utilities Commission (CPUC) - The state agency that administers certain rules and regulations of the railroad industry.

Center Line of Track – An imaginary line, that runs down the center of the two rails of a track.

Confined Space – A space that is large enough and so configured that an individual can enter and perform assigned work. The space has limited or restricted means for entry or exit and is not designed for continuous individual occupancy. This would include but not limited to tanks, vessels, silos, storage bins, hoppers, vaults and pits.

Derailment - A potentially dangerous condition, whereby rail cars or engines leave the tracks.

Employee-In-Charge (EIC) – A roadway worker designated to provide On-Track-Protection for one or more work groups.

Engine – A unit propelled by any form of energy or more than one of these units operated from a single control typically referred to as a locomotive.

Excavation – Any removal of earth. Any excavation and/or shoring, no matter how large or small require prior approval from SCRRA Engineer.

Exclusive Track- Is a method of establishing working limits on controlled track in which movement, occupancy, or authority of trains and other equipment is withheld by control operator or restricted by flagman.

Fill – A section of earth built up to support the railroad's track structure.

Foul the ballast – Anything that contaminates the ballast section of the roadbed and inhibits the ballast from supporting the track, draining water, or suppressing weed growth. In most cases ballast is fouled by excavated material being placed on the ballast.

Foul the track – Placement of an individual or a piece of equipment in such a proximity to a track that the individual or equipment could be struck by a moving train or track equipment. SCRRA fouling distance is defined as within 20 feet from the nearest rail.

Form B- A method of exclusive track occupancy by authorizing a roadway worker to foul or occupy track(s) within limits between two recognizable points as determined by railroad timetable within a designated time period using flag protection.

General Code of Operating Rules (GCOR) – The rules that govern the use of railroad tracks by trains, maintenance employees, contractors and others.

Hy-rail Vehicle - This vehicle is considered on-track equipment. It is typically driven on highways, but has specially manufactured attachments that allow the vehicle to travel on railroad tracks. They are viewed as trains and only authorized railroad personnel may operate them.

Job Site – Any area where work is performed, where materials and equipment are stored, or which employees access during the project.

Main Track – A track extending through yards and between stations that must not be occupied without authority or protection.

Mileposts – Field indicators of approximate distance from a specific point the railroad system used for approximate locations of railroad facilities. They are not to be used for field surveys.

On-Track Equipment - Maintenance of Way machines such as track cars, Hy-rail vehicles, tampers, ballast regulators, etc. which may be operated on the track.

On-Track Safety- On track Safety is a state of freedom from the danger of being struck by moving trains or on track equipment that is provided by the operating and safety rules, which govern track occupancy by personnel, trains and on track equipment.

Right to challenge- If the third party contractor employee does not believe that the protection against trains is sufficient, the employee may at any time, in good faith, challenge the EIC's form of protection and must remain clear of all tracks until the challenge is resolved.

Roadbed - A graded area beneath and on either side of the track structure that provides support and drainage of the track.

Safety Training - A session conducted by a qualified SCRRA representative at which On-Track Safety and Metrolink right of way rules and regulations are discussed.

Safety Sticker - An emblem indicating completion of third party contractor training. The non transferable "Safety Trained' emblem is to be placed on each individual's hard hat so it is visible when working on the Railroad's Right-of Way.

Siding – A secondary track used for the passing of trains on single-track routes.

Third Party Contractor –Any contractor working on or adjacent to the railroad right of way on non railroad related work.

Tracks – The rails, ties, and ballast that compose the traveling surface by trains.

Track Structure – The rails, ties ballast, and roadbed that compose the traveling surface used by trains.

Track and Time- The dispatcher will authorize men or equipment to occupy a track or tracks within specified limits for a certain time period.

Trains – One or more engines coupled together, with or without cars, which use the Railroad track.

Train Approach Warning (provided by Watchmen)-A method of establishing On-Track Safety, provided by Watchmen, of warning workers of the approach of trains in ample time (not less than 20 seconds) for them to move to or remain in a place of safety.

Train Movement – Any motion of engines and/or cars over the railroad tracks.

Watchman- An employee who has been annually trained and qualified to provide warning to roadway workers of approaching trains and on track equipment.

Watchman Protection – Employees in a work group using Train Approach Warning provided by watchmen lookouts must be provided warning in sufficient time to enable each employee to move to a previously determined place of safety, not less than 20 seconds before a train moving at the maximum speed authorized on that track would arrive at the employee's location.

Working Limits – A segment of track with definite boundaries upon which trains and engines may move only as authorized by the roadway worker having control over that defined segment of track. Working limits may be established through exclusive track occupancy, foul time or inaccessible track.

Yard- A collection of secondary tracks used to store equipment (cars, engines, maintenance machines, etc.), for assembling or disassembling trains, and/or conducting other railroad operations.

Asking me to condone an unsafe act is like asking me to jeopardize the value of your life.

Zero Tolerance Safety Rules

SCRRA has a Zero Tolerance policy. Zero tolerance means that certain actions will absolutely not be tolerated under any circumstances. Be aware of the following rules at all time:

- All third party contractors must have a Right-of-Entry or approved document to work on SCRRA right-of-way.
- Drinking alcoholic beverages, being under the influence of any drug or medication or having them in your possession at any time on SCRRA property will not be tolerated.
- All third party contractor personnel must have completed the Third Party Construction and Utility Worker Safety Training Program and have a valid SCRRA safety sticker on their hard hat or they will not be allowed on SCRRA property.
- All third party contractor personnel and utility workers must wear a hard hat, safety glasses with side shield, safety vest with retro-reflective tape for night work or at railroad crossing must be worn. A safety T-shirt, sweatshirt or jacket may be worn during the day, long pants, and safety boots.

WORKING ON OR AROUND TRACKS: Contractors must be aware of the following:

1. All work within 20 feet of the nearest rail must be coordinated with the Right-of-Way Encroachment Administrator so that protection can be provided for personnel.
2. No work can begin until an SCRRA representative is on site and proper protection is being afforded.
3. Do not foul the track with any piece of equipment without an EIC, job briefing and exclusive track occupancy.
4. Do not stand on the track or within 20 feet of the nearest rail.
5. Do not leave open holes or trenches unattended.
6. Do not disturb or foul the ballast at any time.

VIOLATION OF ANY OF THESE RULES WILL RESULT IN REMOVAL FROM THE PROPERTY AND MAY CAUSE THE RIGHT OF WAY ENTRY PERMIT TO BE REVOKED.

METROLINK

Southern California Regional Rail Authority

INDEMNIFICATION
and
ASSUMPTION OF LIABILITY AGREEMENT

SCRRA FORM NO. 5

SCRRA File No.	
SCRRA Project/Task No.	
Subdivision	
Mile Post	
Thomas Guide Page	

The Contractor, hereby requests permission to encroach onto the Southern California Regional Rail Authority (SCRRA) and Member Agency Right-of-Way.

- Location of Work:_____
- Purpose/Description:_____

1. **Definitions**

A. Contractor is an individual, firm, partnership or corporation, or combination thereof, private, municipal or public, including joint ventures, which are referred to throughout this document by singular number and masculine gender. For purposes of this agreement, Contractor also includes any subcontractor, supplier, agent or other individual entering the Right-of-Way during performance of work.

B. Indemnitees are SCRRA, Member Agencies, and Operating Railroad, and their respective officers, commissioners, employees, agents, successors and assigns.

C. Operating Railroad is/are that specific passenger or freight-related railroad company(s) validly operating on SCRRA and Member Agency track(s). Operating Railroads are any combination(s) of the National Railroad Passenger Corporation, (AMTRAK) the Union Pacific Railroad Company, (UPRR) and the BNSF Railway Corporation. (BNSF)

D. Property and Right-of-Way is defined herein to mean the real and/or personal property of SCRRA and/or Member Agencies.

E. SCRRA is a five-county joint powers authority, created pursuant to State of California Public Utilities Code Section 130255 and California Government Code Section 6500 et seq., to build and operate the "Metrolink" commuter train system in the five-county area on rail rights-of-ways owned by the Member Agencies. The five-county Member Agencies are comprised of the following: Los Angeles County Metropolitan Transportation Authority (MTA), Ventura County Transportation Commission (VCTC), Orange County Transportation Authority (OCTA), San Bernardino Associated Governments (SANBAG), and Riverside County Transportation Commission (RCTC).

F. SCRRA Employee-In-Charge (EIC) is a Southern California Regional Rail Authority employee or contractor (SCRRA General Code of Operating Rules and Territory Qualified) providing warning to Public Agency or Contractor personnel of approaching trains or on track equipment and who has the authority to halt work and to remove personnel from the Right-of-Way to assure safe work.

G. SCRRA Safety Trainer is a qualified SCRRA employee or contracted employee (SCRRA General Code of Operating Rules qualified) as authorized by the SCRRA Director of Engineering and Construction to provide Contractor training.

2. **Entry Onto Right-of-Way**

No verbal approvals will be granted. A fully executed copy of this Form 5 must be in the possession of the Contractor at the encroachment site and must be produced upon request by SCRRA or Member Agency's representative. If said Agreement is not produced, SCRRA has the right to delay access to the Property until the Contractor demonstrates possession of the Form 5. SCRRA EIC must be present whenever the Contractor enters into the Right-of-Way. SCRRA will also provide additional personnel and equipment for protection deemed necessary by SCRRA. SCRRA may authorize encroachment onto the Property without presence of an SRE depending on the nature and location of the encroachment. SCRRA involvement in providing positive protection shall not relieve the Contractor from its complete responsibility for the adequacy and safety of its operation. The Contractor shall furnish information so that SCRRA can take all precautionary safety measures. If, for any reason, it is necessary to change the time and/or date when encroachment is required, the Contractor shall contact SCRRA's ROW Encroachments Administrator (See SCRRA Contact on Page 4) and not enter the property until it has been approved in writing and appropriate safety protection can be rescheduled.

3. **Termination of Agreement**

SCRRA or Member Agency reserves the right to terminate or revoke this Agreement at any time upon two hours notice; however, in the event of an unsafe condition on the Right-of-Way, SCRRA shall have the right to terminate this Agreement immediately, without any advanced notice. Unless subsequently modified, extended, terminated or revoked by SCRRA, this temporary Agreement shall extend until the work authorized hereunder is completed or accepted by SCRRA. The Contractor agrees to notify SCRRA, in writing and orally, when work is completed. (See SCRRA contact on Page 4)

At the request of SCRRA or Member Agency, Contractor shall remove from the Right-of-Way any employee or other individual who fails to conform to the instructions of SCRRA's or Member Agency's representative. Any right of Contractor to cross the Right-of-Way shall be suspended until such request of SCRRA or Member Agency is met. Contractors shall defend, indemnify and hold harmless SCRRA and Member Agency against any claim arising from the removal of any such employee or other individual from the Right-of-Way.

4. **Indemnification**

Contractor, on behalf of itself and its employees, subcontractors, agents, successors, and assigns, agrees to indemnify, defend, by counsel satisfactory to SCRRA and Member Agency, and hold harmless "Indemnitees", and each of them to the maximum extent allowed by law, from and against all loss, liability, claims, demands, suits, liens, claims of lien, damages (including incidental consequential damages), costs and expenses (including, without limitation, any fines, penalties, judgments, actual litigation expenses, and experts' and actual

attorneys' fees), that are incurred by or asserted against Indemnitees arising out of or connected in any manner with (i) the acts or omissions of the Contractor, or its officers, directors, affiliates, subcontractors or agents or anyone directly or indirectly employed by them or for whose acts the foregoing persons are liable (collectively, "Personnel") in connection with or arising from the presence upon or performance of activities by the Contractor or its Personnel with respect to the Right-of-Way, (ii) bodily and/or personal injury or death of any person (including without limitation employees of Indemnitees) or damage to or loss of use of Property resulting from such acts or omissions of the Contractor or its Personnel, or (iii) non-performance or breach by Contractor or its Personnel of any term or condition of this Agreement, in each case whether occurring during the term of this Agreement or thereafter.

The foregoing indemnity shall be effective regardless of any negligence (whether active, passive, derivative, joint, concurring or comparative) on the part of Indemnitees, unless caused by the sole negligence or willful misconduct of Indemnitees, and is in addition to any other rights or remedies, which Indemnitees may have under the law or under this Agreement.

Claims against the Indemnitees by the Contractor or its Personnel shall not limit the Contractor's indemnification obligations hereunder in any way, whether or not such claims against Indemnitees may result in any limitation of the amount or type of damages, compensation, or benefits payable by or for the Contractor or its Personnel under workers' compensation acts, disability benefit acts or other employee benefit acts or insurance.

The provisions of this section shall survive the termination or expiration of the Agreement.

5. **Assumption of Liability**

To the maximum extent allowed by law, the Contractor releases Indemnitees from and assumes any and all risk of loss, damage or injury of any kind to any person or property, including without limitation, the Property and/or Right-of-Way and any other property of, or under the control or custody of, the Contractor or its personnel in connection with any acts undertaken under or in connection with this Agreement. The Contractor's assumption of risk shall include, without limitation, loss or damage caused by defects in any structure or improvements (including easement, lease or license agreements for other existing improvements and utilities) on the Right-of-Way, accident or fire or other casualty on the Right- of-Way, or electrical discharge, noise or vibration resulting from SCRRA, Member Agency, and Operating Railroad transit operations on or near the Right-of-Way and any other persons or companies employed, retained or engaged by SCRRA or Member Agency. The Contractor, on behalf of itself and its Personnel (as defined in Section 4, "Indemnification") as a material part of the consideration for this Agreement, hereby waives all claims and demands against the Indemnitees for any such loss, damage or injury of the Contractor and/or its Personnel. The Contractor waives the benefit of California Civil Code Section 1542, which provides as follows: "A general release does not extend to claims which the creditor does not know or suspect to exist in his favor at the time of executing the release, which if known by him must have materially affected his settlement with the debtor."

The provisions of this Section shall survive the termination or expiration of this Agreement.

6. **Reimbursement of Costs and Expenditures**

The Contractor agrees to reimburse SCRRA or Member Agency actual cost and expense reasonably incurred for all services and work performed in connection with said work, including

SCRRA's allocated overhead and fringe benefits. SCRRA will charge the Contractor for eight hours minimum if the Contractor cancels SCRRA services after SCRRA Railroad Employee is on site on the day of the appointment.

The Contractor also agrees to reimburse SCRRA, Member Agency and/or Operating Railroad for any and all cost and expense incurred as a result of Contractor's work which may result in (i) unscheduled delay to the trains or interference in any manner with the operation of trains, (ii) unscheduled disruption to normal train operation, (iii) unreasonable inconvenience to the public or private user of the system, (iv) loss of revenue, and (v) alternative method of transportation for passengers. SCRRA will submit final bills to the Contractor for cost incurred.

Prior to commencement of work, the Contractor shall deposit with SCRRA the sum of _____ dollars ($)_____representing the estimated expense to be incurred by SCRRA and Member Agency in connection with said work. As the work progresses, SCRRA may require additional progress payments as the scope of work changes or becomes clearer. SCRRA may discontinue services to Contractor pending receipt of progress payments. The deposit and progress payments shall be applied to SCRRA's and Member Agency's actual costs and expenditures. The Contractor shall be responsible to pay any amount exceeding the above payments upon receipt of notice or invoice by SCRRA. SCRRA shall exercise its best efforts to provide final invoicing to Contractor within 90 days following completion of the work; however, Contractor acknowledges that it shall be responsible for payment of all expenses incurred by SCRRA and Member Agency in connection with the work even if the final invoicing is provided to Contractor thereafter.

7. **Safety Orientation Class**

The Contractor and his subcontractors shall be required to attend a SCRRA Safety Orientation Class prior to receiving permission to enter the Right-of-Way. The Contractor shall notify SCRRA's contractor for safety and flagging services at 1-877-452-0205 to arrange for third party safety training. Allow 24 to 72 hours from the request for safety training to arrange the training. Upon completion of safety training, the Contractor shall notify SCRRA's contractor at (714) 920-9037 a minimum of fifteen (15) working days prior to beginning work on the Right-of-Way and secure any protection SCRRA deems necessary. This prior notification does not guarantee the availability of on track safety protection for the proposed date of construction. To the full extent of Paragraph 5 above (Indemnification), Contractor agrees to indemnify SCRRA against any and all claims resulting from sickness or any other absence.

8. **Emergency Telephone Numbers**

The Contractor must immediately contact SCRRA in case of accidents, personal injury, defect in track, bridge or signals, or any unusual condition that may affect the safe operation of the railroads. The following are SCRRA's emergency numbers:

Signal Emergencies and Grade Crossing Problems	**(888) 446-9721**
Metrolink Chief Dispatcher	**(909) 593-0661 or (888) 446-9715**
Metrolink Sheriff's Dispatcher	**(323) 563-5280 or (323) 563-5000**
Signal and Communications Cable Location	**(909) 859-4105 of (909) 859-4112**

9. **California Law**

This agreement shall be construed and interpreted in accordance with and governed by the

laws of the State of California. Venue shall be located in courts in Los Angeles County.

10. **SCRRA Contact**

All information and documents shall be submitted to the following:

Assistant Director, Standards and Design
Southern California Regional Rail Authority (SCRRA)
297 East Arrow Highway Suite A
Attn: Mr. Christos Sourmelis - ROW Encroachments Coordinator
Email: sourmelisc@scrra.net
(909) 394-3418

The Contractor hereby agrees to the terms as set forth in this Agreement, and hereby acknowledges receipt of this Agreement.

(*Name of Applicant*)	(*Signature*)
(Address)	(*Print Name*)
	(*Title*)
(*Telephone*)	(*Applicant's State License No.*)
(Fax)	*(Email)*

Receipt of the foregoing agreement is hereby acknowledged on this_____day of_____20____

By: _____
ROW Encroachments Coordinator

By: _____
Assistant Director, Standards and Design

[Approved as To Form By Legal Counsel]

METROLINK
Southern California Regional Rail Authority

TEMPORARY RIGHT-OF-ENTRY AGREEMENT

SCRRA FORM NO. 6

SCRRA File No.	
SCRRA Project/Task No.	
Subdivision	
Mile Post	
Thomas Guide Location	

This Temporary Right-of-Entry Agreement ("Agreement") is between the Southern California Regional Rail Authority (hereinafter referred to as "SCRRA") and _____ (hereinafter referred to as "Contractor"). This Agreement is for entry upon, over and under SCRRA and Member Agency Right-of-Way ("Right-of-Way") at or near _____ in the City of _____ or in the Unincorporated County of _____ (as such location is more specifically identified above) for the purpose of _____ _____ (as shown on attached drawings).

1. **Definitions**

A. Contractor is an individual, firm, partnership or corporation or combination thereof, private, municipal or public, including joint ventures, which are referred to throughout this document by singular number and masculine gender. For purposes of this agreement, Contractor also includes any subcontractor, supplier, agent or other individual entering the Right-of-Way during performance of work.

B. Indemnitees are SCRRA, Member Agencies and Operating Railroad and their respective officers, commissioners, employees, agents, successors and assigns.

C. Operating Railroad is/are that specific passenger or freight-related railroad company(s) validly operating on SCRRA and Member Agency track(s). Operating Railroads are any combination(s) of the SCRRA (METROLINK), the National Railroad Passenger Corporation (AMTRAK), the Union Pacific Railroad Company (UPRR) and the BNSF Railway Company.

D. Property and Right-of-Way is defined herein to mean the real and/or personal property of SCRRA and/or Member Agencies.

E. SCRRA is a five-county joint powers authority, created pursuant to State of California Public Utilities Code Section 130255 and California Government Code Section 6500 et seq., to build and operate the "Metrolink" commuter train system in the five-county area on rail rights-of-ways owned by the Member Agencies. The five-county Member Agencies ("Member Agency") are comprised of the following: Los Angeles County Metropolitan

Transportation Authority (MTA), Ventura County Transportation Commission (VCTC), Orange County Transportation Authority (OCTA), San Bernardino Associated Governments (SANBAG), and Riverside County Transportation Commission (RCTC).

F. SCRRA Employee-In-Charge (EIC) is a Southern California Regional Rail Authority employee or contractor (SCRRA General Code of Operating Rules and Territory Qualified) providing warning to Public Agency or Contractor personnel of approaching trains or on track equipment and who has the authority to halt work and to remove personnel from the Right-of-Way to assure safe work.

G. SCRRA Safety Trainer is a qualified SCRRA employee or contracted employee (SCRRA General Code of Operating Rules qualified) as authorized by the SCRRA Director of Engineering and Construction to provide Contractor training.

2. **References**

When working on the Right-of-Way, the Contractor must comply with the rules and regulations contained in the current editions of the following documents which are "references" incorporated in this document as if they were set out in full in this paragraph. The Contractor, by its signature on this Agreement, acknowledges receipt of these documents and agrees to abide by said rules and regulations at all times when on the Right-of-Way.

A. Rules and Requirements for Construction on Railway Property, SCRRA Form No. 37.

B. General Safety Regulations for Third Party Construction and Utility Workers on SCRRA Property.

3. **Entry Onto Right-of-Way**

No verbal approvals will be granted. The Contractor shall not enter onto the Right-of-Way unless Contractor has arranged for SCRRA safety training as well as protective services (EIC and/or other protective services to be determined by SCRRA) and has paid all charges and fees. A fully executed copy this Form 6 must be in the possession of the contractor at the job site and must be produced by Contractor upon request by SCRRA, a law enforcement officer or Member Agency's representative. If said Agreement is not produced, SCRRA has the right to suspend work in the Right-of-Way until Contractor demonstrates possession of Agreement at the job site.

4. **Termination of Agreement**

SCRRA or Member Agency reserves the right to terminate or revoke this temporary Agreement at any time upon two hours notice; however, in the event of an unsafe condition on the Right-of-Way, SCRRA shall have the right to terminate this Agreement immediately, without any advanced notice. Unless subsequently modified, extended, terminated or revoked by SCRRA, this temporary Agreement shall extend until the work authorized hereunder is completed or accepted by SCRRA. In any event, however, the Agreement shall be automatically terminated if or when the insurance that the Contractor is required to maintain hereunder lapses or expires. The Contractor agrees to return the Property to a condition substantially the same as before construction, including replacement, repair, or reinstallation of railroad signs and property. Railroad signs include but are not limited to "No Trespassing", "Speed Limit", "Milepost", "Whistle", "Station Stop" and "Fiber Optics". The Contractor agrees

to notify SCRRA, in writing and orally, when use of the Right-of-Way or work is completed (see Section 18 of this Agreement for SCRRA contact). Under no circumstances shall the temporary right of entry provided for under this Agreement be construed as granting to the Contractor or its Subcontractors and agents any right, title or interest of any kind or character in, on or about any Property.

At the request of SCRRA or Member Agency, Contractor shall remove from the Right-of-Way any employee or other individual who has not completed safety training or otherwise fails to conform to the instructions of SCRRA's or Member Agency's representative in connection with work on the Right-of-Way. Any right of Contractor to enter upon the Right-of-Way shall be suspended until such request of SCRRA or Member Agency is met. Contractors shall defend, indemnify and hold harmless SCRRA and Member Agency against any claim arising from the removal of any such employee or other individual from the Right-of-Way.

5. **Indemnification**

Contractor, on behalf of itself and its employees, subcontractors, agents, successors and assigns, agrees to indemnify, defend, by counsel satisfactory to SCRRA and Member Agency, and hold harmless "Indemnitees", and each of them to the maximum extent allowed by law, from and against all loss, liability, claims, demands, suits, liens, claims of lien, damages (including incidental consequential damages), costs and expenses (including, without limitation, any fines, penalties, judgments, actual litigation expenses and experts' and actual attorneys' fees), that are incurred by or asserted against Indemnitees arising out of or connected in any manner with (i) the acts or omissions of the Contractor or its officers, directors, affiliates, subcontractors or agents or anyone directly or indirectly employed by them or for whose acts the foregoing persons are liable (collectively, "Personnel") in connection with or arising from the presence upon or performance of activities by the Contractor or its Personnel with respect to the Right-of-Way, (ii) bodily and/or personal injury or death of any person (including without limitation employees of Indemnitees) or damage to or loss of use of Property resulting from such acts or omissions of the Contractor or its Personnel or (iii) non- performance or breach by Contractor or its Personnel of any term or condition of this Agreement, in each case whether occurring during the term of this Agreement or thereafter.

The foregoing indemnity shall be effective regardless of any negligence (whether active, passive, derivative, joint, concurring or comparative) on the part of Indemnitees, unless caused by the sole negligence or willful misconduct of Indemnitees, and is in addition to any other rights or remedies, which Indemnitees may have under the law or under this Agreement.

Claims against the Indemnitees by the Contractor or its Personnel shall not limit the Contractor's indemnification obligations hereunder in any way, whether or not such claims against Indemnitees may result in any limitation of the amount or type of damages, compensation or benefits payable by or for the Contractor or its Personnel under workers' compensation acts, disability benefit acts or other employee benefit acts or insurance.

The provisions of this section shall survive the termination or expiration of this Agreement.

6. **Assumption of Liability**

To the maximum extent allowed by law, the Contractor releases Indemnitees from and assumes any and all risk of loss, damage or injury of any kind to any person or property, including without limitation, the Property and/or Right-of-Way and any other property of or

under the control or custody of, the Contractor or its personnel in connection with any acts undertaken under or in connection with this Agreement. The Contractor's assumption of risk shall include, without limitation, loss or damage caused by defects in any structure or improvements (including easement, lease or license agreements for other existing improvements and utilities) on the Right-of-Way, accident or fire or other casualty on the Right-of-Way or electrical discharge, noise or vibration resulting from SCRRA, Member Agency and Operating Railroad transit operations on or near the Right-of-Way and any other persons or companies employed, retained or engaged by SCRRA or Member Agency. The Contractor, on behalf of itself and its Personnel (as defined in Section 5, "Indemnification") as a material part of the consideration for this Agreement, hereby waives all claims and demands against the Indemnitees for any such loss, damage or injury of the Contractor and/or its Personnel. The Contractor waives the benefit of California Civil Code Section 1542, which provides as follows: "A general release does not extend to claims which the creditor does not know or suspect to exist in his favor at the time of executing the release, which if known by him must have materially affected his settlement with the debtor."

The provisions of this Section shall survive the termination or expiration of this Agreement.

7. **Insurance**

The Contractor, at its sole cost and expense, shall obtain and maintain in full force and effect during the term of this Agreement insurance as required by SCRRA or Member Agency in the amounts, coverage, and terms and conditions specified, and issued by insurance companies as described on Exhibit "A". SCRRA or Member Agency reserve the right, throughout the term of this Agreement, to review and change the amount and type of insurance coverage it requires in connection with this Agreement. Prior to entering the Right-of-Way or performing any work or maintenance on the Right-of-Way, the Contractor shall furnish SCRRA with insurance endorsements or certificates in the form of Exhibit "B", evidencing the existence, amounts and coverage of the insurance and signed by a person authorized by the insurer to bind coverage on its behalf. In most instances, SCRRA and Member Agency do not allow self-insurance; however, if the Contractor can demonstrate assets and retention funds meeting SCRRA and Member Agency self-insurance requirements, SCRRA and Member Agency may in SCRRA's sole and absolute discretion permit the Contractor to self-insure. The right to self-insure with respect to any coverage required hereunder may be granted or revoked at the sole and absolute discretion of SCRRA or any Member Agency. SCRRA or Member Agency shall not be liable for the payment of any premiums or assessments for insurance required to be maintained by the Contractor under this Agreement. Contractor affirms that all subcontractors covered by this Agreement are insured to the same limits required of the Contractor or included in Contractor's policy.

Prior to the expiration of any policy, the Contractor shall furnish SCRRA with certificates of renewal or "binders" thereof. Each certificate shall expressly state that such policies shall not be cancelable or otherwise subject to modification except after thirty (30) days prior written notice to SCRRA and Member Agency.

8. **No Assignment**

The Contractor shall not assign this Agreement or any right hereunder without SCRRA's and Member Agency's prior written consent.

9. **Compliance by Contractor**

The Contractor shall take all steps necessary to assure that its subcontractors comply with the terms and conditions of this Agreement and applicable laws and regulations. The Contractor shall assure that no lien is placed against the Right-of-Way arising from performance of work hereunder by Contractor or any subcontractor, and in the event of such a lien, Contractor shall immediately remove or cause to be removed such lien.

10. **Safety Orientation Class**

The Contractor and his subcontractors shall be required to attend a SCRRA Safety Orientation Class prior to receiving permission to enter the Right-of-Way. The Contractor shall notify SCRRA's contractor for safety and flagging services at 1-877-452-0205 to arrange for third party safety training. Allow 24 to 72 hours from the request for safety training to arrange the training. Upon completion of safety training, the Contractor shall notify SCRRA's contractor at (714) 920-9037 a minimum of fifteen (15) working days prior to beginning work on the Right-of-Way and secure any protection SCRRA deems necessary. This prior notification does not guarantee the availability of on track safety protection for the proposed date of construction. To the full extent of Paragraph 5 above (Indemnification), Contractor agrees to indemnify SCRRA against any and all claims resulting from sickness or any other absence.

11. **SCRRA Safety and Protective Services**

The Contractor must request and arrange for on track safety protection satisfactory to SCRRA in the following circumstances:

A. When the Contractor's work activities are within the right-of-way of SCRRA.

B. When the Contractor's work activities are located over or under a track or tracks.

C. When cranes, pile drivers, drill rigs, concrete pumps, or similar equipment positioned outside of the right-of-way could foul the track in the event of tip-over or other catastrophic occurrence.

D. When in the opinion of the SCRRA it is necessary to safeguard the employees, trains, engines and facilities of SCRRA.

E. When any excavation is performed below the elevation of the track sub-grade, or track or other railroad facilities may be subject to movement or settlement.

F. When work in any way interferes with the safe operation of trains at timetable speeds.

G. When any hazard is presented to railway track, communications, signal, electrical, or other facilities either due to persons, material, equipment or blasting in the vicinity.

H. When clearing, grubbing, grading, or blasting is in proximity to the right-of-way which, in the opinion of SCRRA or representative of an SCRRA Member Agency, may endanger the right-of-way or operations.

I. When street construction and maintenance activities, located within the right-of-way or in the vicinity of the highway-rail grade crossing, requiring temporary work area traffic control, which may affect or create unsafe conditions for employees, public, trains and

vehicles.

The Contractor, and his subcontractors, shall complete SCRRA's Safety Orientation Class, as instructed in Item 10. Upon completion individuals will received a safety sticker which shall be adhered to their hardhat while working on railroad Right-of-Way as proof of completion of safety training.

12. **Reimbursement of Costs and Expenditures**

The Contractor agrees to reimburse SCRRA or Member Agency for all cost and expense incurred by SCRRA or Member Agency in connection with said work, including without limitation the expense of engineering plan review, staff costs to process approvals and agreements, safety training, furnishing an SCRRA Railroad Employee and protective services as SCRRA deems necessary. Contractor agrees to reimburse SCRRA for all construction related services including but not limited to installation and removal of falsework beneath tracks, restoration of railroad roadbed and tracks, installation of appropriate protective devices, temporary and permanent repairs of signal or communication equipment, restoration of the Right-of-Way to a condition satisfactory to SCRRA's and Member Agency's representative.

The Contractor agrees to reimburse SCRRA or Member Agency actual cost and expense reasonably incurred for all services and work performed in connection with said work, including SCRRA's allocated overhead and fringe benefits. SCRRA will charge the Contractor four hours minimum for the mandatory safety training class and for other services four hours or less in duration. SCRRA will charge the Contractor for eight hours minimum if the Contractor cancels SCRRA services after SCRRA Railroad Employee or SCRRA Safety Training Officer is on site on the day of the appointment.

The Contractor also agrees to reimburse SCRRA, Member Agency and/or Operating Railroad for any and all cost and expense incurred as a result of Contractor's work which may result in (i) unscheduled delay to the trains or interference in any manner with the operation of trains, (ii) unscheduled disruption to normal train operation, (iii) unreasonable inconvenience to the public or private user of the system, (iv) loss of revenue and (v) alternative method of transportation for passengers. SCRRA will submit final bills to the Contractor for cost incurred.

Prior to commencement of work, the Contractor shall deposit with SCRRA the sum of _____ dollars ($)_____representing the estimated expense to be incurred by SCRRA and Member Agency in connection with said work. As the work progresses, SCRRA may require additional progress payments as the scope of work changes or becomes clearer. SCRRA may discontinue services to Contractor pending receipt of progress payments. The deposit and progress payments shall be applied to SCRRA's and Member Agency's actual costs and expenditures. The Contractor shall be responsible to pay any amount exceeding the above payments upon receipt of notice or invoice by SCRRA. SCRRA shall exercise its best efforts to provide final invoicing to Contractor within 90 days following completion of the work; however, Contractor acknowledges that it shall be responsible for payment of all expenses incurred by SCRRA and Member Agency in connection with the work even if the final invoicing is provided to Contractor thereafter. Upon satisfactory completion of all work, any payments in excess of SCRRA's and Member Agency's costs and expenditures shall be returned to the Contractor within reasonable time.

If there is no amount indicated in the blank space provided above for the deposit to be made by the Contractor, and if prior SCRRA written approval is obtained, in lieu of such deposit,

Contractor shall cause surety bond to be executed by a reliable surety acceptable to SCRRA and Member Agency, conditioned upon the faithful performance of the provisions of this Agreement.

13. **Temporary Traffic Control**

Temporary traffic control shall be used when a maintenance or construction activity is located on the Right-of-Way or when the activity is located in the vicinity of a highway-rail grade crossing, which could result in queuing of vehicles across the railroad tracks. Temporary traffic control will comply with the current editions of the CA MUTCD, WATCH and SCRRA Engineering Standard ES4301. Refer to SCRRA's "Temporary Traffic Control Guidelines" for further information on definitions, referenced standards, traffic control plans, submittals, traffic control elements and responsibility/authority for temporary traffic control at highway-rail grade crossings. The guidelines provide acceptable alternatives and procedures, which prescribe appropriate temporary traffic control measures at highway-rail grade crossings and are available on the SCRRA website. (http://www.metrolinktrains.com).

14. **Environmental Health and Safety Plan**

Contractor shall immediately notify SCRRA and the appropriate regulatory agency (ies) of any spill, release, discharge or discovery of any hazardous material or contaminants in, on or under the Property. After providing such notice to SCRRA and the appropriate regulatory agency (ies), any contaminated soils or hazardous materials which are spilled, released, discharged or discovered by the Contractor, shall be promptly removed and disposed of by Contractor in accordance with all the applicable laws at Contractor's sole cost and expense. To the extent preexisting contamination or hazardous material, which was not caused or contributed to by Contractor, is discovered or unearthed by Contractor, Contractor shall only be obligated by this provision to removing and disposing of that portion of the contaminated soils or hazardous materials that are unearthed or otherwise disturbed during Contractor's operations. Prior to entry onto the Property, Contractor (s) performing trenching, excavations or soil borings may be required by SCRRA to submit a "Hazardous Materials Work Plan." If required, said plan shall include Contractor's site-specific health and safety plan and any other information that SCRRA may require. Contractor shall ensure that all documentation for transportation or disposal of contaminated soils of hazardous materials is prepared in the Contractor's name only and that neither SCRRA nor Member Agency shall have any responsibility or liability therefor. Contractor shall defend and indemnify SCRRA for any spill, release or discharge of contaminants or hazardous materials by Contractor in connection with activities hereunder in accordance with Section 5 Indemnification (Page 2 of 14)

15. **Warranty for Plan Review**

Review and or approval of the plans and calculations by SCRRA shall not relieve the Contractor of responsibility for full compliance with contract requirements, correctness of design drawings and details, proper fabrication and construction techniques and coordination with other government and private permitting agencies, nor shall such review or approval by SCRRA in any way relieve Contractor from, or otherwise modify, Contractors' indemnity obligations (Section 5) or assumption of liability obligations (Section 6). Execution of this right of entry does not imply design warranty or responsible charge on the part of SCRRA engineering employees. The parties expressly agree that SCRRA makes no warranty of any kind and assumes no responsibility therefore.

16. **Miscellaneous**

Wherever the context of this document so requires, words used in the masculine gender shall include the feminine and neuter genders; words used in the neuter gender shall include the masculine and feminine genders; words in the singular shall include the plural; and words in the plural shall include the singular.

17. **Emergency Telephone Numbers**

The Contractor must immediately contact SCRRA in case of accidents, personal injury, defect in track, bridge or signals or any unusual condition that may affect the safe operation of the railroads. The following are SCRRA's emergency numbers:

Signal Emergencies and Grade Crossing Problems	**(888) 446-9721**
Metrolink Chief Dispatcher	**(909) 593-0661 or (888) 446-9715**
Metrolink Sheriff's Dispatcher	**(323) 563-5280 or (323) 563-5000**
Signal and Communications Cable Location	**(909) 859-4100 or (909) 859-4112**

18. **Notices**

Except as otherwise provided in this agreement, all notices, statements, demands, approvals or other communications to be given under or pursuant to this agreement will be in writing, addressed to the parties at their respective addresses as provided below and will be delivered in person or by certified or registered mail, postage paid or by telegraph or cable, charges pre-paid.

SCRRA: Assistant Director, Standards and Design
Southern California Regional Rail Authority (SCRRA)
279 East Arrow Highway, Suite A
San Dimas, California 91773
Attn: Mr. Christos Sourmelis - ROW Encroachments Coordinator
E-mail: sourmelisc@scrra.net
Office Number: (909) 394-3418

Contractor: Contractor's address is shown on the next page.

19. **California Law**

This agreement shall be construed and interpreted in accordance with and governed by the laws of the State of California. Venue shall be located in courts in Los Angeles County.

The Contractor hereby agrees to the terms as set forth in this Agreement and hereby acknowledges receipt of this Agreement and of the insurance certificate forms (Exhibits A & B) herein provided.

(*Name of Contractor*)	(*Signature*)
(Address)	(*Print Name*)
	(*Title*)
(*Telephone*)	(*Contractor's State License No.*)
(Fax)	*(Email)*

Receipt of the foregoing agreement and certificated of insurance furnished by the Contractor are hereby acknowledged on this_____day of_____20_____.

SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY

By: _____
ROW Encroachments Coordinator

By: _____
Assistant Director, Standards and Design

[Approved As To Form By Legal Counsel]

EXHIBIT "A"
INSURANCE REQUIREMENTS FOR RIGHT OF ENTRY AGREEMENTS

Contractor shall procure and maintain for the duration of the contract insurance against claims for injuries to persons or damages to Property, which may arise from or in connection with the performance of the work by the Contractor, his agents, representatives, employees or subcontractors.

1. **Minimum Scope of Insurance**

Coverage shall be at least as broad as:

© Insurance Services Office Commercial General Liability coverage (occurrence form CG 0001).
© Insurance Services Office form No. CA 0001 (Ed. 1/87) covering Auto. Liability, code 1(any auto).
© Worker's Compensation insurance as required by the State of CA. & Employer's Liability Insurance.
□ Course of Construction insurance form providing coverage for "all risks" of loss.
□ Property insurance against all risks of loss to any tenant improvements or betterment.
□ Contractor's Pollution Liability

2. **Minimum Limits of Insurance**

Contractor shall maintain limits no less than:

© General Liability: $2,000,000 per occurrence for bodily injury, personal injury and Property damage.
© If Commercial General Liability Insurance or other form with a general aggregate limit is used, either the general aggregate limit shall apply separately to this project/location or the general aggregate limit shall be twice the required occurrence limit.
© Automobile Liability: $1,000,000 per accident for bodily injury and Property damage.
© Employer's Liability: $1,000,000 per accident for bodily injury or disease.
□ Course of Construction: Completed value of the project.
□ Property Insurance: Full replacement cost with no coinsurance penalty provision.
□ Contractor's Pollution Liability: $1,000,000 per occurrence/$2,000,000 annual aggregate

3. **Certificate Holder/Additional Insured**

Certificate holder and/or insured will be the following:

Southern California Regional Rail Authority (SCRRA)

Additionally Insured will be the following:

Los Angeles County Metropolitan Trans. Auth. (MTA)
Orange County Transportation Authority (OCTA)
Riverside County Transportation Commission (RCTC)
San Bernardino Associated Government (SANBAG)
Ventura County Transportation Commission (VCTC)
Burlington Northern Santa Fe Corp. (BNSF)
Union Pacific Railroad Company (UPRR)
National Railroad Passenger Corp. (AMTRAK)

4. **Railroad Protective Liability Insurance**

© Railroad Protective Liability Insurance

The Contractor shall provide, with respect to the operations they or any of their subcontractors perform on the Property, Railroad Protective Liability Insurance, AAR-AASHTO (ISO/RIMA) in the name of the railroads and Member Agencies shown in Section 3 above.

The policy shall have limits of liability of not less than **$2 million per occurrence**, combined

single limit, for coverage and for losses arising out of injury to or death of all persons and for physical loss or damage to or destruction of Property, including the loss of use thereof. A **$6 million annual aggregate** shall apply.

If coverage is provided on the London claims-made form, the following provisions shall apply:

A. The limits of liability shall be not less than $3 million per occurrence, combined single limit. A $9 million aggregate may apply.

B. Declarations item 6, extended claims made date, shall allow an extended claims made period no shorter than the length of the original policy period plus one year.

C. If equivalent or better, wording is not contained in the policy form, the following endorsement must be included:

> It is agreed that "physical damage to Property" means direct and accidental loss of or damage to rolling stock and their contents, mechanical construction equipment or motive power equipment, railroad tracks, roadbed, catenaries, signals, bridges or buildings.

For certain low-hazard activity, Contractor may request that the SCRRA and Member Agency waive the requirement to provide the Railroad Protective Liability Insurance. If the exposure to the track is physically separated by a building, floor or a continuous fence (no thoroughfares) and the employees of the Contractor are explicitly notified that they are not permitted to have any contact with the track, the Railroad Protective Liability Insurance requirement may be waived by SCRRA's Manager Public Projects or his/her designated representative.

5. **Deductibles and Self-Insured Retentions**

Any deductibles or self-insured retentions must be declared to and approved by SCRRA and Member Agency. At the option of SCRRA, either: the insurer shall reduce or eliminate such deductibles or self-insured retentions as respects SCRRA and Member Agency, its officials and employees or the Contractor shall procure a bond guaranteeing payment of losses and related investigations, claim administration and defense expenses.

6. **Other Insurance Provisions**

The General Liability and Automobile Liability policies are to contain, or be endorsed to contain, the following provisions:

A. SCRRA and Member Agency, its subsidiaries, officials and employees are to be covered as insureds as respects: liability arising out of activities performed by or on behalf of the Contractor; premises owned, occupied or used by the Contractor, or automobiles owned, leased, hired or borrowed by the Contractor. The coverage shall contain no special limitations on the scope of protection afforded to SCRRA and Member Agency, its subsidiaries, officials and employees.

B. For any claims related to this project, the Contractor's insurance coverage shall be primary insurance as respects SCRRA and Member Agency, its subsidiaries, officials and employees. Any insurance or self-insurance maintained by SCRRA and Member Agency, its subsidiaries, officials and employees shall be excess of the Contractor's insurance and shall not contribute with it.

C. Any failure to comply with reporting or other provisions of the policies including breaches of warranties shall not affect coverage provided to SCRRA and Member Agency, its

subsidiaries, officials and employees.

D. The Contractor insurance shall apply separately to each insured against whom claim is made or suit is brought, except with respect to the limits of the insurer's liability.

E. Each insurance policy required by this clause shall be endorsed to state that coverage shall not be suspended, voided, canceled by either party, reduced in coverage or in limits except after thirty (30) days' prior written notice by certified mail, return receipt requested, has been given to SCRRA and/or Member Agency.

Course of Construction policies shall contain the following provisions:

A. SCRRA and Member Agency shall be named as loss payee.

B. The insurer shall waive all rights subrogation against SCRRA and Member Agency.

7. **Acceptability of Insurers**

Insurance is to be placed with insurers with a current A.M. Best's rating of no less than A:VII, unless otherwise approved by SCRRA and Member Agency.

8. **Verification of Coverage**

Contractor shall furnish SCRRA with original endorsements effecting coverage required by this clause. The endorsements are to be signed by a person authorized by that insurer to bind coverage on its behalf. The endorsements are to be on forms provided by SCRRA. All endorsements are to be received and approved by SCRRA before work commences. As an alternative to SCRRA's forms, the Contractor's insurer may provide complete, certified copies of all required insurance policies, including endorsements effecting the coverage required by these specifications.

9. **Subcontractors**

Contractor shall include all subcontractors as insured under its policies or shall furnish separate certificates and endorsements for each subcontractor. All coverage for subcontractors shall be subject to all of the requirements stated herein.

10. **Train Services**

Approximate daily train traffic is_____passenger trains and_____freight trains.

11. **Submittal**

The original insurance policy (s) shall be submitted to:

Assistant Director, Standards and Design
Southern California Regional Rail Authority (SCRRA)
279 East Arrow Highway, Suite A
San Dimas, California 91773
Attn: Mr. Christos Sourmelis - ROW Encroachments Coordinator
E-mail: sourmelisc@scrra.net
Office Number: (909) 394-3418

METROLINK

Southern California Regional Rail Authority

EXHIBIT "B"
RAILROAD PROTECTIVE LIABILITY POLICY
DECLARATION

POLICY

Insurance Company:
Policy Number:
Policy Period: _____ _____ From: To:
12:01am Standard time at location

CERTIFICATE HOLDER AND ADDITIONALLY INSURED

Certificate Holder/Insured:

Southern California Regional Rail Authority (SCRRA)
279 E. Arrow Highway, Suite A, San Dimas, CA 91773

Additionally Insured:

Los Angeles County Metropolitan Transportation Authority (MTA)
Orange County Transportation Authority (OCTA)
Riverside County Transportation Commission (RCTC)
San Bernardino Associated Governments (SANBAG)
Ventura County Transportation Commission (VCTC)
Burlington Northern Santa Fe Corporation (BNSF)
Union Pacific Railroad Company (UPRR)
National Railroad Passenger Corp. (AMTRAK)

LIMITS OF INSURANCE

Aggregate Limit $6,000,000 Each Occurrence Limit $2,000,000

DESCRIPTION OF WORK AND JOB LOCATION(S)

NAME AND ADDRESS OF DESIGNATED CONTRACTOR

NAME AND ADDRESS OF INVOLVED GOVERNMENT AUTHORITY OR OTHER CONTRACTING PARTY

PREMIUM

Contract Cost _____
Premium Base _____ Rate per 1,000 of _____ Advance Premium _____

FORM OF ENDORSEMENT

Title **Number**

COUNTERSIGNATURE

Countersigned by _____ Date _____
(Authorized Representative)

METROLINK
Southern California Regional Rail Authority

EXHIBIT "B

CERTIFICATE OF INSURANCE Southern California Regional Rail Authority (SCRRA)	ISSUE DATE (MM/DD/YY)
PRODUCER INSURED	THIS CERTIFICATE OF INSURANCE IS NOT AN INSURANCE POLICY AND DOES NOT AMEND, EXTEND OR ALTER THIS COVERAGE AFFORDED BY THE POLICY BELOW. **COMPANIES AFFORDING COVERAGE** COMPANY LETTER **A** COMPANY LETTER **B** COMPANY LETTER **C** COMPANY LETTER **D** COMPANY LETTER **E**

COVERAGES
THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED NAMED ABOVE FOR THE POLICY PERIOD INDICATED, NOTWITHSTANDING ANY REQUIREMENTS, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN. THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

CO LT R	TYPE OF INSURANCE	POLICY NUMBER	POLICY EFFECTIVE DATE (MM/DD/YY)	POLICY EXPIRATION DATE (MM/DD/YY)	LIMITS	
	GENERAL LIABILITY □ COMMERCIAL GENERAL LIABILITY □ CLAIMS MADE □ OCCUR. □ OWNER'S & CONTRACTOR'S PROT. □ OTHER _____				GENERAL AGGREGATE PRODUCTS-COMP/OP AGG. PERSONAL & ADV. INJURY EACH OCCURRENCE FIRE DAMAGE (Any one fire) MED. EXPENSE (Any one person)	$ $ $ $ $ $
	AUTOMOBILE LIABILITY □ ANY AUTO □ ALL OWNED AUTO □ SCHEDULED AUTOS □ HIRED AUTOS □ NON-OWNED AUTOS □ GARAGE LIABILITY				COMBINED SINGLE LIMIT BODILY INJURY (Per person) BODILY INJURY (Per accident) PROPERTY DAMAGE	$ $ $ $
	EXCESS LIABILITY □ UMBRELLA FORM □ OTHER THAN UMBRELLA FORM				EACH OCCURRENCE AGGREGATE	$ $
	PROPERTY INSURANCE □ COURSE OF CONSTRUCTION				AMOUNT OF INSURANCE	$
	WORKER'S COMPENSATION AND EMPLOYER'S LIABILITY				STATUARY LIMITS EACH ACCIDENT DISEASE-POLICY LIMIT DISEASE-EACH EMPLOYEE	 $ $ $

DESCRIPTION OF OPERATIONSILOCATIONSIVEHICLESISPECIAL ITEMS

THE FOLLOWING PROVISIONS APPLY:

1. None of the above-described policies will be canceled, limited in scope of coverage or nonrenewed until after 30 days' written notice has been given to SCRRA at the address indicated below.
2. As respects operations of the named insured performed on behalf of SCRRA, the following are added as additional insured on all liability insurance policies listed above: SCRRA, its Member Agencies, Operating Railroads, its subsidiaries, officials and employees.
3. It is agreed that any insurance of self-insurance maintained by SCRRA will apply in excess of and not contribute with, the insurance described above.
4. SCRRA is named a loss payee on the property insurance policies described above, if any.
5. All rights of subrogation under the property insurance policy listed above have been waived against SCRRA.
6. Any failure by the insured to comply with reporting or other provisions of the policies including breaches of warranties shall not affect coverage provided to SCRRA, its Member Agencies, its subsidiaries, officials and employees.
7. The worker's compensation insurer named above, if any, agrees to waive all rights of subrogation against SCRRA for injuries to employees of the insured resulting from work for SCRRA or use of Member Agencies premises or facilities.

CERTIFICATE HOLDER Southern California Regional Rail Authority (SCRRA) 279 E. Arrow Highway, Suite A, San Dimas, CA 91773 **ADDITIONAL INSURED** MTA, OCTA, RCTC, SANBAG, VCTC, BNSF, UPRR, AMTRAK	**AUTHORIZED REPRESENTATIVE** SIGNATURE _____ TITLE _____ PHONE NO. _____

METROLINK

Southern California Regional Rail Authority

SCHEDULE OF FEES

NO	ITEM	AMOUNT	DESCRIPTION
1	Standard Plan Review	$1,500.00 ***(Plus any Additional Fees based on plans being submitted for review. See "description")***	$1,500.00 - SCRRA basic plan review, site visits and correspondence. **Add additional** (to Standard Plan Review Fee): *$1,000.00* - ***Traffic Control Plans*** *$3,000.00* – ***Shoring Plans*** * *$3,000.00* – ***Falsework Plans*** *
2	Administration	$1,000.00	SCRRA permit processing; and schedule of flagging & signal location services
3	Contingency	$1,500.00	Monies to cover potential (unforeseen) project administration and support and agency allocated overhead costs. Any monies not utilized will be refunded once the project is closed out by SCRRA's Finance Dept.
4	SCRRA Third Party Safety Training	$500.00	Costs assume the following: One (1) hour training class and two (2) hours travel time. Class size – up to 20-participants
6	Signal and Communications Line locations	$500.00	Signal and Communications location service is provided by SCRRA Contractor. Costs assume the following: • Signal marking for one location • Travel time • Additional locations are estimated at $275.00 each
6	Flagging	$1,500.00 Per day	Railroad flagging is provided by SCRRA Contractor or consultant. Costs assume the following: • Eight (8) hours of EIC Railroad Protection; 2.5 hours of preparation, set-up, and flag take down if Form B is used. • Vehicle costs • Management oversight
7	Inspection	$1,500.00 Per day	Railroad inspection is provided by SCRRA Contractor or consultant. Costs assume one days of inspection including travel time, vehicle costs.

* ***Allows for site visit to ensure Shoring and/or False Work meet SCRRA Standards***

Notes:

1. The above Schedule of Fees is intended only as a guideline estimate. The Applicant or their contractor shall reimburse SCRRA the actual cost and expense incurred by SCRRA and its contractors and consultants for all services and work performed in connection with the request, including an allocated overhead representing SCRRA's costs for administration and management.

2. For what SCRRA deems as "**Major Construction"** such as (but not limited to);

   a. ***Roadway Alterations***
   b. ***Roadway/Bridge Widening/Bike Trails***
   c. ***Grade Separations***
   d. ***Other construction on or about the Right-of-Way with the potential to affect railroad operational safety***

   A "Cost Estimate" will be provided that is contingent on the complexity of the project and the (estimated) direct costs and expenses incurred by SCRRA and its contractors and consultants.

SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY

TRACK MAINTENANCE, RIGHT OF WAY AND STRUCTURES,

ENGINEERING INSTRUCTIONS

ISSUED: 06-30-2000
REVISION ISSUED: 02-12-2009

INTRODUCTION

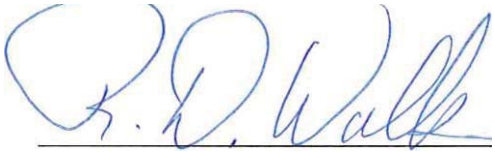
The Track Maintenance, Right of Way, and Structures, Engineering Instructions are for the use of all SCRRA employees, contractors, and consultants who comprise our engineering team. Its instructions, policies, and guidelines cover many aspects of Railroad Engineering and Maintenance-of-Way activities.

These instructions provide guidelines, procedures, and policies for the maintenance of SCRRA owned track, right of way, and structures, Engineering personnel responsible for maintaining the track, right of way, and structures shall maintain a copy of this handbook and keep it available while on duty for reference.

Engineering personnel responsible for maintenance and inspection of the track, right of way, and structures must exercise every effort to correct conditions not found in compliance with this publication.

The Fifth Edition of Track Maintenance and Engineering Instructions is effective February 12, 2009, and remains in effect until the Director of Engineering and Construction cancels, revises, or otherwise supersedes all or any part. These guidelines, procedures, and policies can be superseded by instruction issued via Special Instruction or General Order. The Federal Railroad Administration's (FRA) Track Safety Standards are the legal minimum requirements to which the track structure is to be maintained and shall be complied with at all times, FRA Track Safety Standards supersede any practice or guideline in these Instructions if these Instructions are less restrictive than FRA Track Safety Standards.

This document includes information confidential and proprietary to the Southern California Regional Rail Authority. The content of this manual will be revised periodically and the latest revision may be found through the Director of Engineering and Construction office, If technical data included is found to be inaccurate or displayed with typographical errors, please notify the office of the Director of Engineering concerning the necessary corrections and follow up notification with a fax or email to transmit the information.



Richai'd Walker
Assistant Dii'ectoi', Maintenance and Rehabilitation

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LIST OF TABLES, FIGURES, AND FORMS IN TEXT

SECTION 1 GENERAL INSTRUCTIONS

1.1 SAFETY

Safety is always the first priority. It is responsibility of all employees/contractors working on or around Southern California Regional Rail Authority (SCRRA) Right of Way to perform their duties in a safe and proactive manner and to prevent and correct any unsafe conditions that they observe in the discharge of their duties. The importance of employee and public safety is directly related to the quality workmanship and productivity on any railroad project or job. Efficiency, quality, and safety are closely related. An efficient, high quality job is a safe job, and a safe job is an efficient, high quality job. It is both possible and imperative to safely perform every job in compliance with all safety rules.

A. Job Briefing

1. Conduct a job briefing before any roadway worker fouls a track. A job briefing is not complete until each roadway worker acknowledges understanding of the method of on-track safety that will be applied and the procedures that will be followed and has signed the Job Briefing.

B. Fouling the Track

1. SCRRA's General Code of Operating Rules of MofW Employees (MofW OPR Rules) (Sec 2.0) and specifically the Roadway Worker On-Track Safety Instruction (Glossary) in the MofW OPR Rules explains when authority is required on a main track and controlled sidings. It also explains how protection is provided and how a lone worker or employees protected by a lookout may perform minor work or a routine inspection without proper authority.

2. On-Track Equipment: Only qualified employees may operate on-track equipment including hi-rail vehicles. On-track equipment shall be inspected daily before use and must comply with FRA (CFR 214 Subpart D) On-Track Roadway Maintenance Machines and Hi-Rail Vehicles.

C. MofW OPR Rules

1. Assignments Requiring Maintenance of Way Operating Rules Qualifications.

2. Initial Training Required for Qualifications.

D. Contractor Qualification Requirements: Contractors directly employed by SCRRA Engineering, Maintenance of Way (MofW) work groups, subcontractors of such contractors, and contractors involved in SCRRA projects, public projects, or utility projects who will be performing work activities on SCRRA property within 20 feet from the nearest running rail are responsible for developing and implementing a roadway worker protection/on-track safety program. This program must provide roadway worker protection/on-track safety training (RWP Safety Program) for their employees. This training is reinforced at the job site through job safety briefings.

1.1.1 REGULATIONS

A. Employees/Contractors performing maintenance-of-way or new construction work are also governed by Federal Railroad Administration Track Safety Standards, railroad workplace safety standards, and OSHA and shall immediately report to their supervisors any conflicts between those standards and those instructions received from their supervisors. In general, the standards of SCRRA prescribed by these instructions, engineering standards, and rules meet or exceed Federal Track Safety and Railroad Workplace Safety Standards. Employees/Contractors are required to fully understand and comply with the SCRRA "Maintenance of Way Safety Instructions" and the "Roadway Worker On-Track Safety Manual".

B. Maintenance-of-Way and new construction work must also conform to SCRRA's Engineering Standards and the California Public Utilities Commission (CPUC) standards for walkways, clearances, and other general orders, including engineering design and construction specifications.

C. Employees/contractors shall confirm regulations with their supervisors. Employees/contractors shall review and clarify any instructions in the Contract Documents, which appear to not be in compliance with the above regulations. Any discrepancies with the regulations must be reported in writing to the Manager, Track and Structures Maintenance.

1.2 ENVIRONMENTAL CONCERNS

1.2.1 POLLUTION

SCRRA's effect on the environment is a high priority issue. Many railroad maintenance activities affect the environment, and employees/contractors are responsible for any actions resulting in excessive air pollution, water pollution, noise pollution, waste disposal problems, or other environmental impact. Check with the appropriate supervisor or Contract Documents before beginning an activity, which may cause excessive pollution.

1.2.2 HEALTH

Job-related health concerns are also a priority issue for employees/contractors. Often an employee's/contractor's own action may affect his/her health. Many railroad job-safety precautions require the use of respirators and other protective equipment. Protective equipment requires special training on use and care. Those assigned special protective equipment must receive the required training on the use of the equipment. Do not use the equipment or perform work requiring such equipment until receiving this special training.

1.2.3 SCRRA PROPERTY

Employees/contractors observing unusual situations that in any way affect SCRRA'S property shall report the situation to the responsible supervisor. Such situations may include out of place or unusual items, illegal waste disposal, unusual liquid drainage or runoff, trash dumping, adjacent construction, encroaching construction, and trespassing.

1.2.4 HANDLING AND DISPOSAL OF TREATED WOOD

A. Disposal of treated wood shall be in accordance with state and Federal regulations. Do not burn treated wood in open fires, stoves, or fireplaces.

B. Avoid skin contact with creosote. If accidental contact does occur, remove creosote from skin as soon as possible with waterless cleaner or with mild soap and water. Never eat, drink, or smoke before removing creosote contamination from skin.

C. Avoid the inhalation of dust when sawing or machining treated wood. Wear an approved dust-type respirator when necessary.

D. If any creosote liquid or creosote-wood sawdust contaminates clothing, launder before re-use. Wash work clothes separately from other household clothing.

1.2.5 TRANSPORTATION OF HAZARDOUS MATERIAL

A. Comply with Federal regulations which require proper description on the waybill of any hazardous material shipped by rail and the placement of appropriate placards on the car. Some of the commodities covered are propane, butane, oxygen, acetylene, and gasoline and diesel fuel.

B. When transporting hazardous materials on the highway, the driver must carry written documentation of the type and quantity of hazardous materials on the truck in accordance with all Federal CDL, state, and local regulations.

1.3 ON TRACK MAINTENANCE OF WAY EQUIPMENT

A. These instructions apply to hi-rail vehicles and material handling car (push cars). Refer to Section 14, Maintenance-of-Way Cars, for instructions pertaining to railroad cars.

B. An operator's manual must be carried on the equipment. Keep repair parts catalogue and assigned tools within the car.

C. Before operating on-track equipment, operator shall first:

1. Receive training to qualify on on-track roadway equipment and receive relevant certification.

2 Be informed of the safety procedures that apply to persons working near equipment.

3. Be familiar with all aspects of information in the operator's manual. Contact the proper supervisor for assistance in understanding the instructions.

4. Follow the manual's instructions for safe operation.

5. Fully understand the safety procedures for the specific equipment to be operated.

1.3.1 INSPECTION

A. Hi-rail vehicle operators shall make a walk around visual inspection every time the vehicle is place into service on the tracks to ensure that the vehicle is properly lined and the hi-rail equipment is properly secured and ready for use.

B. Operators must be familiar with the safe operation of the rail gear and the manufacturer's operations and maintenance requirements. Operators of this equipment shall inspect the vehicle and rail gear thoroughly and frequently to see that all bolts, nuts and cotter pins are in place and tight; that rail sweeps are in place and properly adjusted; that wheel wear is within safe limits; that wheel gage is correct; and that all safety appliances are in place and in good working order.

C. Operator shall immediately remove any hi-rail vehicles from service that are found to be unsafe to operate. Operator shall report hi-rail vehicles removed from service to the appropriate supervisor.

1.3.2 LOADING OF MATERIALS AND TOOLS

Load and secure all material and tools before moving or operating any vehicle or equipment. Do not overload cars.

1.3.3 MOVING MATERIAL ON PUSH CARS AND HI-RAIL TRAILERS

A. Use only push cars or trailers of adequate capacity to transport material such as ties, rails, and frogs. When moving loaded push cars or trailers, assign a person to watch the load to ensure that tools or material remain secure.

B. Do not ride on push cars or trailers.

C. When a load projects more than four feet beyond the bed of a trailer or a push car operating across or over public roads or streets, display a clearly visible red flag by day and red light by night at the protruding load end.

1.3.4 SHOVING TRAILERS, CARS, OR CARTS

A. Do not push trailers, cars, or carts to material storage areas and work sites until load is properly secured. Shuttle push cars and trailers at speeds of less than ten miles per hour and for only short distances; otherwise, couple them behind the motorized unit. Do not shuttle push cars and trailers on descending grades, unless totally unavoidable.

B. Equip all push cars and trailers with approved coupling devices. Coupling devices must be secured by a latch or clamp to resist loosening during operation. Assign only experienced employees/contractors to handle brakes on push cars or trailers.

1.3.5 PROTECTING CARS AND ON-TRACK EQUIPMENT

Exercise care in the protection of track cars and on track equipment. Following the use of the equipment, operator shall arrange to secure the equipment giving ample consideration to the location and general area where equipment is to be stored. Doors and compartments shall be locked and windows closed. Trailers or push cars shall be secured with a locked chain passed through the wheels and around the rail when left unattended.

1.4 TOOLS AND SUPPLIES

A. Use tools only for the purpose for which they are intended. Always follow the manufacturer's safety, care, and instructions for each tool.

B. Only employees qualified for the use of that particular power tool may use them. Each employee is responsible for the proper use and care of power tools used on SCRRA property. The employee must be familiar with the

manufacturer's instructions for care, use, and safety before operating any power tool.

1.4.1 CARE OF TOOLS AND SUPPLIES

A. Take care of all tools and supplies as they represent a large investment. Collect surplus tools and supplies along with defective tools and scrap, and ship them in accordance with instructions from the proper supervisor.

B. Each work unit shall be equipped with sufficient tools for planned and routine tasks; spare and excess tools shall be stored and secured against theft, damage, and weather.

C. Separate defective tools from serviceable tools, equipment, and material and tag them "Defective-Do Not Use". Do not use defective straps or belts; discard as directed by appropriate supervisor.

D. At the start of each work shift, before using and as often as necessary while using, visually inspect tools, straps, rope, jacks, and all other items of equipment and material. If defective or showing signs of fatigue or wear, remove from service until repaired or replaced.

E. Tools with striking surface cracked or mushroomed are defective.

1.5 PORTABLE TRACK GRINDING WHEELS AND ABRASIVE SAWS

1.5.1 HANDLING, CARE, AND STORAGE OF GRINDING WHEELS AND ABRASIVE SAWS

A. All abrasive grinding wheels are breakable. Do not drop, bump, or roll wheels.

B. Protect abrasive grinding and abrasive saw wheels when not in use. Do not expose grinding/saw wheels to water, high humidity, or any solvent, including gas and oil.

1.5.2 GRINDING AND ABRASIVE SAW WHEEL MOUNTING

A. Carefully inspect abrasive wheels before and after mounting and before each use. Do not use wheels showing any evidence of cracks, chips, or abuse.

B. Check abrasive wheel spindle speed with a tachometer and compare this speed with the speed shown on wheel. If no speed is shown, do not use the wheel. Also, NEVER PERMIT ANY OVER-SPEED. Do not use the equipment until speed is properly adjusted.

1.5.3 OPERATION OF GRINDERS AND ABRASIVE SAWS

A. Employees/contractors operating a rail grinder/saw guide must wear foot and shin protector, goggles, and face shields. Employees/contractors shall not operate grinder/saw if the guards or shields have been removed or are not functioning as intended.

B. All employees/contractors not directly involved with the grinding/cutting operation must keep clear in order to avoid injury from steel and stone fragments.

C. Grinding on the sides of wheel intended for peripheral grinding may be dangerous. Only a limited amount of side grinding, such as shoulder or form grinding, is permissible. Never use excessive side pressure during permissible side grinding.

D. Take every precaution to prevent fires when using grinder or abrasive saws.

1.6 SMALL MACHINES AND POWER TOOLS

A. Each track or bridge gang leader (foreman) shall maintain a record of each small machine assigned, noting all repairs and other necessary information for each machine.

B. Keep machines and power tools clean at all times. When using the machine/power tool, keep all safety devices and guards in place.

C. Operate air-operated tools with manufacturer's recommended pressure and a maximum of 100 psi set on the air compressor. If a tool does not operate properly at 100 psi, clean and re-lubricate it. If it still does not operate properly, remove from service and report it to the appropriate supervisor.

D. To properly cool air-cooled engines, keep all shrouds in place whether in use or in storage, and keep the area under shrouds clean.

E. Provide pneumatic machines with safety cables or another approved safety lock to prevent disconnected air hoses from whipping (whip checks).

F. Level air compressors and other two-wheel machines with towing hitches with a dolly jack or wheel before operating them, and operate them only in a level position.

G. Use only the proper proportions of pre-mixed fuel in small machines requiring an oil-gas mixture for lubrication.

H. Comply with the manufacturer's instruction on the storage, use, transport, and maintenance of hydraulic power tools.

I. Protect hydraulic power tool lines from damage: do not drop material on them, drive equipment over them, or place them where they present a hazard to other employees. Wipe all connections clean before coupling tools or extension lines. Lines showing abrasions, cuts, or heat damage shall be removed from service.

J. Check the pressure output at the power pack at the start of each day. Do not operate hydraulic equipment at pressures in excess of the manufacturer's rating.

K. Transport lines and tools in secure compartments. These compartments must be capable of protecting the lines and tools from impact by other material being carried and must be capable of securing tools against impact against the compartment walls and other tools.

L. To prevent damage, properly load and store all small machines.

M. To prevent theft, lock air compressors, trailers, and other towed equipment to a permanent structure, such as a telephone pole, when not in use.

N. Get authorization for local repairs by outside firms from the appropriate field supervisor.

1.6.1 GENERAL RULES FOR OPERATION OF POWER TOOLS

General rules for operation of power tools are:

A. Wear safety shoes, safety glasses, hearing protection, respirators, face shields, shin protectors, and other required protective equipment.

B. Keep hands off throttle lever until ready to start operation.

C. Maintain a steady balance at all times.

D. Never put your face close to the tool.

E. Never rest the tool on your foot.

F. Never point the tool at anyone.

G. Never start a tool when it is lying on the ground, except when manufacturer's instructions indicate that is the proper method.

H. Never use the body to control an active tool.

I. Never indulge in horseplay.

J. Never point an air hose at anyone.

K. Tighten all hose connection. Note, a loose hose may not only leak, but also may disengage from the tool, whip around, and injure the operator.

L. Check and tighten all bolts, screws, and other connections before using a machine because ordinary vibration shakes parts loose and can cause breakage and other damage.

M. Do not operate the power tool without a proper tool in the chuck or front head.

N. Hold the tool firmly against the work, and always keep both hands on the handle while operating.

O. Maintain and use handles when provided.

P. Do not straddle a tool with one leg over the handle.

Q. Only qualified personnel may make adjustments to carburetors on abrasive type rail saws.

R. Do not crowd to try to speed up drilling with rail drills; they have automatic feed.

S. Do not override governors on machines so equipped.

T. Maintain any log books provided with machines.

1.7 HIGHWAY MOTOR VEHICLES

Only qualified, approved employees may operate SCRRA's motor vehicles. Such employees are required to maintain a valid driver's license.

1.7.1 FIRE HAZARD – CATALYTIC CONVERTERS

Converters get hot enough to ignite dry weeds and grass; be careful not to start a fire when it is necessary to drive in off-road situations.

1.7.2 FIRE EXTINGUISHERS

Vehicles in routine use on SCRRA property must be equipped with an approved type fire extinguisher. Keep them charged and properly inspected.

1.7.3 ADDITIONS AND ALTERATIONS

Do not make additions and alterations to any vehicle without proper authorization.

1.7.4 CROSSING PRIVATE PROPERTY AND PROPERTY DAMAGE

A. If necessary to drive on private property, obtain permission from the owner. When driving on private property, do not damage anything and close all gates.

B. Report any damages to private or public property to the appropriate supervisor.

1.7.5 TRUCK MOUNTED CRANES

A. General rules for operation of truck-mounted cranes are:

1. THE AREA OF CRANE OPERATION IS TO BE CLEAR OF OBSTRUCTIONS AND PERSONNEL.

2. Do not operate crane unless the truck is level.

3. Set outriggers at all times when using cranes.

a. EXCEPTION: It may be necessary to lift or lower loads between the rails when the truck is on the track and there is no practical way to set the outriggers. However, to carry this kind of load, place it on the bed of the truck or on a push car. Do not carry it on the load line of the crane, except for short distances in a working area.

4. Prevent overload at all times. Never exceed the load limit in the diagram posted on the crane. If the load diagram is missing, report it to your supervisor for prompt replacement. Use extreme care to prevent overload.

B. Never use the crane for side pulling. The crane is not designed or intended for side pulling.

C. Inspect cable frequently for signs of fraying or kinks. A damaged cable is a hazard, and shall be replaced.

D. Do not load the cable with boom in full down position. Always raise boom slightly so relief valves will bypass and thus prevent overloading of the crane.

E. Never repair or weld booms without proper authorization.

F. Arrange work so that one designated employee transmits signals to crane operator.

G. When traveling, put the boom on the boom rests.

1.8 UPDATING TIMETABLE AND RULEBOOK

When a general order amends the timetable, note the changes in your MofW OPR Rules timetable. If you cannot note the changes, write, "See amendment" across the affected portions and attach a copy of the general order or instructions to the timetable. When a general order cancels or amends another general order, mark the affected order to indicate the changes.

1.9 USE OF ELECTRONIC DEVICES

1.9.1 DEFINITIONS

A. Electronic device means a mobile (cellular) telephone or another electronic or electrical device used to:

1. Conduct verbal communications or send or receive electronic mail or text message.

2. Play games.

3. Listen to or view music, play video.

4. Navigate the internet.

5. Perform data gathering or computational tasks.

B. In addition to cellular telephones, electronic devices include items such as:

1. Any accessories associated with electronic devices.

2. Personal digital assistants (PDA).

3. Lap-top computer.

4. Devices that can receive or send radio signals.

1.9.2 RESTRICTIONS

A. While on duty, electronic devices, as defined herein, shall not be used for personal purposes at anytime within 25 feet of any track, roadway, signal house, signal equipment, or Railroad shop.

B. Any device that can receive or send any radio signal (excluding cellular) that is not broadcast, received, or recorded on a Railroad frequency is prohibited from use on SCRRA right of way.

1.9.3 USE OF SCRRA APPROVED DEVICES

A. Only SCRRA provided or approved electronic communication devices may be used on SCRRA right-of-way in the performance of duty.

B. Refer to MofW OPR Rules (Sec. 2.0) for instructions concerning radio use.

C. Company cellular phones may be used for official communication along the right of way as long as such phone is used outside of the foul distance of track, whether the track is in service or not.

D. Company cellular phones and railroad radios may be used in the operators cab only for official railroad communication. At no time shall the operator be distracted from operating the equipment or vehicle.

E. Hi-rail vehicle and equipment operators shall, whenever practical, stop the vehicle or equipment to use either company cellular phone or railroad radio.

F. Hi-rail vehicle operators shall stop vehicle whenever using a company provided lap-top computer.

G. At no time, shall any passenger (railroad employee or contractor) riding in a train's operator cab, locomotive, on-track equipment, or hi-rail vehicle, use any electronic device, unless assisting in handling an emergency situation.

H. At no time shall cellular phone or railroad radio use place the user or anyone else in an unsafe situation.

I. Do not use cellular phones in areas where inattention could result in being struck by tools or equipment.

J. Digital thermometers may be used in the performance of railroad duties.

K. Electronic testing equipment shall be used in accordance with CFR 49 parts 213 and 214.

L. Digital time pieces that do not receive or transmit any signal are permitted for use on SCRRA right of way.

1.9.4 HIGHWAY VEHICLES AND USE OF ELECTRONIC DEVICES

The following rules apply for use of electronic devices while operating any highway vehicle.

A. All state and locals laws shall be obeyed concerning the use of cellular phones in highway vehicles.

B. When initiating or receiving cellular phone calls, the driver shall utilize hands-free equipment. If practical, driver shall bring the vehicle to a safe stop until the call is completed.

C. Conversations should be as brief as possible.

D. Lap-tops or navigational equipment shall not be operated while driving any vehicle.

E. Cellular phones shall not be used while re-fueling.

1.10 VEHICLE TRACK INTERACTION SYSTEM PROCEDURES

1.10.1 DATA COLLECTION AND REPORTING

A. Vehicle Track Interaction (VTI) is a technology that evaluates how the vehicle interacts with the track. The tool is used to: detect vehicle and track interaction deviations; provide a proactive approach to reducing damage to vehicles and track; improve the track inspection process; quantify and prioritize the exceptions; prevent costly service and equipment failures; and provide quality assurance through evaluation of maintenance quality and results.

B. VTI is a real time system that continuously evaluates the track for exceptions. When exceptions are found, they are labeled with milepost, GPS coordinates, speed, date, and time.

C. The Vehicle Track Interaction (VTI) System (also known as ACCELEROMETER) is an autonomous instrumented system located on select SCRRA rolling stock that transmits information regarding forces under live loaded conditions. These forces are measured at three key points on the locomotive – the carbody, the axle, and the truck. On the carbody, vertical and lateral forces of the train are measured and assist in providing vital information concerning the condition of the track structure and geometry. On the axle, forces are measured at the wheel/rail interface to identify impacts from the moving train that can cause further wheel damage to rolling stock and cause damage to or break rail joints. On the truck, lateral forces are measured to identify issues with truck hunting or the vehicle suspension system that could create a safety condition or adversely influence the readings from the other sensors. This information

is transmitted wirelessly to a central server. Information autonomously collected from the VTI system is compared to preset event thresholds (see Figure 1-1, Threshold Acceleration and Loads). The central server will screen all incoming information and document event conditions (which are categorized as priority, near urgent, and urgent) with a location including milepost, GPS coordinates, and subdivision.

D. The following Reported Exception Events are developed from mounted sensors on locomotive:

1. CBV - Carbody vertical exceptions

2. CBL - Carbody lateral exceptions

3. TRL – Track lateral exceptions

4. AXV1 – Axle vertical 1 exceptions (Engineer's side)

5. AXV2 – Axle vertical 2 exceptions

FIGURE 1-1 - THRESHOLD ACCELERATIONS AND LOADS[1]

Exception Events	Event Categories		
	Priority	Near Urgent	Urgent
Carbody Vertical (CBV)	0.5 – 0.74 G	0.75 – 0.99 G	1.0 G and greater
Carbody Lateral (CBL)	0.4 - 0.54 G	0.55 – 0.74 G	0.75 G and greater
Axle Vertical 1 (AXV1)	45 – 64 KIPS	65 – 79 KIPS	80 KIPS and greater
Axle Vertical 2 (AXV2)	45 - 64 KIPS	65 - 79 KIPS	80 KIPS and greater
Truck Lateral (TRL)	0.3 G	0.35 G	0.4 G

Note 1: These numbers are recommended by ENSCO and are based on proposed numbers from the Rail Safety Advisory Committee's High Speed Track Safety Standards (for non-passenger carrying equipment) as well as an analysis of Metrolink VTI data since the VTI System has been installed.

E. The central server will store this information in a web-based database that can be viewed by pre-established end-users. The associated graphic interface will report the severity of the event for visual evaluation.

F. Events will trigger an email to designated MofW SCRRA and Contractor employees for their inspection, investigation, repair, and remedial action

reporting. However employees with access to the web-based site shall review the published database daily.

G. When SCRRA's Maximus system is implemented, will receive email reports of all events and create a viewable database for designated employees to review. These designated employees shall be responsible to investigate event reports and report back their findings noting in Maximus what was found and what remedial action was taken. Some events and their location may become repetitive in nature, but all events shall have a follow-up report in Maximus indicating what was found and remedial action taken.[1]

1.10.2 MONITORING AND RESPONSE

The maintenance contractor shall monitor daily the VTI data collection information and ensure the following events are addressed as listed.

A. **Priority Events:** The Maintenance Contractor Supervisor shall review and monitor the progress of Priority events. The Maintenance Contractor Supervisor shall determine if action is required. Each contractor track inspector shall be aware of all Priority events logged on his assigned territory.

B. **Near Urgent Events:** The Maintenance Contractor Supervisor shall review and monitor Near Urgent events. The Maintenance Contractor Supervisor shall determine what action is required and schedule corrective work as necessary. Each contractor track inspector shall be aware of all Near Urgent events logged on his assigned territory and shall verify track condition with each scheduled inspection.

C. **Urgent Events:** The Maintenance Contractor Supervisor shall review Urgent events and shall direct the contractor track inspector to inspect all Urgent events within 24 hours. The Maintenance Contractor Supervisor shall determine what action is required and schedule corrective work.

D. The Maintenance Contractor Supervisor shall follow up on corrective actions and review the Near Urgent and Priority event logs monthly with the Manager, Track and Structures Maintenance.

E. **Truck Lateral (TRL) Events:** Truck frame lateral exceptions are most likely caused by problems with the vehicle, not track. Once a vehicle starts to experience truck frame lateral exceptions they typically do not go away until vehicle maintenance is performed. If this event is recorded over a large area, the mechanical supervisor shall be notified so that vehicle maintenance can be performed.

[1] Maximus system is not currently available. Once the system is implemented, these Instructions concerning it shall be followed.

1.10.3 INSPECTIONS, POST-INSPECTION REPORTING AND FOLLOW-UP

A. Individuals directed to respond to an event location for inspection must be qualified per FRA Track Safety Standards Part 213.7 and have the knowledge and ability to make a judgment on the conditions found and either direct remedial action, place slow-order, or determine that no event occurred.

B. When responding to a location for inspection, the qualified individual shall be equipped with sufficient tools to evaluate location, GPS locator, track gage and level board, tape measure, and string line.

C. Location shall be inspected for gage, cross-level, line, and surface. Location shall also be evaluated for pumping ties, anchor movement, rail cant, and movement.

D. Locations within or approaching turnouts shall inspected with consideration for facing and trailing movement.

E. Rail shall be inspected closely for wheel-burns, low welds, and corrugation.

F. In all cases, the qualified individual making the inspection must take into consideration that the data collected by the VTI system was developed under loaded track conditions.

G. Following the assessment of a location reported as an event, the individual shall report the findings immediately to the individual's supervisor and/or the Manager, Track and Structures Maintenance, and proceed to create a follow-up report in the Maximus system.[2] Whether the individual reports to a supervisor or the Manager, Track and Structures Maintenance, will be determined. Findings shall dictate the nature of remedial action. Such action shall be carried out in accordance with requirements for safety of operations and in compliance with FRA requirements.

H. Some locations may need immediate attention and other may be determined to be programmable for another day; in either case, remedial action remains at the discretion of the qualified individual making the inspection.

I. Periodically these documented alarm reports in Maximus and the remedial action taken shall be reviewed on an overall basis to establish locations

[2] Maximus system is not currently available. Once the system is implemented, these Instructions concerning it shall be followed.

that continue to create ride-quality exceptions in order that they may be addressed in maintenance and rehabilitation programs.[3]

[3] Maximus system is not currently available. Once the system is implemented, these Instructions concerning it shall be followed.

SECTION 2 RAIL

2.1 RAIL AND FASTENINGS

2.1.1 ORDERING

Rail for new construction, rehabilitation, and maintenance must be ordered through the Manager, Track and Structures Maintenance, or designated Project Manager. Keep inventory levels to a minimum for inventory and to support capital and rehabilitation programs. Contractors may be provided rail in the quantities and locations stated in the Contract Documents.

2.1.2 UNLOADING

Unload rail and fastenings from cars under the supervision of a qualified person in charge using the pre-approved method. Unload rail in a safe manner to prevent loss and damage to material and danger to personnel.

2.1.3 STORAGE

A. Neatly arrange rail and fastening storage areas. Arrange rail and fastenings by weight and class, and stack them to permit easy access. When it is necessary to store rail and fastenings adjacent to the track, take care to prevent movement from vibrations and to avoid poor footing. Contractor shall obtain approval of all storage and lay down sites within the SCRRA's Right of Way from the Manager of Maintenance of Way or Project Manager specific to the work site.

B. New or used rail in lengths up to 82 foot shall be stored on blocks (not in contact with the ground). If stacked more that one tier high, slats at least 1 inch thick shall be placed at 25 foot spacing to keep each tier separate.

C. CWR may be stored on the ballast or ground if it is programmed for installation within 12 months of unloading. If not programmed for installation, CWR shall be placed on blocks spaced at 25 feet apart and away from the toe path if possible and clear from Right of Way roads. Except as provided in 2.2.2.1 G, CWR shall not be covered or buried by ballast, soils, or debris. CWR shall be protected from impact by or operation over by any vehicle. Ends of CWR strings shall be placed at least 8 foot away from the nearest operating rail in order to prevent impact by dragging equipment.

D. If it is impossible to avoid poor footing conditions, report this to the SCRRA Dispatcher requesting a footing order. When unloading welded rail along the main track, place it outside the ends of the ties. Also, do not obstruct the ends of welded rail strings; otherwise expansion can cause buckling and in turn, foul the main track. Wood spacers should be placed

between the ends of welded rail strings so that ends may by-pass and not buckle against each other from expansion.

2.1.4 RAIL LENGTHS

Use no rail less than 30'-0" long in the main track, with the following exceptions:

A. At turnouts (as permitted by Standard Plans)

B. Between railroad crossings.

C. As a temporary expedient (minimum 19' – 6") *

D. Where a short rail is used with field welds (Minimum 19'-6") *

* In curves of 2 degrees or more, use 30'-0" minimum length for all installations.

2.1.5 TRANSPORTING RAIL

Transport rail in compliance with outstanding instructions and state laws. Do not drag rail behind trucks.

2.1.6 SPIKING

A. New construction or rehabilitation of rail and ties shall conform to E.S. 1404. When a rail re-lay dictates complete re-spiking, plug the old holes with approved tie plugs or other approved method and re-spike to the new spiking pattern. In other rail replacement, plug the spike holes and re-drive spikes in the same pattern. When using two spikes per tie plate, never drive line spikes opposite each other on either side of rail.

B. Start drive spikes vertically, square and snug against the rail. Do not strike the base of the rail. Do not drive spikes in holes of slotted joints or against the rail within 3 inches of any joint.

2.1.7 COMPROMISE JOINTS AND COMPROMISE THERMITE WELDS

A. Use only compromise joints (step joints) or compromise thermite welds of approved design for connecting different rail sections. A set of compromise joints has two joints and four bars. The four bars of the set are right gage, right out, left gage and left out.

B. Do not directly support a compromise joint with a cross tie. Instead, suspend it in the middle of the crib between two cross ties. This will provide good support at the joint for both weights of rail.

C. Compromise welds are preferred over comp joints for connections between differing rail sizes. Compromise welds or joints shall be

designed and manufactured specifically for the sizes of rail to be connected. If available from a manufacturer, compromise rails (factory welded) shall be used in all new work.

2.1.8 BOLTING

Fully bolt joints, using the outer four bolts only on six hold joint bars to connect rail ends which will be field welded within 60 days. Keep nuts tight. Put the flat side of the nut against the spring washer. Remove frozen bolts with a cutting torch or a chisel.

2.1.9 EXTEND MAIN TRACK RAIL SIZE THROUGHOUT TURNOUT

Turnouts shall be constructed wholly of one size of rail. Compromise joints or molds shall be located beyond the limits of the turnout.

2.1.10 CHANGING OUT RAILS - INSPECTION

A. Rail in curves shall be inspected periodically to determine whether it shall be replaced due to wear and to determine the actual length of rail to be replaced. Actual wear conditions shall be determined for each curve. Do not rely on rail date information or curve length information in the track chart. The wear rate of rail shall be considered in planning for rail replacement. Generally, rail should be planned for inclusion in the following year's capital maintenance program when the wear reaches a point of about 3/16 inch less than the limits in Figure 2-1, Rail Wear Limits. Rail should be transposed, or replaced, when it reaches the limits in Figure 2-1.

B. Rail may be replaced as high side and discard old high side rail; replace high side and set high rail to low and discard old rail; or replace low rail, as indicated by the conditions in each curve. The condition of both rails should be considered when recommending the transposition of a particular curve. This decision will be made by the Manager, Track and Structures Maintenance or as required in the Contract Documents.

C. Replacement rail shall be 136 lb. rail unless specifically authorized by the Manager, Track and Structures Maintenance. Premium rail (alloy or head hardened) shall be used for curves of three degrees or more and in special trackwork.

D. When 6-inch base rail is installed to replace 5-1/2 inch base rail, or when rail is being replaced on wood ties with curvature of four degrees or more, tie plates shall be elastic fastener 16-inch plates per E.S. 1406 or as stated in the Contract Documents.

FIGURE 2-1 - RAIL WEAR LIMITS				
RAIL WEIGHT	WEAR LIMIT TO TRANSPOSE	SIDE WEAR LIMIT TO REPLACE	HEIGHT WEAR LIMIT TO REPLACE	GAGE FACE ANGLE
136 LB.	1/4” to 1/2”	5/8”	11/16”	18 degrees
119 LB.	1/4” to 1/2”	5/8”	1/2”	18 degrees
115 LB.	1/4” to 1/2”	5/8”	3/8”	18 degrees

E. Measure side wear at a point 5/8 inch below top of rail.

F. When replacing rail, or renewing switch points or frogs, carefully inspect the rail ends and bolt holes in the remaining rail before applying angle bars. If cracks or signs of stress are visible in the rail end, or if the bolt holes are excessively deformed or elongated, replace the rail or cut the remaining rail back to a location where sound bolt holes can be drilled. Also replace chipped rail ends with more than a 1 inch chip comprising more than twenty-five percent of the railhead. Be sure that the gage and running surface of rail ends match (CFR49 p213.115). Control of thermal expansion of rail requires that there be no net addition of rail. Following replacement or repairs rails, rails shall be thermally adjusted. When necessary, use a rail expander to close gaps at joints. In all cases of changing rail, the foreman or supervisor shall submit reports required under Section 2.2.7 entitled “Reporting Disturbed CWR Track” herein.

2.1.11 CHANGING OUT RAILS – REPORTING AND MARKING

A. In order to ensure proper accounting, inventory adjustments, and chain of custody, all rail removed from service must be ultrasonically tested for internal defects and marked with date of test. The track repair leader must submit the appropriate rail transaction report for any rail changed out. Refer to Section 2.3 entitled “Rail Defects” for marking, reporting, and disposal requirements for defective rails.

B. Any rail that is removed from service that has been tested within the last six months and is defect free and planned for re-use must be clearly marked per the Section 2.1.17 entitled “Rail Testing and Identification” herein.

2.1.12 NEW, SECONDHAND (SH), SCRAP RAIL, AND OTHER TRACK MATERIAL (OTM)

A Track supervisors and track repair crew leader (foreman) must clearly mark all rail in inventory, showing length, weight, and class. Load and

ship surplus new and secondhand rail as the Manager, Track and Structures Maintenance, instructs or as directed in the Contract Documents. Slat loaded rail (wood slats between rail levels), and submit the proper rail transaction report in order to maintain proper rail inventory accounting.

B. The Manager, Track and Structures Maintenance, will determine the disposition of defective rail removed from the track. Stack rail so it can be loaded with a magnet crane. Do not slat load scrap rail. Submit the proper rail transaction report to SCRRA Material Control Manager.

C. Classify surplus track material as either unsorted scrap or as salvageable secondhand material. All fit for re-use rail (salvageable and secondhand rail) returned to inventory shall be clearly marked "fit for re-use" with the date of the last rail test. After classifying the material, advise the Manager, Track and Structures Maintenance, who will handle scrap material in accordance with SCRRA procedures. Ship scrap switch points and frogs separately from rail.

2.1.13 CUTTING RAIL

A. When it is necessary to cut a new or second hand rail, make a square and accurate cut using a rail saw. Refer to Section 1.5.3 entitled "Operation of Grinders and Abrasive Saws" herein. .

B. In an emergency, a cutting torch may also be used (and may only be used) in an emergency. In this case, carefully clean the rail end. If it is necessary to torch-cut rail, protect the track with a 25 MPH slow order and change it torch-cut rail within 24 hours.

2.1.14 DRILLING RAIL

Except at turnouts (as required by Standard Plans) and at field welds, drill rail so that there will only be the holes required in the rail end to fully bolt the joint. Do not torch cut holes in any track under any circumstances. Do not drill holes through the joint bar.

2.1.15 RAIL ANCHORS

A. Apply and maintain rail anchors as outlined in Engineering Standards (E.S. 1101 and 1102). When placing anchors or increasing the number of anchors, consult with the Manager, Track and Structures Maintenance, on what pattern to use. Keep anchors snugly against the ties or tie plates, or they are useless. When it is necessary to move anchors, remove and reapply them (except when using an anchor adjusting or squeezing machine).

B. Do not drive anchors along the rail. Use anchor applicator and squeezer machine when available. For hand application, use the proper wrench. Apply drive-on anchors with a sledge-hammer. Place the anchor snugly against the tie or tie plate. Seat it first with a light blow, striking the heel of the anchor squarely with the hammer. Then strike the anchor with a hard blow. Make sure that the anchor fastens properly to the base of rail. To avoid deforming the anchor and reducing its holding power, do not overdrive. Do not strike the base of the rail.

2.1.16 SPECIAL FASTENERS

A. Use special fasteners approved by the Director of Engineering and Construction or required in the Contract Documents on concrete ties and on curves and in other areas where rail turnover or frequent rail change-out is a problem. Fasteners shall be removed and applied according to manufacturer's instructions.

B. Fasteners for angle bars and insulated joints shall conform to the manufacturer's recommendations. Use of inappropriate fasteners can short circuit the signal system.

C. Elastic fastener clips shall be galvanized per E.S. 1407 and 1409. Shoulder insulators shall be steel insert type for curves in excess of four degrees. Base pads and insulators shall be replaced whenever out-of-face rail replacement or transposition is performed. Use 3-piece pads (polyethylene/steel/polyurethane) for all new construction and programmed rail replacement.

2.1.17 RAIL TESTING AND IDENTIFICATION

Second hand rail shall be ultrasonically tested and the test documented to establish a chain of custody before it can be placed into service in class 3 or higher track. Rail that is removed from service and planned for reuse shall be ultrasonically tested and marked with the month and year of the last test date and clearly marked "fit for reuse". If the second hand rail chain of custody cannot be verified, the rail must be ultrasonically tested and marked with the date of the test and "fit for reuse." If the ultrasonic test has not been performed within the past 6 months, the second hand rail must be ultrasonically tested again and marked with the date of the test and "fit for reuse."

2.2 CONTINUOUS WELDED RAIL (CWR)

This section covers CWR installation and maintenance. Refer to Section 8, Prevention of Track Buckling, for additional instructions on procedures for prevention of track buckling. Refer to Federal Track Safety Standards 213.119 for regulations governing work on CWR.

2.2.1 DEFINITIONS FOR CWR

The following terms are used in reference to CWR:

A. **Continuous Welded Rail (CWR):** Rail that is welded into lengths in excess of 400 feet.

B. **Neutral Rail Temperature (NRT):** The temperature at which the rail has no thermal stress due to expansion or contraction, this is the actual rail temperature if the rail is free to expand or contract as when the anchors are removed and the rail is vibrated.

C. **Preferred Rail Laying Temperature (PRLT):** The temperature that the rail is to be installed at, or adjusted to, in order to balance the thermal expansion and contraction forces for optimum track maintenance practices.

D. **Pull-Apart:** A track defect caused by excessive contraction of the rail when cold, it may be the rupture of all bolts in a joint or a rail fracture that pulls apart the rail.

E. **Rail Temperature:** The actual temperature of the rail as measured by rail thermometer(s).

F. **Track Buckle:** A kink in the track caused by excessive thermal expansion of the rail, insufficient lateral strength, or both -- often called a “sun kink”

G. **Destressing:** A maintenance procedure that makes the longitudinal thermal stress in the rail the same as, or as close as possible to what it would be, if the rail was laid and anchored at the PRLT -- sometimes called “adjusting” CWR.

2.2.2 MAINTENANCE OF CWR

A. Proper maintenance of CWR will result in a high ride quality and extended rail service life.

B. It is a requirement of the FRA (49CFR 213.119) that each railroad manage the maintenance of CWR to maintain thermal forces within safe limits. This Section 2, Rail, and Section 8, Prevention of Track Buckling, are a part of the SCRRA program to maintain CWR.

C. Employees responsible for the maintenance, inspection and installation of CWR must receive annual training in CWR practices.

D. For the proper maintenance of CWR, the neutral rail temperature, ballast section, drainage, cross ties, anchors, and rail head wear/profile must be maintained to the highest quality.

E. Newly installed CWR rail shall be ground as soon as possible (during the next scheduled rail grinding program) after laying to correct any surface irregularities in the railhead. If irregularities are excessive, corrective measures other than grinding may be necessary.

2.2.2.1 RESPONSIBILITIES OF MANAGER, TRACK AND STRUCTURES/ CONSTRUCTION PROJECT MANAGER[4] FOR THE INSTALLATION OF CWR

A. The Project Manager must be qualified per CFR 49 part 213.7; is responsible for the overall safe passage of trains' and must inspect track frequently behind CWR gang to ensure safe operating practices, proper rail temperature adjustment, and appropriate temporary speed restrictions.

B. The Project Manager is responsible for the quality of field welding, rail pickup, and OTM pickup behind the CWR gang.

C. The Project Manager is responsible for the reporting and documentation of rail installation temperatures.

D. The Project Manager shall verify that the following requirements are met in regard to CWR installation:

1. The roadbed shall be properly prepared prior to distributing material. This includes:

    a. Installing ties if required.

    b. Surfacing.

    c. Verifying that ballast is properly regulated and broomed.

2. Turnouts shall be evaluated prior to installation to verify that:

    a. Those not required are removed.

    b. Those to be replaced are completed.

    c. Those to be relocated are completed.

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[4] The Manager of Maintenance of Way or Construction Project Manager may function as the Project Manager or may delegate these functions to another authorized person. In either case a definite understanding of who will function as Project Manager will be provided by the Manager of Maintenance of Way or the Construction Project Manager.

d. Those that are not replaced are rehabilitated, as required.

3. If practical, all crossings through which CWR is to be installed should be rehabilitated ahead of rail installation.

4. All open deck bridges on which CWR is to be installed must have the following preparation work done prior to rail installation:

a. Ties renewed as necessary.

b. Alignment corrected, if necessary..

c. Hook bolts or boat spikes installed to comply with SCRRA standards.

d. Support for unloaded CWR.

e. Inner guard rails removed.

f. Tie pads available as necessary.

E. The Project Manager shall consult with the Manager, Signals and Communications, to arrange for signal support. They will determine status of insulated joints: whether existing joints can be removed and whether new joints will be required. Plan rail relay to include prefabricated insulated joints installed contiguous with CWR.

F. Consideration should be given to completing any other functions to improve quality or productivity of project.

1. Repair of previous derailment areas with damaged spikes and other damage.

2. Operating Brush Cutter

3. Operating Shoulder Ballast Cleaner

4. Cut widening with Dozers

G. Unload CWR giving special consideration to productivity gains such as minimizing thermite welds and eliminating the need to lay jointed rail to fill in gaps around turnouts and crossings. If possible, CWR shall be unloaded through secondary crossings by trenching through the roadway and backfilling with ballast and covering with temporary asphalt road surface. Refer to Section 2.1.3.C.

H. The Project Manager shall ensure that OTM is properly distributed in proper quantities. It is as wasteful to over distribute as it is to under distribute. All OTM should be distributed on one side of the track only.

2.2.2.2 RAIL GANG LEADER ("FOREMAN'S") RESPONSIBILITY[5]

A. The Foreman is responsible for the overall operation of the gang. The Foreman shall constantly evaluate the gang's performance and ensure that all work is being performed to the highest standard in a safe manner and according to standard practices.

B. The Foreman must have a rail thermometer, tape measure, string line, level board, and a track gage available at all times.

C. The Foreman shall check gage, spiking, anchoring, general quality, and production. The Foreman is responsible for checking ahead of the gang so there will be a uniform flow of work; advising the Project Manager of any shortages of material or appropriate corrective action.

D. The Foreman shall coordinate all work with the Signal Support Personnel. All Work Windows arranged for the work shall include ample time for restoration of the signal system.

E. The Foreman is responsible to ensure the CWR is being laid at the proper temperature and the rail is being properly adjusted. The Foreman is responsible to take, record, and report rail-anchoring temperatures per Section 2.2.3 entitled "Preferred Rail Laying Temperatures" and Section 2.2.4 entitled "Instructions for Taking Rail Temperatures for CWR" herein, using sample form shown as Figure 2-2.

F. Cutting and drilling of rail should be done under the direction of the Foreman to ensure correct workmanship.

G. Before track is released for train operation, the Project Manager or Foreman shall inspect the work to ensure that is accordance with the Section 2.2.2.4 entitled "Restoring Track for Train Operation after CWR Gang Work" and meets all the requirements of CFR 49 part 213

2.2.2.3 GENERAL GANG OPERATION

A. CWR must be installed and anchored at the Preferred Rail Laying Temperature. (NOTE: When rail heater is required, it shall operate in front of spiking operation if rail temperature can be maintained for anchoring.)

B. Track gage for CWR installation shall be as follows:

1. **Timber Ties:** 4' – 8 1/2" for tangent track and curve.

[5] The Rail Gang Leader may be the employee of a construction contractor, maintenance contractor, SCRRA, or a consultant. Whoever is directly in charge of installing rail shall be governed by these instructions.

2. **Concrete Ties:** 4’ – 8 1/2”

C. When removing scrap and usable OTM from track, it should all be piled on one side, and on the opposite side of the new OTM to be installed. Make piles of removed OTM as large as practicable.

D. Jointed rail to be removed shall be center marked before removing from track and shall be set out head of the ball up.

E. Stub spikes shall be marked and then driven down with a stub punch to avoid injury or damage to the adzer.

F. Tie adzing shall only be of sufficient depth to allow for a full level seat for the new tie plate. Adzer shall be properly adjusted and checked periodically. Over adzing reduces the life of the tie. Adzer bits shall be of the right size. Maintain adzer bits sharp at all times to avoid fraying the tie or breakage of bits.

G. Tie adzing shall not be done on open deck bridges.

H. Spiker gage, Dunrite gage, and tie drills must be properly set. Frequent checking of the setting shall be made to avoid improper gage.

I. Rail temperature shall be taken immediately behind anchor application totaling a minimum of four times each one-quarter mile CWR string. Determine the rail temperature in accordance with the Section entitled 2.2.4 “Instructions for Taking Rail Temperatures” herein.

J. When automatic spiker is not available, spikes shall be set and driven straight. Do not over drive spikes.

K. Anchor machines must be properly adjusted. Inspections shall be made checking to ensure the anchors are fully applied and fit flush against the tie.

L. CWR must be laid in tension; it must be stretched at regular intervals from a location close enough to ensure longitudinal movement at the spiking and anchoring operation.

M. A minimum of two spikes (cut or screw) or as required in the Contract Documents must be in place to secure each tie plate at end of each work shift. All cut or screw spikes must be installed by end of second work shift.

2.2.2.4 RESTORING TRACK FOR TRAIN OPERATION AFTER CWR GANG WORK

A. Refer to Appendix C, Summary of Speed Restrictions for Trackwork.

B. If surfacing work has been performed and the rail is properly adjusted and/or the ballast has been disturbed without being properly compacted by a dynamic track stabilizer, limit speed of first train over the newly installed rail to 10 MPH for passenger trains and 10 MPH for freight trains and maintain this speed for any track that does not have the full complement of anchors per E.S. 1102 and does not have a minimum of two spikes per tie plate unless otherwise directed. After the passage of the first train, the track shall be inspected and then, under the authority of the qualified person-in-charge (qualified under CFR 49Part 213.7), the speed may be increase to 40/30 MPH for the period of 24 hours with the minimum of 12 trains.[6] Then after another track inspection, the speed may be restored to the Timetable Speed.

1. Before removing any speed restrictions, the abutting rail's anchor pattern and rail end gap condition shall be inspected.

2. Review grades and curves in Track Chart so consideration is given when placing speed restriction to prevent buckled track.

3. Inspect track to ensure the track is safe to return to the correct track class for operation.

4. Following CWR installation, the Foreman shall inspect the track. If the Foreman determines that there are no exceptions and ballast has not been disturbed, the maximum speed for the first train shall be 15/10 MPH. After the passage of the first train and after another track inspection, the speed may be restored to the Timetable Speed.

C. Prior to increasing speeds, the following criteria must be met:

1. Before removing 10/10 MPH speed restriction abutting rail shall be inspected for rail anchor and end gap condition.

2. The opposite rail's anchor condition and cross level condition shall be inspected prior to removing 10/10 MPH speed.

3. If more than 1/2 inch of change of elevation has occurred due to height of new rail or plates, limit maximum passenger speed to 50 mph on tangent or speed per E.S. 2302, whichever is slower.

4. After the first train following CWR installation, the speed may be increased to Timetable Speed following inspection and determination that all back work is complete (i.e. Anchor patterns, spike patters, field weld or joint properly made, etc.)

[6] When train speed is written as two numbers separated by a "/", it shall be understood that the first number, in this case 30, applies to passenger trains and the second number, in this case 25, applies to freight trains.

D. If track surfacing is to be or has been performed in conjunction with the installation of CWR, the track speed shall be limited to 10 MPH for passenger and 10 MPH for freight for the first train, then:

1. Until surfacing is complete, the speed may be increased to 30/20 MPH until surfacing is complete provided that anchors, rail temperature adjustment, welds, and joints have all been properly installed, then:

a. When surfacing is complete, limit speed to 30/20 MPH for 24 hours of operation or:

b. If surfacing is completed with a Dynamic Track Stabilizer and all anchors, joints, welds, and spiking are complete, there is no mandatory speed restriction for any train; however supervisor in charge may limit speed in accordance with this supervisor's responsibilities under 49CFR213.7.

2.2.3 PREFERRED RAIL LAYING TEMPERATURES FOR CWR

A. When laying welded rail, heat the rail if necessary so that the rail temperature will be at the Preferred Rail Laying Temperature (PRLT) listed below unless approved by Director of Engineering and Construction. Heated rail must actually move as it expands. Spike and anchor at the target temperature.

B. Paint the actual average rail temperature achieved at the time of installation, as well as the date, on each end of each string in the web of the rail on the field side, and report rail installation and forward a copy to the Manager, Track and Structures Maintenance. Rail date and temperature shall be marked per the Section 3.1.15 entitled "Marking Field Welds" herein will satisfy this requirement.

C. The rail length needs to be divided into four marks that indicate the required rail movements, making the first mark at 100 feet and then the last three equally spaced to the end of the rail using the chart in Figure 8-2, CWR Movement Chart - Inches. The marks shall be made with paint stick on the base of the rail; the match mark shall be made on the tie plate on wood ties and on concrete on concrete ties. When the rail is heated to PRLT, the marks will line up and then the anchors or clips shall be installed starting at the beginning of the rail. The marks shall be matched up on the rail and shall be considered destressed. The procedure shall be done by the foreman in charge of maintenance or by the construction inspector of a construction or maintenance contract.

D. Preferred Rail Laying Temperature:

1. 110 degrees F on all tracks with the exception of tunnels.

2. 70 degrees F inside tunnels.

3. If rail is found to be in an adjusted temperature or Force Free Temperature more than 5 degrees F above or below the PRLT, it shall be destressed.

2.2.4 INSTRUCTIONS FOR TAKING RAIL TEMPERATURES

A. Take rail temperature readings on the web of the shady side of the rail. Take a minimum of four readings: One at each end with two equally spaced in the middle. Take temperatures before and after all breaks in welded rail strings (i.e. road crossing, switches, insulated joints, etc.). Record rail temperature notes and data as shown in Figure 2-2, Record of Rail Installation Temperatures.

B. If rail temperature is taken with either an optical or a contact thermometer, take two readings adjacent to each other. If the two temperatures are within 3 degrees Fahrenheit, take the average. If they vary by more than 3 degree Fahrenheit, continue to spot check until a stable temperature as measured.

C. If magnetic thermometers are used, they must be left on the rail for five minutes to ensure that they have equalized to the rail temperature before recording the temperature.

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FIGURE 2-2 - RECORD OF RAIL INSTALLATION TEMPERATURES								
Date	Mile Post	Subdivision	Track No.	Rail N / S	String No. & Length	Air Temp.	Rail Temp.	Weather / Time

Submitted by: _____

Description: _____

_____

Instructions:

Date: Date when rail is laid.

Rail – N / S: North or South rail, as defined by timetable direction.

String No.: Number the strings beginning with #1 and continuing in succession with each string laid in the course of the day. Each day the crew should start the numbering with #1. Indicate length of each string.

Air Temp: Air temperature in degrees Fahrenheit taken at the same time the rail temperature is taken.

Rail Temp: Rail Temperature in degrees Fahrenheit taken at the same time the rail is anchored.

Weather/Time: Weather conditions and time when the air temperature and rail temperature are taken.

Description: Notes about special items (i.e., weather, mile post locations, etc.).

Distribution: Deliver completed forms (FIGURE 2-2) to SCRRA Manager of Maintenance of Way for filing by milepost order for each subdivision.

2.2.5 MAINTAINING CWR TRACK

A. It is a requirement of the FRA (49CFR 213.119) that each railroad manage the maintenance of CWR as to maintain thermal forces within safe limits. This Section 2, Rail, and Section 8, Prevention of Track Buckling, are a part of the SCRRA program to maintain CWR.

B. In welded rail track, frequently inspect the joints and bolts. Replace bent and/or distorted bolts and checked or cracked joint bars. In order to prevent excessively wide openings at rail ends in extremely cold weather, replaced defective bolts one at a time. Maintain proper rail end, anchor pattern at joints in accordance with E.S. 1102. If a pull-apart occurs in continuous welded rail or for any other reason it becomes necessary to saw in a short length of rail to restore service, use lengths between 19'6" and 39'. The length of the inserted rail should be the same length as the removed rail. Do not add rail, since this causes excessive stress and thus, kinks in hot weather. Field weld all rail cuts as soon as possible.

C. Rail installation shall be in accordance with the Section 2.2.2.3 entitled "General Gang Operation".

D. At joints in welded rail where numerous contraction openings occur, make adjustment of rail anchors when rail temperature is above the PRLT. If rail expander/puller cannot correct a contraction opening, saw in a section of jointed rail only as a last resort and only after notifying and consulting with Manager, Track and Structures Maintenance.

E. Do not lay continuous welded rail using expansion shims. Do not bump or drive rail position in order to fill openings or in order to get rail into position to lay in track. (DO NOT ADD RAIL).

F. When it is necessary to move continuous welded rail, do it by pulling; however, a rail expander may be used to secure proper openings for insulated joint end-posts.

G. Ballast shall be maintained per E.S. 1801, including both shoulders and cribs.

2.2.6 DISTURBED TRACK

2.2.6.1 SLOW ORDER CHART REGARDING DISTURBED TRACK

A. Refer to Appendix C, Summary of Speed Restrictions for Trackwork, for speed restrictions in regard to disturbed track.

2.2.6.2 AMBIENT TEMPERATURE BELOW 80 DEGREES F AND RAIL TEMPERATURE BELOW PREFERRED RAIL LAYING TEMPERATURE:

A, When it is necessary to perform maintenance or construction on any component of track structure (including surfacing, tie replacement, and ballast cleaning) and the ambient temperature is below 80 degrees F or the rail temperature is below the Preferred Rail Laying Temperature, the Foreman completing the work shall check the cross-level and alignment of the disturbed track. If necessary, the Foreman shall place a speed restriction for the appropriate class of track per 49 CFR Part 213 to ensure the safe operation of trains.

B. On CWR, a speed restriction of 30/20 mph must be in place until a full ballast section is restored and conforms to the standard ballast section. Refer to E.S. 1801.

C. If a speed restriction is placed, do not remove it until the defect has been corrected and a qualified person in charge inspects the track and declares it safe for normal speed. Note; only a person qualified per 49 CFR Part 213.7 may remove a speed restriction.

D. Refer to Section 8, Prevention of Track Buckling, for general discussion on preventing track buckles and the Section 8.3 entitled "Destressing Continuous Welded Rail" for procedure to destress rail.

2.2.6.3 AMBIENT TEMPERATURE 80 DEGREES F OR ABOVE OR RAIL TEMPERATURE ABOVE ADJUSTED RAIL LAYING TEMPERATURE:

A. When it is necessary to disturb the ballast or any component of track structure (including surfacing, tie replacement and ballast cleaning) and the ambient temperature is above 80 degrees F or rail temperature is above the Preferred Rail Laying Temperature, provide the following slow order protection:

1. On the main track, place a speed limit of no more than 30/20 MPH for at least 24 hours.

2. On the main track, place a speed limit of 10 MPH for at least 24 hours if the Foreman/Supervisor determines the condition warrants a more restricted speed than 30/20 MPH.

B. When using a Dynamic Track Stabilizer in conjunction with a surfacing operation and an inspection by the Foreman indicates that a standard ballast section exists, that alignment and surface are correct, and that the track is in full compliance with the class of track, the slow order as described in Paragraph A above may be removed after passage of the first

train and after the track has been re-inspected by the qualified person in charge.

2.2.7 REPORTING DISTURBED CWR TRACK

A. A report "SCRRA CWR Stress Adjustment/Disturbance Report" (Figure 2-3)shall be filled out by the qualified person-in-charge when work listed below which has the potential for disturbing the preferred rail temperature or the lateral resistance of the track is performed. These reports are required by FRA Track Safety Standards. These reports are for situations that may either raise or lower the Neutral Rail Temperature. These reports are required for both maintenance and construction activities.

B. The qualified person-in-charge of work being performed on the track shall retain original of report and shall forward a copy to the Manager, Track and Structures Maintenance. If box marked "Corrective Action Required" is checked, a second report shall be submitted to indicate the corrective action and shall refer to the original report by date and milepost location.

C. Reports will be reviewed and compiled by the Manager, Track and Structures Maintenance, or this Manager's representative. They will be filed in milepost order, by Subdivision, in the same file as the rail installation reports. If a report overlaps a previous report of rail installation temperatures at the same location, the old report will be retained with a notation that it has been superseded by the new report. The Manager, Track and Structures Maintenance will examine these reports quarterly to confirm that corrective actions have been accomplished.

D. Work requiring submittal of Form shown in Figure 2-3 includes the following:

1. Additions/changes of rail:

    a. Installation of repair rail

    b. Installation/replacement of bonded insulated joint

    c. Field weld of bolted joint

    d. Removal/Replacement of Track Panel:

        - Road Crossing
        - Bridge Deck
        - Derailment/Washout
        - Turnout

    e. Realignment of Curved Track

f. Destressing

g. Repair of Track Buckle

h. Repair of Pull-Apart

2. Changes to track strength:

a. Surfacing

b. Loss of ballast:

- Construction Activity
- Operation of roadway vehicles

c. Installation of ties:

- Spot tie or production wood tie replacement
- Change-out of wood to concrete ties
- Subgrade subsidence repair/surfacing

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FIGURE 2-3 - SCRRA CWR STRESS ADJUSTMENT /DISTURBANCE REPORT - FORM

SCRRA CWR STRESS ADJUSTMENT /DISTURBANCE REPORT

SUBDIVISON:_____REPORT DATE: _____
DATE OF DISTURBANCE:_____REPORTED BY: _____
CORRECTIVE ACTION REQUIRED? YES_____NO_____

LOCATION:
- **MILEPOST:_____to_____**
- **TRACK NO.: _____**
- **N or S RAIL:_____(if applicable)**

TEMPERATURES:
- **AIR: _____**
- **RAIL:_____(actual)**
- **RAIL: (as adjusted, if applicable)**

TYPE OF ADJUSTMENT/DISTURBANCE:
_____REPAIR RAIL INSTALLED: BOLTED_____WELDED_____FT._____
_____TRACK PANEL (S) INSTALLED FEET: _____
_____TURNOUT INSTALLED
_____ROAD CROSSING INSTALLED
_____TIES INSTALLED
_____SURFACING OF TRACK: INCHES OF LIFT: _____
_____REALIGNMENT OF CURVE
_____UNDERCUTTING
_____WASHOUT
_____BUCKLED TRACK
_____PULL-APART
_____DESTRESSING PERFORMED
_____OTHER _____

CORRECTIVE ACTION:
- **DATE:_____AIR TEMP. _____**
- **RAIL TEMP._____(Actual) RAIL TEMP._____(Adjusted)**
- **DESCRIPTION:**

_____
_____
_____
_____

Report all CWR rail disturbances on this Form (Figure 2-3), to SCRRA Manager, Track and Structures Maintenance.

2.2.8 INSPECTING JOINTS IN CWR

A walking visual inspection of all joints including insulated joints in CWR shall be performed.

A The walking visual CWR joint inspection shall detect any excessive forces allowing vertical or longitudinal rail movement. The inspection shall include the track (rail, ties, fasteners, anchors, and ballast section) for the minimum of 20 feet each side of the joint.

B. Inspectors must observe joint bars for visible or otherwise detectable cracks; loose, bent, or missing joint bolts; rail end batter or mismatch railheads; tie spacing; tie condition; disturbed ballast; surface deviations; hanging ties; and rail anchors.

C. In CWR, each rail must be bolted with at least two bolts at each end used to connect CWR strings or CWR to conventional rail.

D. Each joint bar must be held in position by track bolts or fasteners tightened sufficiently to provide firm support for abutting rail ends. In CWR, joints shall be tightened as much as possible to resist longitudinal expansion or movement.

E. If a joint bar in CWR class 2 or higher shows signs of stress or excessive vertical or longitudinal movement of either rail end when all bolts or fasteners are in place and tight, the track shall be protected by a 30/25 MPH speed restriction until the joint is repaired or replaced.

F. All Control Point (CP) joints are not included. These joints are inspected during the monthly switch inspection.

2.2.8.1 RECORD KEEPING OF CWR JOINT INSPECTIONS

A comprehensive SCRRA CWR Joint Inventory List (Figure 2-4) shall be maintained and periodically updated. CWR Joint Inventory records will be maintained by the Manager, Track and Structures Maintenance, who will issue new “Joint Identification” numbers as necessary.

A. The CWR Permanent Joint Inventory List must contain: Subdivision, Date of Last Inspection, Mile Post, Rail Designation, GPS Location, Joint Identification Number, Type of Joint, Rail Size, and Track Number.

B. The CWR Temporary Joint Inventory List must contain: Subdivision, Date of Installation, Mile Post, Rail Designation, GPS Location, Joint Identification Number, Type of Joint, Rail Size Track Number, and Date of Joint Inspection.

FIGURE 2-4 - CWR JOINT INVENTORY LIST SAMPLE

SCRRA - CWR Joint Inventory List — Page 1

Line	Date	M.P.	Rail N-S	GPS - Location	Joint ID #	Type	Size	P/T	Tr.#
	11/11/2005	0.4	N	34-00-00N, 117-44-55W	VA0.4N	FG	119	P	1
		0.4	S	34-00-00N, 117-44-55W	VA0.4S	FG	119	P	1

2.2.8.2 TEMPORARY CWR JOINTS

Temporary CWR Rail Joints shall be inventoried on the Temporary Joint Inventory List using Figure 2-4 as the sample format. The date to be indicated on the Temporary CWR Rail Joint is to be the date that the temporary joint was placed into service.

A. Temporary CWR Rail Joints shall not remain in-service on track Class 2 or higher for more the 30 Days without the written authorization of the Manager, Track and Structures Maintenance.

B. Temporary CWR Rail Joints in Class 2 track or higher shall be visually inspected every 30 days and the inspection shall be recorded on the bi-weekly FRA inspection reports.

1. Inspectors shall inspect temporary CWR joints for the following defects: Visible or otherwise detectable cracks in joint bars; loose, bent, or missing joint bolts; rail end batter or mismatch railhead; tie spacing; tie condition; disturbed ballast; surface deviations; hanging ties; and rail anchors.

C. Upon removal of the temporary joint from an in-service track, it shall be removed from the Temporary CWR Rail Joint inventory list.

2.3 RAIL DEFECTS

2.3.1 DEFINITION

A defective rail is any rail that has failed in service or has a defect found by detector cars, audio-gage parties, visual inspection, or other means.

2.3.2 REPORTING AND REMOVAL

A. Report all rail service failures and defects on main tracks and Centralized Traffic Control (CTC) sidings in writing on the SCRRA CWR Adjustment/ Disturbance Report - Form, Figure 2-3, and submit it to the Manager, Track and Structures Maintenance. Defective rail reports must reference the defect number in order to facilitate clearing of reports generated by the detector car.

B. Mark each defective rail with red paint on the ball of the rail and with marking on both sides of the web and base. Cut into pieces less than six feet in length for immediate disposal. Send a Failed Rail Report, Figure 2- 3, for all defective rail to the Manager, Track and Structures Maintenance.

2.3.3 REMEDIAL ACTION

A. Refer to Part 213.113 of the FRA Track Safety Standards for the remedial actions required upon discovery of defects in rails.

B. The whole length of any rail (from plant weld to plant weld or from joint to joint) that contains a longitudinal defect (e.g. Vertical Split Head) must be removed and handled as defective, whether or not the defect is visible or detected for the whole length.

2.4 REPLACEMENT OF RAIL

A. When inserting second hand replacement rail (fit for re-use), track supervisors and track repair crew leader (foreman) shall ensure that rail is free of defects. The rail shall be visibly inspected and must be clearly marked “fit for reuse”. If the replacement rail (new or used) is to be welded in as CWR, do not drill the two center holes. Use only four bolts in each six-hole angle bar unless the rail already has a center hole. Thermite weld the replacement rail into the welded rail string as soon as possible.

B. When a rail is changed, visually inspect the rail ends checking the condition of the bolt holes and of the rail ends for obvious defects before applying angle bars and the placing the track back into service. Also visually inspect angle bars for cracks or elongated bolt holes.

2.5 MATCHING RAIL WEAR CONDITIONS

When replacing rail with head or gage wear in excess of 1/8 inch, grind to match or select and install replacement rail, which provides the best possible match on both the gage side and running surface.

2.6 FREQUENCY OF RAIL TESTING

Testing of all main lines, sidings, turnouts, crossovers and railroad crossings and selected branch line turnouts shall be in accordance with the guidelines listed below:

A. **Passenger Routes:** Three times per year, with at least three months, but no more than six months, between tests

B. **Freight Only Routes:** Once a year, or as directed

C. **Field Weld:** Once after completion of construction, then as directed.

D. **Field welds (Flashbutt, Thermite) in Class 3 or higher:** Ultrasonically test within 3 to 14 days of the track being placed into service or as directed by the Manager, Track and Structures Maintenance.

SECTION 3 TRACK WELDING AND RAIL GRINDING

3.1 TRACK WELDING

3.1.1 WELDING SAFETY

A. Welding contractor shall provide trained qualified track welders and their welding safety plan to SCRRA for approval.

B. EIC/Welders shall be prepared to place temporary speed restrictions as necessary to protect any work in progress. The following are guidelines for various welding tasks: [7]

1. Place a 10 MPH slow order for all trains over frogs or crossing diamonds while cutting or welding is in progress.

2. Place a 20 MPH slow order for all trains over repairs in progress for rail ends.

3. Thermite field welding shall comply with the Section 3.1.13 entitled "Thermite Welding Process" under 3.1.13C. "Thermite Welding Procedures" herein, and restrict first train to 10 MPH.

4. When repairing turnout frogs and crossings in track, whether by electric or oxy-acetylene process, protect train movement with appropriate slow orders.

C. Comply with safety rules and all other rules contained herein. Keep all vehicles and equipment used in welding procedures in good repair and in safe operating condition. Protect nearby persons (e.g. at crossings or stations) from sparks or other hazards associated with welding or grinding. Protect against fires by clearing vegetation (except for irrigated landscaping) for a minimum distance of 35 feet from welding or grinding.

D. Regulators shall be removed from cylinders and stored in a clean dry compartment while traveling to and from the work site. If regulators are equipped with protective caps, such caps shall be installed. NEVER TRANSPORT A CYLINDER WITH A REGULATOR ATTACHED.

3.1.2 COORDINATION WITH SIGNAL DEPARTMENT

Track Welders shall coordinate with Signal Department maintainers or supervisors before taking any of the following actions:

A. Use of arc welding on any track.

---

[7] EIC refers to Employee-in-Charge who shall be qualified by SCRRA under FRA 49 CFR Parts 213 and 214.

B. Removal and replacement of a section of rail that has track wires attached.

C. Removal and replacement of a section of rail, or removing bond wires, within a crossing warning circuit.

D. Grinding switch points and stock rails.

E. Metal powder and grinding debris shall be removed from switch slide plates and insulated joints upon completion of work.

3.1.3 APPROVED WELDING PROCEDURES

Approved welding procedures are as follows:

A. Repair of manganese steel track casting (except manganese tip switch points in main track) including cracks, casting defects, and batter or wear.

B. Repair of chipped, battered and worn long point rails, short point rails and binder rails on rail bound manganese frogs and rail crossing diamonds (excluding cracked or broken rails).

C. Repair carbon rail frogs and rail crossing diamonds (excluding spring wing rail on spring frogs).

D. Repair chipped and/or battered rail ends.

E. Repair chipped or worn switch points (yard and industry tracks only).

F. Weld “A&B” plate stops on frog gage plates.

G. Weld hold down boxes on spring frogs.

H. Field weld rail (thermite weld).

3.1.4 PROHIBITED WELDING PROCEDURES

The following welding prohibitions apply:

A. Do not weld clips, lugs, plates, or other fixtures on rail.

B. Do not weld main track switch points (except joint at heel where block may be built up).

C. Do not weld switch point protectors on main track.

D. Do not weld or heat any main track switch operating mechanism, switch stand or switch connecting rod.

E. Do not weld cracked or broken joint bars.

F. Do not make compromise joint bars by welding portions of joint bars or different sized joint bars together.

G. Do not make main track compromise thermite welds with nonstandard or field fabricated molds.

H. Do not torch cut rail (except in emergencies, when protected by a slow order).

I. Do not torch cut bolt holes in angle bars.

J. Do not torch cut bolt holes in rail (except during rail loading/unloading operations).

K. Do not place ground clamp on base of running rail, binder rail or guard rail.

L. Do not weld tools, machines or vehicles without proper authority.

M. Do not weld, heat or cut heat-treated hooks, steel alloy chains and associated rings, links or couplings.

N. Do not weld cut or heat containers than contain or that have contained flammable or explosive materials.

O. Do not make bond welds on base or web of running rails. Bond welds are permitted to the webs of wing and point rails on turnout frogs.

3.1.5 MANGANESE FROGS AND CROSSINGS

A. Grinding: Grinding maintenance shall be performed on all newly installed manganese frogs and diamond crossings to improve quality and to extend the lifecycle of these components. Inspect new manganese turnout frogs and crossing castings or recently welded castings periodically, checking for any metal flow, which might have occurred during the work hardening process of the manganese. Grind off any bead or ridge from the top edges of the casting. Confine grinding to the top edges where the bead or ridge forms. Grind a radius of 3/8 inch to 5/8 inch. Do not leave any sharp edges or square corners. Perform this procedure a number of times until the unit is fully work-hardened.

1. Slot grind at regular intervals. Include areas where manganese castings are in rigid contact with binder rails, the mating surface between long and short point rails, the heel of frog castings and rail joints at the ends of crossing and/or turnout frogs.

B. Welding: Manganese turnout frogs and crossings need to be repaired in the following situations:

1. Cracks have developed

2. Depressions have developed

3. Wear exceeds standards

4. Spalling, cracking, chipping or casting defects have surfaced

C. Prior to welding, tighten all loose bolts and correct all track conditions such as faulty ties, irregular surface, misaligned track, and incorrect guard rail flangeway width.

D. Remove work hardened surface metal and defective material by grinding or with arc air before welding on casting. Weld using electric arc process only. Use only electrodes or wire feed welding metals designated for repair of manganese steel special trackwork. The temperature of a track casting must not exceed 700 degrees F in any area during a welding operation.

E. Control thermal stress. Weld bead size shall be no more than 5/8 inch in width. Peen weld deposits in severely restricted areas.

F. After completing the weld, check clearance and build up the carbon rail components, as necessary, to match level of the casting on such components as wing rails, long point rails, and short point.

3.1.6 WELDING CARBON RAIL FROGS AND CROSSINGS

A. Repair battered or chipped areas of carbon rail frogs or crossings by building up worn or damaged areas to match the contour.

B. Before doing any welding, tighten all loose bolts and check frog or crossing for gage, alignment, surface, and tie irregularities. If unsatisfactory conditions exist, correct them before proceeding.

C. Check for worn or damaged areas with a straight edge to determine area to be built up. Grind to a depth of approximately 1/16 inch in order to remove work-hardened metal. Grind chipped, flaking, or spalled metal until reaching sound metal.

D. Preheat head, web, and base of rail to 600 degrees F in areas to be welded. In point area of the frog, where filler blocks cover the web and the base of rail, pre-heat only the railhead.

E. Grind the welded area (web and base) so that the surface is as level as possible and that it conforms to the contour of the entire unit.

3.1.7 WELDING RAIL ENDS

Repair chipped, battered or mismatched rail ends using the electric arc or oxy-acetylene process. Arc weld rail ends only on jointed rail and at ends of insulated joint rail. Use automatic wire feed machines whenever possible. Prior to welding, fully bolt all joints and tighten all bolts. Also, raise low joints and tamp them prior to welding.

A. Preparation:

1. Visually inspect rail ends for cracks, chips or other defects. Use a straight edge to determine the length of any low spots or the amount of build up needed. Examine each rail independently. Never weld rail past the last bolt hole in the angle bar.

2. If rails are mismatched in height, the low rail shall be built up to match the high rail.

3. Use a grinder to remove all chipped, spalled, work-hardened, defective, and excess flow metal before welding.

4. Use only electrodes, rods, or wire feed metals designated for restoration of rail ends.

5. Pre-heat rails to 600 degrees F.

B. Grinding:

1. Surface grind immediately after welding, using an angle head grinder mounted in surface grinding guide. Make sure the finished surface is free of any blemishes and gouge marks from the grinding wheel and grind it to conform to the contour of the rest of the rail.

2. Slot rail ends according to the instructions in the Section 3.1.9 entitled “Slotting Instructions” herein. After welding is complete, remove old bond wire, and grind the field side of the railhead until smooth. Finally, notify the Signal Maintainer so that the joint can be bonded.

3.1.8 WELDED REPAIRS TO BONDED INSULATED JOINTS

A. Repair bonded insulated joints only in an emergency the same way regular angle bar joints are repaired; however, use only arc welds. Do not preheat

bonded insulated joints; this destroys the bonding material. Replace any defective or repaired insulated joint rail as soon as practical.

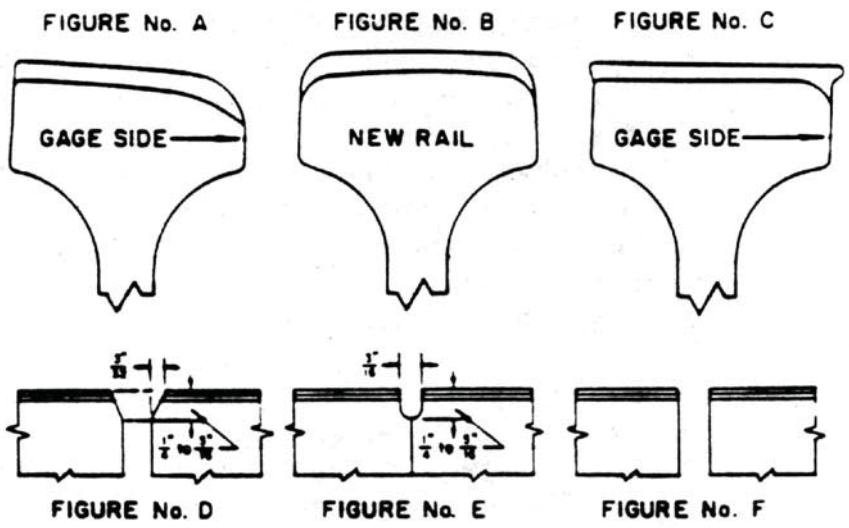
B. Before welding, squarely slot both rail ends about 3/8 inch deep. Make sure no metal particles are left in the insulated joint as a result of slotting. Protect the end post during welding process. Weld the insulated joint slowly in order to help minimize damage to the end post and the angle bars from heat during welding. The side of the ball of the rail should not exceed 300 degrees F.

C. Lightly oil the end post after slotting is complete.

D. Coordinate all welding on insulated joints with the Signal Supervisor or Maintainer and be governed by the instruction of the signal representative. Do not weld on more than one insulated joint affecting any one track circuit at the same time.

3.1.9 SLOTTING INSTRUCTIONS

A. Grinding Wheels 3/16" thick are standard for slotting and beveling of rail ends.



B. FIGURES No. A, B, C are end views of railhead showing the slotting and beveling of rail ends.

1. No. A is worn rail on the high side of curve.

2. No. B is new rail before use or soon after being laid.

3. No. C is worn rail on low side of curve. Note that slotting or beveling must always follow contour of the rail head. Rail ends at

closed joints shall be slotted. Rail ends at open joints shall be beveled.

C. FIGURES No. D, E, F are side views showing the slotting and beveling of rail ends.

1. No. D shows beveling rail ends, giving depth and width.

2. No. E shows tightly closed joint after rail ends have been slotted, giving depth and width.

3. No. F shows rail ends at insulated joint. The flowed metal shall be removed from rail ends leaving ends square or very slightly beveled on top corners of insulated joint. Particles of metal removed by grinding must not be left in insulated joint.

D. NOTE: If weld deposit exceeds standard depth of slots, slot must be ground to bottom of weld deposit.

3.1.10 MAINTENANCE OF SWITCH POINTS

A. The gage face of the tip of the switch point shall be maintained (by grinding) to an angle of 78 degrees (approximately 1:6), as shown in the Engineering Standards for the various turnouts; this is the "as manufactured" original shape of the point. This angle of the point will prevent a wheel flange from "riding up" onto the top of a point. This angle on the side of a switch point should extend down to 1-1/2 inches from the top of the stock rail so as to catch all wheel flanges and divert them to the intended route. This angle shall match the machined gage face of the switch point.

B. Refer to the Section 4.1.9 entitled "Special Consideration for Curves" herein for instructions on maintenance of switches in or near curves.

C. Main track switch points and stock rails shall be inspected regularly for indications of metal flow and shall be ground to remove metal flow before flow results in chips breaking off.

D. Lightly round all sharp edges, and make sure that the switch point fits firmly against the stock rail.

3.1.11 WELDING "A" AND "B" PLATE STOPS ON FROG GAGE PLATES

A. Properly position and secure gage plates before welding. See Figure 3-2, Frog and Guard Rail Gage Plates.

B. Check track for gage, and then beginning with one of the gage plates, field weld plate stops "A" and "B" to the track, one plate at a time while

simultaneously controlling the gage. If joints or guard rail ends interfere with positioning and/or welding plate stops, move the gage plate to the next tie. Place plate stop "A" field side, against the base of running rail, and place plate stop "B" on the gage side, against the base of running rail or guard rail. Refer to Figure 3.1.

C. To permit renewal of the insert casting, position plate stop "B" against the base of the wing rail connecting the toe end of the frog to the straight main line closure rail. Position plate stop "A" against the base of the wing rail connecting the toe end of the frog to the curves turnout side closure rail.

D. Weld plate stops with 3 pass 1/2 inch plus fillet weld as shown in the drawing in FIGURE 3-1.

FIGURE 3-1 - SWITCH GAGE PLATE

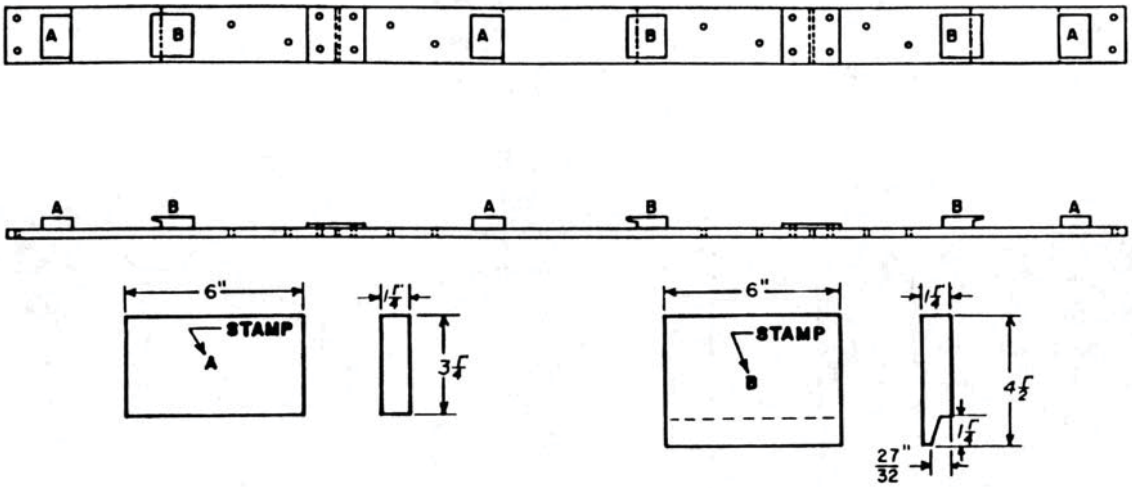


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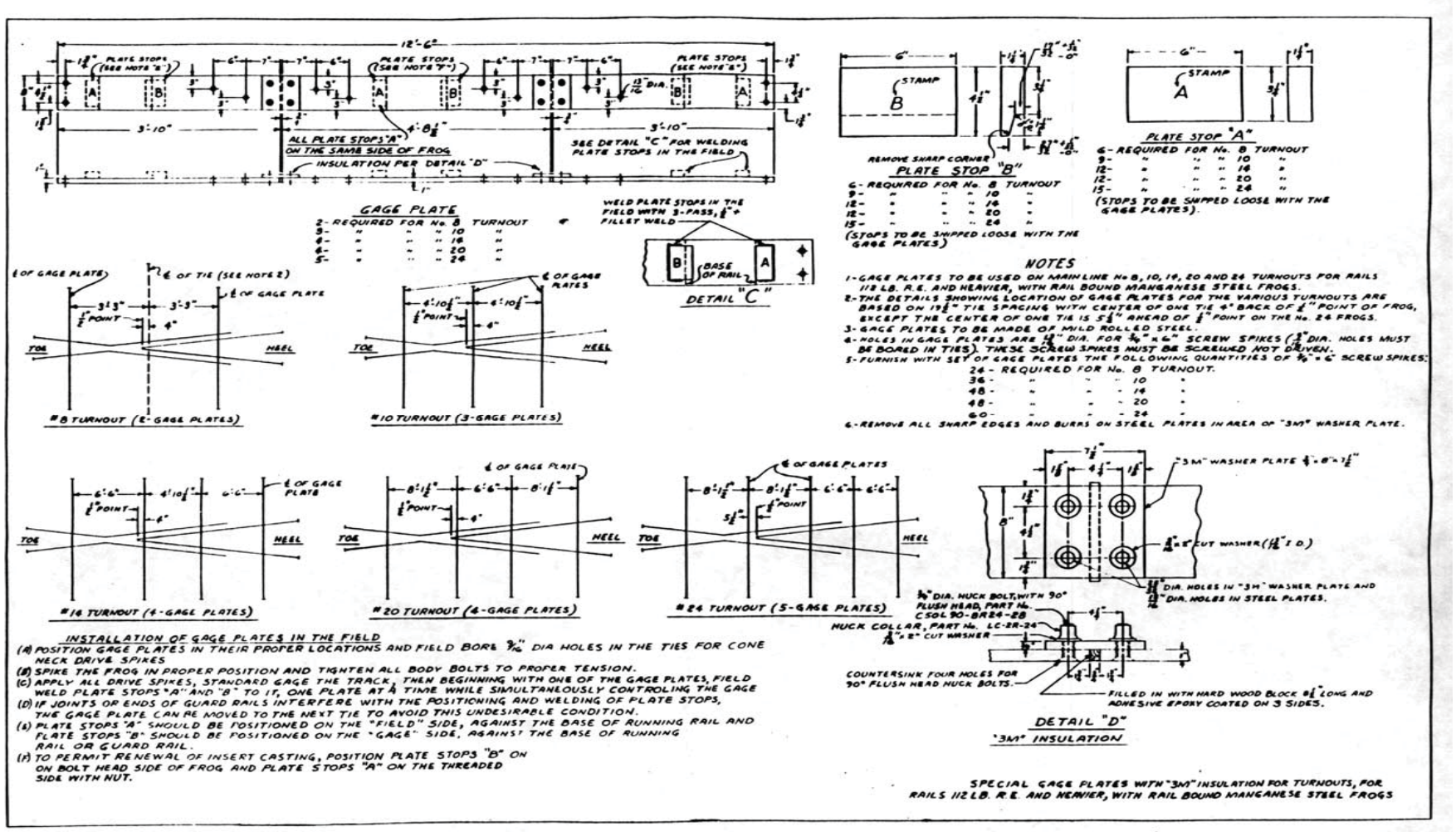
FIGURE 3-2 - FROG AND GUARD RAIL GAGE PLATES



3.1.12 LOCATION AND PREPARATION FOR THERMITE WELDS

A. If the use of a cutting torch is required in the preparation for field welding, the rail shall be trimmed back a minimum of 3 inches with a rail saw before making the weld.

B. When field welding is required, plan in advance to avoid welds being close to bolt holes, bond wire pinholes, plant welds or other field welds with the minimum restrictions specified in paragraph E. herein "Field welds shall not be made:".

C. Restrictions regarding minimum length of rail to be welded into track:

1. Rail less than 19'-6" shall not be welded in main track, except where designated in the Engineering Standards drawings for special track work or approved by Manager, Track and Structures Maintenance.

2. 30 feet is the minimum length of rail than can be field welded in curves 2 degrees and greater.

D. Track at the field weld shall be in proper surface and alignment before the weld is made.

E. Field welds shall not be made:

1. Within 6 feet from another field weld.

2. Within 2 feet from a plant weld with a crown of 0.040 inch or less.

3. Within 3 feet from a plant weld with a crown of more than 0.040 inch.

4. Within 5 inches from bolt hole or bond wire pinhole.

F. The rail ends to be welded shall be a minimum of 4-1/2 inches from the ties to permit the proper application and packing of the base plate and mold assembly. Flash butt welds shall be performed to the welding supervisor's design criteria.

G. Each rail end must be properly prepared and have a square cut before field welding.

3.1.13 THERMITE WELDING PROCESS

A. Only properly trained and qualified persons, as approved by the Manager, Track and Structures Maintenance, may make thermite welds.

1. Welders so qualified shall follow manufacturer's recommendation for producing field welds and all other instruction contained herein. In case of conflicting instructions, the welder shall request clarification from the Manager, Track and Structures Maintenance, or the Engineer.

2. Welder is responsible for maintaining the ADJUSTED RAIL TEMPERATURE of the rail when making a field weld. RAIL SHALL NOT BE ADDED DURING THE PRODUCTION OF FIELD WELDS.

3. Welder shall be familiar with the safe operation of hydraulic rail jacks for use in adjusting the rail during the production of field welds.

B. No thermite welding shall be performed when:

1. Air temperature is below plus 32 degrees F.

2. It is raining.

3. Rail cannot be properly adjusted.

4. Insufficient time exists to allow weld to cool to less than 600 degrees F before passage of trains.

C. Thermite Welding Procedures:

1. Thermite welds shall be located between ties, so weld is over tie crib.

2. Rail shall be lined up, using wedges so that rail is straight, with a crown of not less than 0.065 inch or more than 0.080 inch when measured using a 3 foot straight edge and taper gage. Clean rail for a distance of 4 inches from end with a torch and wire brush until area is free of grease, rust, and other material.

3. While the weld is still warm, finish grind the base and head of the weld to conform to the size and shape of the adjacent rail. After finishing grinding, re-space and re-spike ties so that ties are away from edges of the weld. Never place tie plates directly under a weld. Replace anchors no closer than 1 inch from weld. Note: Welds shall not be finished ground in the web area.

4. Handle molds and base bricks with care at all times in order to prevent breakage and to keep them dry. Store thermite charges only in dry places as recommend by the manufacturer. Never use a thermite oxide charge that is wet, has been wet, or is even suspected of containing moisture. Do not use weld charges or kits after their expiration dates.

5. When cutting in short rails on tangent track, do not use rail less than 19'-6" long. Follow minimum rail length instruction in the Section entitled "Rail Lengths".

6. **Visual Testing:** Visually inspect field welds immediately after grinding. Pinholes or slag inclusions are indications of a defective weld. Where pinholes or slag inclusions are observed, they shall be immediately removed from the track. Pin holes and slag inclusions less than 1/4-inch deep may be ground out of the head of the rail and repaired with arc welding, using rail end rod (not manganese frog rod).

7. **Ultrasonic Testing:** Field welds (Flashbutt and Thermite) in class 3 or higher shall be ultrasonically tested within 3 to14 days of the track being placed into service or as directed by the Manager, Track and Structures Maintenance. After a successful weld test is completed, the tester shall mark on the web of the rail as specified under Section 3.1.15 entitled "Marking Field Welds".

8. Dispose of slag, risers, and fragments of mold by burial outside of ballast section within SCRRA property. Mold fragments larger than one inch must be removed from the ballast section.

3.1.14 ADJUSTING CWR RAIL TEMPERATURE

A. Refer to Section 8, Prevention of Track Buckling, for additional information about CWR thermal adjustments.

B. Performing field welding may affect the thermal rail adjustment of the track. Welders shall ensure that the original rail temperature adjustment is not changed.

3.1.15 MARKING FIELD WELDS

A. Upon completion of a thermite weld, the welder shall use a paint stick to mark the weld with the date, welder's initials, rail temperature, and air temperature on the field side of the rail, within 2 feet of the weld. The rail temperature shall be either the actual rail temperature or the adjusted rail temperature (if the rail was stretched with hydraulic jacks to achieve thermal adjustment).

B. If the field weld is made with one free end, the word "FREE" shall be placed in lieu of the temperature information. This may occur if a track or switch panel is constructed outside the track or for the first weld of a piece of rail cut into the track.

Examples:4/25/00 RMM RT 115 AT 90 or 4/26/00 MLA FREE

C. If a field weld is made within the destressing range (where rail anchors or clips are removed for destressing) of an older field weld, the welder shall mark out the rail temperature information on the older weld and put the new date and an arrow towards the new weld. This tells the track inspector that the rail temperature information is no longer valid and where to look for the most recent rail temperature adjustment.

D. When field welds in track class 3 or higher are ultrasonically tested, the tested rail shall be painted with "U.T." to indicate ultrasonically tested, the date when tested, and inspector's initials.

Example:UT 4/25/00 RMM

3.1.16 COMPROMISE WELDS

Always use factory compromise molds to make compromise field welds.

3.2 RAIL GRINDING

3.2.1 RAIL GRINDING PROGRAM

A. The Manager, Track and Structures Maintenance, or that Manager's designated representative, shall perform an annual curve inspection and visual tangent track inspection to determine the requirements of the rail grinding program. After the initial inspection and/or electronic measurement using optical scanning data has been collected and evaluated, the Manager, Track and Structures Maintenance, shall prepare the recommended rail grinding program for funding and approval. Using the results of the database analysis, as well as the visual inspection, the Manager, Track and Structures Maintenance, staff shall then prepare an annual rail-grinding program consistent with budget conditions.

B. Note, a comprehensive database of rail profiles shall be used for developing the curved rail rehabilitation program for each curve, developed by an optical scanning device and compared to the original rail profile.

3.2.2 VISUAL INSPECTION FOR RAIL GRINDING

In order to complete a rail-grinding program, obtain the following information during visual rail inspections or from optical rail scan:

A. Side wear measurements.

B. Plastic flows and lips with measurements.

C. Top of rail wear measurements.

D. Observed surface defects consistently described.

3.2.3 OPERATION OF RAIL GRINDERS

A. Grinding trains shall have the capability of moving the angle of the grinding stones for any pattern change. These pattern changes accommodate particular railhead conditions. Grinding trains shall allow a contractor to grind a railhead in order to match it to the role it performs; thus, increasing the life of that rail. Therefore, pattern design and pattern scheduling are as important to the success of the rail-grinding program as the actual grinding.

B. Additionally, information about the planned operation of the rail grinder shall be shared with the communities along the route in coordination with SCRRA External Affairs office.

C. Required daily reports include the following:

1. A daily report of work performed, including the location and the chargeable time (see Figure 3-3 for sample of daily report)

2. Verified daily work reports from the vendor

3. A record of grinding patterns used on each pass and the speed at which the pass was made

D. Forward copies of these reports to the Manager, Track and Structures Maintenance.

E. The SCRRA representative shall work closely with the rail grinding contractor. This representative shall check the quality of work, verify adherence to contract, and work with operations to maximize actual working times.

FIGURE 3-3 - SAMPLE - RAIL GRINDER DAILY REPORT

FAXCOM Manager, Track and Structures Maintenance
Southern California Regional Rail Authority
2701 North Garey Ave.
Pomona, CA 91767
Fax: 909-593-0187

A. Date: _____

B. Contract, Machine & Type of Operation: _____
(i.e., (Contractor name) Rail Grinder)

C. Subdivision: _____

D. MP Limits Worked:

							No. of Passes
MP	_____	To MP	_____	Track	_____	Made	_____
MP	_____	To MP	_____	Track	_____	Made	_____
MP	_____	To MP	_____	Track	_____	Made	_____
MP	_____	To MP	_____	Track	_____	Made	_____
MP	_____	To MP	_____	Track	_____	Made	_____
MP	_____	To MP	_____	Track	_____	Made	_____

E. Hours Contract Machine on Duty: _____
(Hours/minutes)

F. Contract Machine Delays: _____
(Hours/minutes)

F. Other Delays: (hours/minutes):
Weather: _____ Travel: _____ Traffic: _____ Misc: _____

G. Non-Chargeable Travel (hours/minutes): _____

H. Chargeable Time (hours/minutes): _____

I. Production Time (hours/minutes): _____
(i.e., cleaning time/grinding time)

J. Pass Miles Cleaned/Ground: _____
Remarks: _____
_____
_____

K. Location Machine tied up: _____

L. Location Machine began days work: _____ _____

_____
Foreman (or Other Authorized Individual)

SECTION 4 TURNOUTS, DERAILS, AND RAILROAD CROSSINGS

4.1 TURNOUTS

4.1.1 TURNOUTS - GENERAL

A. Turnouts for new construction will follow standard drawings listed below. Standards not previously recognized by SCRRA have also been introduced for new construction and maintenance. These new standards consist of Caltrain Standard and Drawings and are available through the Office of the Director, Engineering and Construction,.

Size	Standard Drawing No.	
No. 8 (RBM Frog)	E.S. 5300	
No. 10 (Spring Rail Frog)	E.S. 5400	
No. 10 (RBM Frog)	E.S. 5500	
No. 14 (Spring Rail Frog)	E.S. 5650	(To be developed)
No. 14 (RBM Frog)	E.S. 5600	
No. 20 (Spring Rail Frog)	E.S. 5750	(To be developed)
No. 20 (RBM Frog)	E.S. 5700	
No. 24 (RBM Frog)	E.S. 5800	

B. The Director, Engineering and Construction, may approve other sizes of turnouts. Repair and maintenance of existing turnouts that were constructed to standards of the previous owner railroads shall be maintained to those standards unless the following situations apply. In these cases, a new turnout complying with SCRRA Engineering Standard Plans shall be installed:

a. Replacement of all slide plates, points and stock rails.

b. Replacement of over 50 percent of switch timber.

c. Realignment of turnout.

C. Spring Rail Frogs:

1. All spring rail frogs, No. 14 or greater, shall be equipped with a hydraulic retarder.

2. No. 10 turnouts shall have spring rail frogs if the proposed use of the turnout complies with the following criteria:

   a. Main track speed 20 MPH or greater

   b. Turnout side used less than twice daily

   c. Turnout side not used for meeting or passing of through trains

3. New Number 14, 20, and 24 turnouts shall have spring rail frogs except at locations where traffic is approximately equal in both directions.

4. Turnouts with Rail Bound Manganese (RBM) frogs shall have replacement spring rail frogs installed when the turnout meets these criteria and the RBM frog is deteriorated to the point it must be replaced.

D. Turnouts shall be equipped with manganese tip switch points, with the exception of turnouts used less than once per day (e.g., industrial spurs) or as directed by the Manager, Track and Structures Maintenance.

4.1.2 INSPECTION, MAINTENANCE, AND INSTALLATION

A. Turnout maintenance shall, at all times, conform to 49 CFR 213 parts 133-143, 233, and 235 for minimum inspection and maintenance regulations. Place and maintain all switches and frogs in accordance with Standard Plans. Track and signal personnel must inspect each main track turnout jointly each quarter using form Figure 4-1.

B. The throw for power-operated switches shall be 4 - 1/2 inches, measured at the point. The throw for hand-operated switches shall be 4 - 3/4 inches, measured at the No. 1 head-rod. Throw dimensions are measured from the gage face of the stock rail to the back of the switch point.

C. Maintain guard rail flangeways at 1 – 7/8 inches for standard gage.

D. Space the guarding face of the guard rail 4’ - 6–5/8” from the gage face of the frog. If this measurement varies more than 1/8 inch, correct it. If, because of curvature, the gage widens through the turnout, space the guarding face of the guard rail 4’ - 6–5/8” from the gage line of frog.

E. Inspect and make adjustments to switch points, bolts, frogs, switch rods, connection rods, switch locks, switch point locks, guard rail, and derails; check line and surface. Inspect all moveable parts to make sure they work easily and without excessive lost motion. See that all bolts and nuts are tight and that all cotter pins are in place and properly spread. Properly secure connection rods, and fit switch points closely against the stock rail, making sure they are in safe condition and gage. A Signal Maintainer must be present during any adjustment involving switch points.

F. Use only the highest quality hardwood ties under the heel block, and maintain them so that there is no unusual pumping at this joint or location. In case of bolt failures, check the joint first to determine why bolts are breaking. If unusual stress is causing problems at the joint, correct the problem to ensure the joint and/or rail does not fail. When problems exist, renew the existing rigid heel block assembly with a floating heel block, especially if other measures cannot fix the problem. When it is necessary to replace a rigid heel block assembly with a new assembly, make a test for internal defects within sixty days after changing the assembly to determine whether the new assembly has placed any failure-producing stress on the rail.

G. Change out switch points when unusual wear and/or chips reach the following limits:

11 foot point	6 to 8 inches
16’ -6” point	10 to 12 inches
22 foot and over	14 to 16 inches

H. Maintain switch points and stock rails so that the point will fit properly to the stock rail when lining the switch for either track. Refer to the Section 3.1.10 entitled “Maintenance of Switch Points” herein for instructions on welding and grinding of switch points. Change out switch points when the distance from the top of the stock rail to the top of the switch point is more than 7/8 inch.

I. When switch point with manganese tip becomes worn, replace the tip before gage face wear of the point at the heel of the manganese tip exceeds 1/8 inch. After installation of new tip, grind tip to match the contour of the switch point. Replace entire switch point if wear exceeds 1/8 inch or if the Manager, Track and Structures Maintenance, directs perform complete replacement. Generally, replacement of tips only is recommended for slow speed tracks. If the switch point rail is to be replaced, the matching stock rail shall also be replaced to ensure a proper fit. Only under the direction of the Manager of Maintenance of Way may one rail be replaced without changing the other.

J. Carefully inspect frogs, both rigid and spring rail, for defects. Keep all bolts tight in order to maintain a proper surface.

K. Secure hold-down hoods on spring rail frogs with a clearance between horn and hood of no more than 1/4 inch.

L. Change out rigid or spring rail frogs when headwear on wing rail reaches 1/4 inch:

M. Power tampers shall not be allowed to lift spring rail frog wing rails or base plates. If a base plate or wing rail is bent or damaged during installation or tamping, the frog shall be immediately replaced or removed from service on diverging route.

N. Maintain each spring rail frog so that the outer edge on the wheel tread cannot touch the gage face of the wing rail. During transport and installation in the track and during installation of panel turnouts, spring rail frogs shall be secured with blocks and clamping bars to prevent horizontal or vertical movement of the wing rail.

4.1.3 QUARTERLY JOINT SWITCH INSPECTION

A. Track and signal maintenance personnel shall jointly perform a quarterly (90 day) inspection of all power turnouts and derails. They shall test and confirm that switch points close and point detectors function as intended (obstruction test and adjustments). Adjustments for rail movement, point closure, rail support, alignment, surface, and gage shall be made as required. Use the form shown in Figure 4-1, Quarterly Turnout and Derail Inspection Report, in connection with quarterly turnout inspection. Reports of joint switch inspections shall be made and forwarded to the Manager, Track and Structures Maintenance, and the Manager, Signals and Communication.

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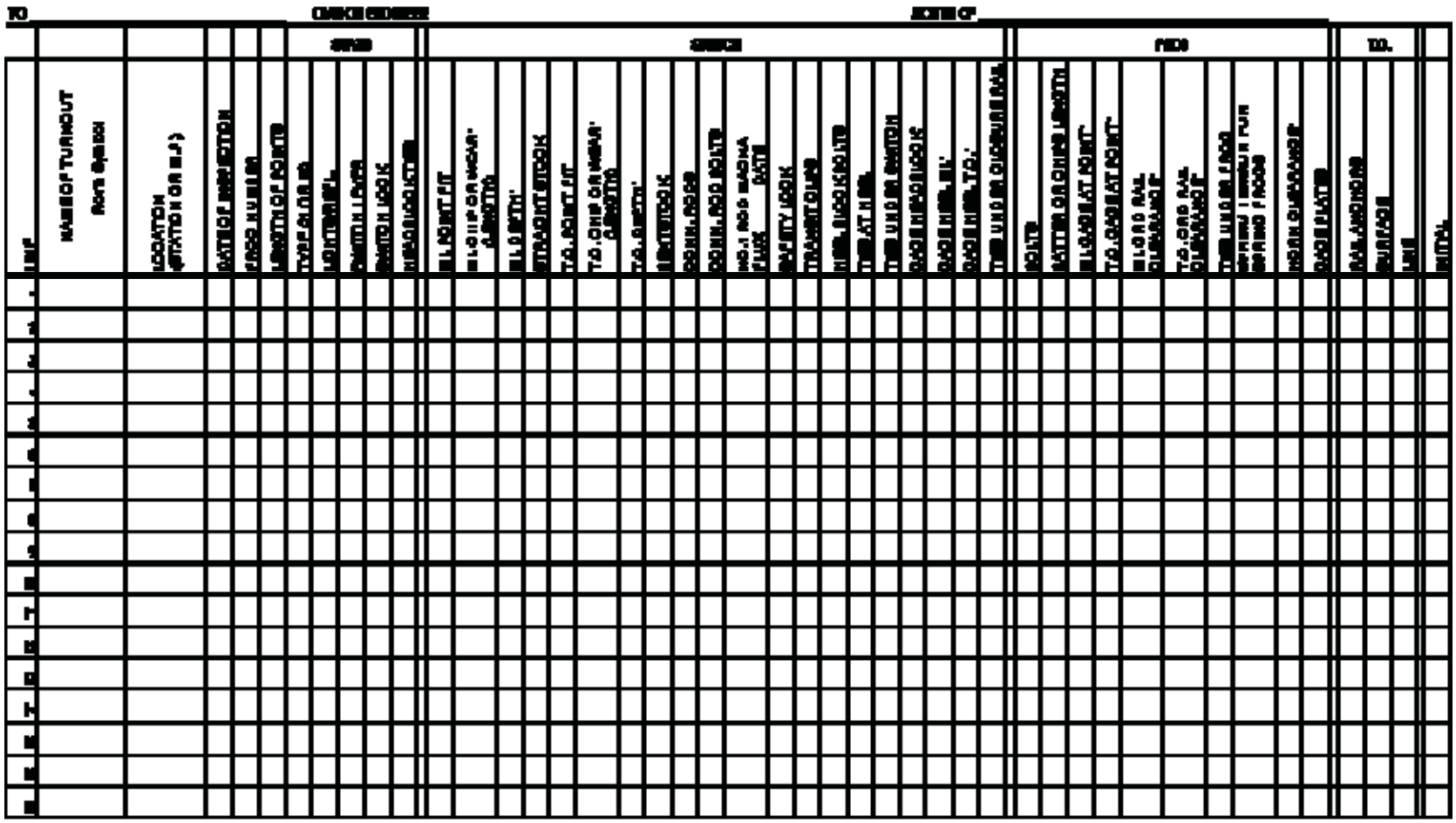
FIGURE 4-1 - QUARTERLY TURNOUT AND DERAIL INSPECTION REPORT



COMMITTEE TRANSMITTAL

December 11, 2017

To: Members of the Board of Directors

From: Laurena Weinert, Clerk of the Board

Subject: Comprehensive Transportation Funding Programs Semi-Annual Review - September 2017

Regional Planning and Highways Committee Meeting of December 4, 2017

Present: Directors Do, Delgleize, Donchak, M. Murphy, and Nelson
Absent: Directors Spitzer and Steel

Committee Vote

This item was passed by the Members present.

Committee Recommendation

Approve adjustments to the Comprehensive Transportation Funding Programs projects and Local Fair Share funds.

December 4, 2017

To: Regional Planning and Highways Committee

From: Darrell Johnson, Chief Executive Officer

Subject: Comprehensive Transportation Funding Programs Semi-Annual Review – September 2017

Overview

The Orange County Transportation Authority recently completed the semi-annual review of projects funded through the Comprehensive Transportation Funding Programs. This process reviews the status of Measure M2 grant-funded projects and provides an opportunity for local agencies to update project information and request project modifications. Recommended project adjustments are presented for review and approval.

Recommendation

Approve adjustments to the Comprehensive Transportation Funding Programs projects and Local Fair Share funds.

Background

The Comprehensive Transportation Funding Programs (CTFP) is the mechanism the Orange County Transportation Authority (OCTA) uses to administer funding for street, road, signal, transit, and water quality projects. The CTFP contains a variety of funding programs and sources including Measure M2 (M2) revenues and State-Local Partnership Program (SLPP) funds. The CTFP provides local agencies with a comprehensive set of guidelines for administration and delivery of various transportation funding grants.

As needed, OCTA staff meets with representatives from local agencies to review the status of projects and proposed changes. This process is commonly referred to as the semi-annual review. The goals of the semi-annual review process are to review project status, determine the continued viability of projects, address local agency concerns, confirm the availability of local match funds, and ensure timely closeout of all projects funded under the CTFP.

Discussion

The September 2017 semi-annual review adjustments are itemized in Attachment A, and described in Attachment B. The adjustments include one advance, eight timely use of funds extension requests for CTFP projects, one timely use of funds extension request for local fair share funds, and 14 scope changes.

OCTA staff has identified several reasons for project schedule delays and requested scope changes, which include delays in equipment delivery, longer than normal wait times for permits, coordination required with stakeholders and other agencies, overlap from other projects, and reevaluation of locations due to technology and costs.

Since the start of M2, OCTA has awarded $404.7 million in competitive funds for the following programs:

- M2 Regional Capacity Program (Project O)
- Traffic Signal Synchronization Program (Project P)
- Environmental Cleanup Program (Project X)
- Community-Based Transit Circulators (Project V)
- Safe Transit Stops (Project W)

Below is a summary of the CTFP allocations using M2 funds, comparing the last semi-annual review changes with the proposed changes in the September 2017 semi-annual review. This update reflects the addition of projects approved by the Board of Directors (Board) in April 2017 as part of the M2 CTFP call for projects. As of September 2017, 84.6 percent of projects have been initiated or are in some stage of completion. Local agencies started 26 project phases and closed out 42 project phases between March 2017 and September 2017.

M2 CTFP Summary				
Project Status	March 2017		September 2017	
	Project Phases	Allocations	Project Phases	Allocations[1] (after adjustments)
Planned[2]	101	$85.4	89	$67.4
Started[3]	170	$156.0	184	$197.8
Pending[4]	75	$46.5	67	$21.8
Completed[5]	196	$81.7	238	$117.7
Total Allocations	542	$369.6	578	$404.7

1. Allocations in millions, pending Board approval of the September 2017 semi-annual review.
2. Planned - indicates that funds have not been obligated and/or are pending contract award.
3. Started - indicates that the project is underway and funds are obligated.
4. Pending - indicates that the project work is completed and the final report submittal/approval is pending.
5. Completed - indicates that the project work is complete, final report approved, and final payment has been made.

Summary

OCTA has recently reviewed the status of grant-funded streets and roads projects funded through the CTFP. Staff recommends approval of the project adjustments requested by local agencies including one advance, eight timely use of funds extension requests for CTFP projects, one timely use of funds extension request for local fair share funds, and 14 scope changes. The next semi-annual review is currently scheduled for March 2018.

Attachments

A. Comprehensive Transportation Funding Programs, September 2017 Semi-Annual Review Adjustment Requests
B. Comprehensive Transportation Funding Programs, September 2017 Semi-Annual Review Adjustment Request Descriptions

Prepared by:

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Approved by:

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Comprehensive Transportation Funding Programs

September 2017 Semi-Annual Review Adjustment Requests

Advances Request(s)								
Agency	Project Number	Project	Project Title	Phase	Current FY	Current Allocation	Proposed FY	Proposed Allocation
Irvine	16-IRVN-ACE-3806	O	University Drive Widening (MacArthur Boulevard to Campus Drive)	C	2018-19	$4,104,971	2017-18	$ 4,016,606
Advances (1) - Total Phase Allocations								**$ 4,016,606**

Acronyms
FY - Fiscal year
Project O - Regional Capacity Program
C - Construction

ATTACHMENT A

Comprehensive Transportation Funding Programs

September 2017 Semi-Annual Review Adjustment Requests

Timely-Use of Funds Extension Requests - CTFP								
Agency	Project Number	Project	Project Title	Phase	Current FY	Current Allocation	Proposed Time Extension	Proposed Expenditure Deadline
County of Orange	14-ORCO-ECP-3740	X	Stormwater Runoff Quality and Quantity Control Best Management Practices	C	2014-15	$ 1,072,049	24 Months	19-Jun-20
Irvine	13-IRVN-TSP-3661	P	Alton Parkway Signal Synchronization	O&M	2014-15	$ 116,640	12 Months	12-May-19
Irvine	13-IRVN-TSP-3662	P	Barranca Parkway Signal Synchronization	O&M	2014-15	$ 114,048	12 Months	12-May-19
Laguna Woods	14-LWDS-TSP-3707	P	El Toro Road Regional Traffic Signal Synchronization	O&M	2015-16	$ 28,800	24 Months	1-Jun-20
Laguna Woods	14-LWDS-TSP-3708	P	Moulton Parkway Regional Traffic Signal Synchronization	O&M	2015-16	$ 71,040	24 Months	1-Jun-20
Newport Beach	14-NBCH-ECP-3735	X	Corona Del Mar Water Quality Improvement and Litter Removal Project	C	2014-15	$ 250,000	24 Months	27-Jan-20
Newport Beach	14-NBCH-ECP-3737	X	Bayview Heights Restoration/Mitigation Project	C	2014-15	$ 305,000	24 Months	12-May-20
Santa Ana	14-SNTA-ECP-3751	X	Residential South Catch Basin Connector Pipe Screen Project	C	2014-15	$ 200,000	24 Months	19-May-20
CTFP Timely-Use of Funds Extensions (8) - Total Phase Allocations						**$ 2,157,577**		

Acronyms

CTFP -Comprehensive Transportation Funding Programs

FY - Fiscal year

Project X - Environmental Cleanup Program

C - Construction

Project P - Regional Traffic Signal Synchronization Program

O&M - Operations and Maintenance

Comprehensive Transportation Funding Programs

September 2017 Semi-Annual Review Adjustment Requests

Timely-Use of Funds Extension Request(s) - Local Fair Share							
Agency	Project Number	Project	Project Title	Phase	Current FY	Proposed Allocation Extension	Proposed Time Extension
Yorba Linda	N/A	Q	N/A	N/A	FY 2014-15	$ 479,809	24 Months
Local Fair Share-Timely Use of Funds Extensions (1) - Total Phase Allocations						**$ 479,809**	

Acronyms

FY - Fiscal year

N/A - Not Applicable

Project Q - Local Fair Share Program

Comprehensive Transportation Funding Programs

September 2017 Semi-Annual Review Adjustment Requests

Scope Change Requests						
Agency	Project Number	Project	Project Title	Phase	Current FY	Current Allocation
Anaheim	11-ANAH-TSP-3545	P	Lincoln Avenue Signal Synchronization (Knott Avenue to Imperial Highway)	I	2011-12	$ 702,328
Anaheim	14-ANAH-TSP-3701	P	Anaheim Boulevard Traffic Signal Synchronization	I	2014-15	$ 696,860
Brea	11-BREA-FST-3509	O	State Route 57-Lambert Road Interchange	E	2011-12	$ 927,000
Brea	16-BREA-ECP-3846	X	Citywide Catch Basin Inserts Project 7524 - Phase 6	C	2016-17	$ 197,885
Buena Park	16-BPRK-ECP-3849	X	City of Buena Park G2 Full Capture Catch Basin Insert Project	C	2016-17	$ 200,000
Cypress	14-CYPR-ECP-3731	X	Priority Sediment-Pollution Removal Project	C	2014-15	$ 211,840
Cypress	15-CYPR-ECP-3799	X	Automatic Retractable Screen Installation Priority Project No. 2	C	2015-16	$ 200,000
Fullerton	14-FULL-ECP-3745	X	Catch Basin Debris Screens	C	2014-15	$ 200,000
Garden Grove	15-GGRV-ECP-3762	X	Magnolia Street Irrigation Retrofit and Bio Clean Curb Inlet Filters	C	2015-16	$ 200,000
Huntington Beach	16-HBCH-ECP-3852	X	Huntington Harbour Marina Trash Skimmers Trash Removal	C	2016-17	$ 73,118
Irvine	16-IRVN-TSP-3791	P	Irvine Center Drive-Edinger Avenue Regional Traffic Signal Synchronization Project	I	2016-17	$ 1,714,560
Mission Viejo	17-MVJO-TSP-3876	P	Olympia Road - Felipe Road Traffic Signal Synchronization	I	2017-18	$ 486,280
Santa Ana	14-SNTA-TSP-3710	P	Harbor Boulevard Corridor Signal Synchronization	I	2014-15	$ 1,769,520
Seal Beach	13-SBCH-TSP-3673	P	Seal Beach TMC Relocation and Fiber Optic Bridge Gap	I	2013-14	$ 500,320
					Scope Changes (14) - Total Phase Allocations	**$ 8,079,711**

Acronyms

FY - Fiscal Year

Project P - Regional Traffic Signal Synchronization Program

I - Primary Implementation

O - Regional Capacity Program

E - Engineering

Project X - Environmental Cleanup Program

C - Construction

TMC - Traffic Management Center

ATTACHMENT B

Comprehensive Transportation Funding Programs
September 2017 Semi-Annual Review Adjustment Request Descriptions

Advance

The City of Irvine (Irvine) is requesting to advance construction funds for the University Drive Widening Project (16-IRVN-ACE-3806) from fiscal year (FY) 2018-19 to FY 2017-18. The anticipated completion date for the engineering and right-of-way phases is October 2017, with construction estimated to begin in January 2018. Therefore, Irvine requests that the construction funds be advanced to FY 2017-18 to allow for an efficient transition of project phases.

Timely-Use of Funds Extensions

Once obligated, the Comprehensive Transportation Funding Programs (CTFP) funds expire 36 months from the contract award date. Per the CTFP Guidelines, local agencies may request a one-time extension of up to 24-months per project grant through the semi-annual review process. During this semi-annual review, eight timely-use of funds extension requests were submitted for CTFP projects.

The County of Orange is requesting a 24-month timely use of funds extension for the construction phase of the Stormwater Runoff Quality and Quantity Control Best Management Practices (Irvine Regional) Project (14-ORCO-ECP-3740) from June 2018 to June 2020. Reevaluation of the hydrology to include Santiago Hills became necessary, as it was not included in the original hydrology analysis from 2013. In addition, OC Parks had to hire a different Architect-Engineer firm to complete the drainage improvement design resulting in a delay of the design phase. The additional time will ensure the design, construction, and all construction closeout items are completed before the grant expires.

The City of Irvine is requesting a 12-month timely use of funds extensions from May 2018 to May 2019 for the following two project phases:

- The Operation and Maintenance (O&M) phase of the Alton Parkway TSSP (TSSP) (13-IRVN-TSP-3661),

- The O&M phase of the Barranca Parkway TSSP (13-IRVN-TSP-3662).

Scheduled completion is anticipated for February 2019. The 12-month timely use of funds extension will allow the projects to maximize usage of funds and ensure project completion.

The City of Laguna Woods (Laguna Woods) is requesting a 24-month timely use of funds extensions for the following two project phases from June 2018 to June 2020:

- The O&M phase of the El Toro Road Regional TSSP (14-LWDS-TSP-3707),

- The O&M phase of the Moulton Parkway Regional TSSP (14-LWDS-TSP-3708).

Laguna Woods plans to begin the O&M phase January 2018. The implementation phase of this project was split between engineering and construction and resulted in a schedule delay. In addition, the contractor has been experiencing delays in equipment delivery.

The City of Newport Beach (Newport Beach) is requesting a 24-month timely use of funds extensions for the following two project phases:

- The construction phase of the Bayview Heights Restoration/Mitigation Project (14-NBCH-ECP-3737) from May 2018 to May 2020. The project has been lengthened due to a delay in obtaining Coastal Commission Approval and a Coastal Development Permit. Newport Beach began the application process in fall 2015, and has recently acquired the permits and now can proceed with the bid.

- The construction phase of the Corona Del Mar Water Quality Improvement and Litter Removal Project (14-NBCH-ECP-3735) from January 2018 to January 2020. This project has been lengthened due to a delay in obtaining Coastal Commission Approval and a Coastal Development Permit. Newport Beach began the application process in fall 2015 and has not received approval but anticipates to receive it early 2018.

The City of Santa Ana (Santa Ana) is requesting a 24-month timely use of funds extension for the construction phase of the Residential South Catch Basin Screen Connector Pipe Screen (CPS) Project (14-SNTA-ECP-3751) from May 2018 to May 2020. A delay in receiving required paperwork from local municipalities has affected the finalization of local regulations. Additional time would allow Santa Ana to draft local regulations and address important questions regarding statewide trash provisions and optimal placement of CPS units.

<u>Local Fair Share (LFS) Timely-Use of Funds Extensions</u>

The City of Yorba Linda (Yorba Linda) received $933,270 of LFS funds in FY 2014-15. Yorba Linda is requesting a one-time 24-month timely-use of funds extension on $479,809. The total funds being considered for extension, $479,809, were disbursed in three separate installments: $148,237 disbursed on November 18, 2014, and must be expended by November 18, 2019; $176,188 disbursed on January 13, 2015, and must be expended by January 13, 2020; and $155,384 disbursed on March 17, 2015, and must be expended by March 17, 2020. The extension will provide Yorba Linda the ability to expend the funds on specific projects beyond the initial expenditures deadline.

Scope Change

The City of Anaheim (Anaheim) is requesting a change in scope of work for the following two project phases:

- Lincoln Avenue TSSP (11-ANAH-TSP-3545). This request is the result of needed repairs and modifications to traffic signal infrastructure critical to the implementation of signal communications. The repairs and modifications affect two segments: Lincoln Avenue between Knott Avenue to Magnolia Street, and Nohl Ranch Road between Imperial Highway and Nohl Canyon Road. In lieu of implementing 46 controllers, Anaheim will implement 33 controllers and utilize cost savings to make the repairs above. Anaheim will subsequently implement 13 controllers from its inventory to fulfil project intent.

- Anaheim Boulevard TSSP (14-ANAH-TSP-3701). The request is to include technologies such as signal phasing and signal timing data. The revisions will allow Anaheim to test connected vehicles technologies along Anaheim Boulevard to ascertain its viability and applicability in the context of improving mobility and reducing emissions.

The City of Brea (Brea) is requesting a change in scope of work for the following two project phases:

- State Route 57 (SR-57) and Lambert Interchange Improvements Project (11-BREA-FST-3509). Due to funding constraints and in consultation and concurrence with California Department of Transportation (Caltrans), Brea has decided to implement the proposed project in four phases. The overall design for all four phases is developed up to 65 percent completion. Phases one through three cover the original project scope for the engineering phase in the original application. Brea has expended sufficient funds for phase one to allow for full reimbursement and have exceeded their matching obligation. Splitting the phases will allow for reimbursement of phase one with Measure M2 funding allocation, while phases two and three will utilize local funds. Phase four is for improvements on the SR-57 mainline which falls beyond the original project scope of Brea's grant application. Brea will apply for additional grant funding to proceed with this phase.

- Citywide Catch Basin Inserts Project 7524 – Phase 6 (16-BREA-ECP-3846). The original scope of work proposed to install 120 catch basin inserts. During the construction process, it was discovered that five of the identified installation locations had catch basins installed under other projects by Brea. By reducing the total number of inserts from 120 to 115, Brea is able to invest the savings in larger catch basins utilizing the full extent of the grant funding awarded. The waterways and pollutants originally identified in the project application remain the same and no change in the allocation amount is recommended.

The City of Buena Park requests a scope change to the City of Buena Park Full Capture Catch Basin Insert Project (16-BPRK-ECP-3849). Unforeseen conditions have created shortages in funding needed to complete the 304 proposed locations. The amount of catch basins equipped with screens was projected to be 304; however, that number fell to 269 after some catch basins were found to be unsuitable for installation. Other conditions in the field caused average screen costs to be higher than expected due to variations in connector piping sizes and curb-front grate sizes. The waterways and pollutants originally identified in the project application remain the same, and no additional funding is being requested as part of the scope change.

The City of Cypress (Cypress) is requesting a change in scope of work for the following two project phases:

- Priority Sediment/Pollution Removal Project (14-CYPR-ECP-3731). The original project identified construction of a vegetated swale and installation of 19 bio-filtration devices. The construction of the vegetated swale has been completed; however, installation of bio-filtration devices is on hold pending utility conflicts. Some bio-filtration locations would require the relocation of a Southern California Edison transmission and distribution line. Other installations would require extensive relocation of Southern California Gas, AT&T, and Golden Gate Water facilities. This would not only be costly, but would also result in service outages in Cypress and neighboring areas. Therefore, Cypress requests a reduction in bio-filtration devices from 19 to 11 devices. The grant amount will be proportionally reduced based on actual construction expenditures.

- Automatic Retractable Screen Installation Priority Project No 2 (15-CYPR-ECP-3799). Cypress requests a scope change from the original 145 devices to 123 devices. 123 devices were successfully installed, however, due to existing physical constraints, 22 locations were deemed unsuitable for the devices. Cost savings will be proportionally shared between OCTA and Cypress.

The City of Fullerton (Fullerton) is requesting a scope change to the Catch Basin Debris Screens Project (14-FULL-ECP-3745). Fullerton requests a scope change for the project, which would reduce the number of basins retrofitted from 204 to 118. Fullerton originally proposed for the installation of up to 204 catch basins in the application. However, the estimate received for actual installation of all 204 significantly exceeded the grant amount. Fullerton agreed with the vendor to install 118 catch basins to utilize the full grant.

The City of Garden Grove (Garden Grove) is requesting a scope change to the Magnolia Street Irrigation Retrofit and Bio Clean Curb Inlet Filters Project (15-GGRV-ECP-3762). Garden Grove originally proposed the installation of five solar power irrigation controllers. However, due to functional issues with these controllers, Garden Grove chose to use three Calsense irrigation controllers as an alternative more feasible and water effective treatment for future operation and maintenance costs. This in turn produced a decreased

need in quantities for backflow devices and water service meters from five to three. This revised scope would not lead to an increase or change in the funding allocations

The City of Huntington Beach (Huntington Beach) is requesting a scope change to the Huntington Harbour Marina Trash Skimmers Trash Removal Project (16-HBCH-ECP-3852). Huntington Beach requests a change to the installation location of two marina trash skimmers. In the original application, seven sites were identified. Due to unforeseen circumstances, two of Huntington Beach's Home Owners Association partners no longer wish to participate in the project. As a result, two additional locations for the marina trash skimmers have been identified, which will provide the same efficiency to the project at no additional cost.

The City of Irvine, acting as administrative lead agency for Tustin, requests a scope change to the Irvine Center Drive/Edinger Avenue Regional TSSP (16-IRVN-TSP-3791). The scope change is primarily comprised of the following two modifications: changing the locations of video detection hardware installation along Irvine Center Drive at four project intersections, and rerouting the traffic signal interconnect conduit and copper hardwire from Edinger Avenue to connect to Tustin City Hall. These revisions would require approximately 4,300 feet of new two inch conduit and 14,000 feet of new fiber optic cable. Additionally, #6 and 6E pull boxes, new Frequency Shift Keying (FSK) telemetry modules, and new four-port Ethernet over copper switches will be installed. Depending on funding availability, additional FSK telemetry modules and a wireless radio link would be beneficial for improved traffic operations along the project corridor.

The City of Mission Viejo (Mission Viejo) requests a scope change for Olympiad Road – Felipe Road TSSP (17-MVJO-TSP-3876). Mission Viejo staff has recently been awarded grant funds as part of the Caltrans Highway Safety Improvement Program (HSIP), which calls for the construction of countdown pedestrian signal head modules at signalized intersection locations, which do not have countdown modules. Since the HSIP grant will construct traffic signal system improvements identical to those supplied by 17-MVJO-TSP-3710, staff would like to modify the scope of work and allocate the programmed funds to construct accessible pedestrian safety push button systems at two different intersection locations and to install one new traffic signal cabinet at one intersection.

The City of Santa Ana, as administrative lead for the cities of Garden Grove, Fountain Valley, Costa Mesa, and for Caltrans, is requesting a scope change for the Harbor Boulevard Corridor TSSP (14-SNTA-TSP-3710). The scope changes were identified during the design and construction phase and were deemed beneficial to the overall intent of the project. Changes include installation of an additional 500 feet of fiber optic cable, two additional ethernet communication switches, one additional wireless radio, and an additional conductor signal cable. Additional changes include the install relocation of one audible pedestrian system, utilization of an existing uninterruptible power supply system at four intersections in Costa Mesa, in lieu of complete equipment change out, and the removal of proposed improvements at two Caltrans Interstate 405 ramps.

The City of Seal Beach (Seal Beach) is requesting a scope change to Seal Beach Traffic Management Center Relocation and Fiber Optic Bridge Gap Project (13-SBCH-TSP-3673). The original grant application proposed the upgrade of 13 traffic signal controllers along Seal Beach Boulevard. Field investigations determined that two of the locations already featured upgraded equipment or were already equipped to communicate through ethernet protocol. Seal Beach requests to eliminate traffic signal upgrades at those two locations and in replacement install three Closed Circuit Television camera systems. The approved budget is sufficient to accommodate the changes and no additional funds will be required.

COMMITTEE TRANSMITTAL

December 11, 2017

To: Members of the Board of Directors

From: Laurena Weinert, Clerk of the Board

Subject: Measure M2 Quarterly Progress Report for the Period of July 2017 Through September 2017

Executive Committee Meeting of December 4, 2017

Present: Chairman Hennessey, Vice Chair Bartlett, and Directors Do, Donchak, Murray, Nelson, and Shaw
Absent: None

Committee Vote

This item was passed by the Members present.

Committee Recommendation

Receive and file as an information item.

December 4, 2017

To: Executive Committee

From: Darrell Johnson, Chief Executive Officer

Subject: Measure M2 Quarterly Progress Report for the Period of July 2017 Through September 2017

Overview

Staff has prepared a Measure M2 quarterly progress report for the period of July 2017 through September 2017, for review by the Orange County Transportation Authority Board of Directors. This report highlights progress on Measure M2 projects and programs and will be available to the public via the Orange County Transportation Authority website.

Recommendation

Receive and file as an information item.

Background

On November 7, 2006, Orange County voters, by a margin of 69.7 percent, approved the Renewed Measure M Transportation Investment Plan (Plan) for the Measure M2 (M2) one half-cent sales tax for transportation improvements. The Plan provides a 30-year revenue stream for a broad range of transportation and environmental improvements, as well as a governing ordinance which defines all the requirements for implementing the Plan. Ordinance No. 3 designates the Orange County Transportation Authority (OCTA) as responsible for administering the Plan and ensuring that OCTA's contract with the voters is followed.

OCTA is committed to fulfilling the promises made in M2. This means not only completing the projects described in the Plan, but adhering to numerous specific requirements and high standards of quality, accountability, and transparency called for in the measure, as identified in the ordinance. Ordinance No. 3 requires that quarterly status reports regarding the major projects detailed in the Plan be brought to the OCTA Board of Directors (Board). All M2 progress reports are posted online for public review.

Discussion

This quarterly report reflects current activities and progress across all M2 programs for the period of July 1, 2017 through September 30, 2017 (Attachment A).

The quarterly report is designed to be easy to navigate and public friendly, reflecting OCTA's Strategic Plan transparency goals. The report includes budget and schedule information provided from the Capital Action Plan, and Local Fair Share and Senior Mobility Program payments made to cities during the quarter, as well as total distributions from M2 inception through September 2017.

Additionally, Attachment A includes a summary of the Program Management Office activities that have taken place during the quarter. Two areas in particular are highlighted below.

Next 10 Delivery Plan

Last November, the Board adopted the Next 10 Delivery Plan (Next 10 Plan), providing guidance to staff on delivery of M2 projects and programs between 2017 and 2026. The Next 10 Plan was based on the 2016 sales tax revenue forecast of $14.2 billion. On September 11, 2017, the Board received the updated 2017 sales tax revenue forecast which was $700 million less at $13.5 billion. During the quarter, staff reviewed and revised all project and program costs and schedules based on the revised revenue projections. Staff incorporated this information into the Next 10 Plan and prepared an updated Next 10 Plan to present to the Board on November 13, 2017.

Future Outlook

Also, as part of the Next 10 Plan adoption in 2016, the Board directed staff to conduct a market analysis to analyze current resource demands and provide information on the impact on OCTA's delivery of M2 projects. The results of the analysis were presented to the Board in September 2017. Overall, the consultant's analysis identified a strong potential that during the Next 10 delivery years, OCTA will experience an increasing-cost environment. This, coupled with a reduction in revenue, could present the potential for significant challenges in the delivery of M2 and the Next 10 delivery plan.

The consultant's recommendations include a consistent message that OCTA should continue to accelerate projects to the fullest extent possible. Additionally, it was recommended that OCTA keep a close watch on identified economic triggers to respond to changes as needed. With acceleration already built into the Next 10 Plan, the risk of an increasing cost environment puts additional pressure on OCTA to identify and capture external funds to augment the plan where possible. The Updated Next 10 Plan incorporates conservative cost escalation factors into project estimates to ensure viability of the plan.

As part of the Next 10 Plan, approval on November 27, 2017, the Board directed staff to develop a plan to monitor and track key early warning indicators and provide the Board with information on changes to the risk factors. A summary of the monitoring effort will be presented to the Board at a minimum bi-annually and, if noteworthy, more frequent updates will be provided through the M2 quarterly progress reports.

Progress Update

The following highlights M2 Program accomplishments that occurred during the first quarter:

- The OCTA Board approved the construction cooperative agreement with the California Department of Transportation (Caltrans) and authorized the release of the request for proposals (RFP) for consultant construction management services for Interstate 5 (I-5) between State Route 55 (SR-55) to State Route 57 on July 24, 2017. (Project A)

- Construction was completed on I-5 between Avenida Vista Hermosa to Pacific Coast Highway in July. The added carpool lanes will be open to traffic when the segments at either side of this improvement (Avenida Pico to Avenida Vista Hermosa and Pacific Coast Highway to San Juan Creek Road) are complete, which is anticipated in early 2018. (Project C and Project D)

- During the quarter, the right-of-way (ROW) maps were approved by Caltrans, the appraisal consultant was selected, and the approval to begin ROW work on the I-5 between State Route 73 to Oso Parkway was granted. (Project C and Project D)

- The final environmental document and project report on SR-55 between Interstate 405 (I-405) to I-5 were approved and signed on August 31, 2017, and September 11, 2017 respectively. (Project F)

- On August 10, 2017 Caltrans executed the design cooperative agreement with OCTA and initiated the 35 percent design. On September 11, 2017, the Board authorized the Chief Executive Officer to negotiate and execute a ROW cooperative agreement with Caltrans, and approved staff consultant selection for design services on SR-55 between I-405 to I-5. (Project F)

- On July 17, the Secretary of Transportation approved the Transportation Infrastructure Finance and Innovation Act (TIFIA) loan. On July 26, OCTA closed the TIFIA loan with the United State Department of Transportation. With the financing for the project in place, OCTA issued Notice to Proceed No. 2 (NTP2) on July 27. (Project K)

- On August 14, the Board approved the release of the 2018 call for projects that will make approximately $32 million available through the Regional Capacity Program to fund additional road improvements throughout the County, and $8 million for the Regional Traffic Signal Synchronization Program. (Project O and Project P)

- In August, the Board selected a consultant to prepare final plans specifications and estimates for the Anaheim Canyon Metrolink Station. (Project R)

- The Laguna Niguel/Mission Viejo Station accessibility improvements project was completed in September 2017. (Project R)

- On July 17, construction began on the Orange Metrolink Station Parking Structure. (Project R)

- On August 14, the Board approved the 2017 Tier 1 Environmental Cleanup Program funding recommendations for 16 projects, in an amount totaling $3,130,251. A total of 154 projects, amounting to approximately $20.1 million, have been awarded by the Board since 2011. (Project X)

- Five of the seven Environmental Mitigation Program Preserve resource management plans (RMPs) have been completed and were finalized in September 2017. OCTA released the remaining two RMPs to the public on August 31, 2017. (Projects A - M)

- Final sales tax receipts for fiscal year 2016-17 were received this quarter and incorporated into the M2 sales tax forecast model. On September 11, 2017, the Board received a presentation on the most recent 2017 sales tax revenue forecast of $13.5 billion, representing a $700 million reduction from the sales tax forecast assumed in the adopted Next 10 Plan.

- The 2018 State Transportation Improvement Program (STIP) funding application was brought to the Board and approved on September 11, 2017. Staff finalized and submitted the 2018 STIP funding application to the Southern California Association of Governments on September 29, 2017, for regional modeling analysis. Staff will work to submit the 2018 STIP funding application to the California Transportation Commission by the December 15, 2017 deadline.

A critical factor in delivering M2 freeway projects is to ensure project scope, schedules, and budgets remain on target. Project scope increases, schedule delays, and resulting cost increases can quickly affect project delivery and have a cascading effect on other activities. In light of the recent reduction in the sales tax revenue forecast, this factor is even more significant. Project delivery is monitored closely, and progress, as well as challenges, are presented to the Board through these quarterly staff reports, individual project staff reports, as well as through the Capital Action Plan quarterly performance metrics reports from the Capital Programs Division.

Summary

As required by M2 Ordinance No. 3, a quarterly report covering activities from July 2017 through September 2017 is provided to update progress in implementing the Plan. The above information and the attached details indicate significant progress on the overall M2 Program. To be cost-effective and to facilitate accessibility and transparency of information available to stakeholders and the public, the M2 quarterly progress report is presented on the OCTA website. Hard copies are available by mail upon request.

Attachment

A. Measure M2 Progress Report, First Quarter of Fiscal Year 2017-18 - July 1, 2017 through September 30, 2017

Prepared by:

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(714) 560-5590

Approved by:

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(714) 560-5741

ATTACHMENT A

The Laguna Niguel/Mission Viejo Americans with Disabilities Act (ADA) Ramps have been completed and are open to the public.

FIRST QUARTER HIGHLIGHTS:

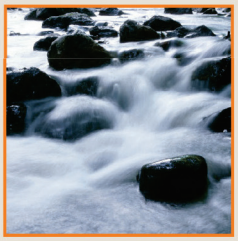
- Freeway Projects
- Streets and Roads
- Environmental Cleanup & Water Quality
- Freeway Mitigation Program
- Finance Matters
- Program Management Office
- Summary

Measure M2

Progress Report

First Quarter of Fiscal Year 2017-18
July 1, 2017 through September 30, 2017



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Measure M2
Progress Report

SUMMARY

As required by the Measure M2 (M2) Ordinance No. 3, a quarterly report covering activities from **July 1, 2017 through September 30, 2017** is provided to update progress in implementing the M2 Transportation Investment Plan.

To be cost effective and to facilitate accessibility and transparency of information available to stakeholders and the public, the M2 progress report is presented on the Orange County Transportation Authority (OCTA) website. Hard copies are mailed upon request.

Cover photo shows the improvements to the Laguna Niguel/Mission Viejo Metrolink station. OCTA, working with the cities of Laguna Niguel and Mission Viejo and with the Southern California Regional Rail Authority, designed and constructed the new ADA-compliant ramps on each side of the station. The ramps replace the station's elevators and were added to the existing pedestrian undercrossing, making for more convenient, reliable access.

List of Common Abbreviations

American Recovery and Reinvestment Act	ARRA
Americans with Disabilities Act	ADA
Annual Eligibility Review	AER
Board of Directors	Board
Burlington Northern Santa Fe	BNSF
California Department of Fish and Wildlife	CDFW
California Department of Transportation	Caltrans
California Transportation Commission	CTC
Capital Action Plan	CAP
Chief Executive Officer	CEO
Congestion Mitigation and Air Quality	CMAQ
Environmental Cleanup Allocation Committee	ECAC
Environmental Cleanup Program	ECP
Environmental Impact Report	EIR
Environmental Impact Statement	EIS
Environmental Mitigation Program	EMP
Environmental Oversight Committee	EOC
Federal Highway Administration	FHWA
Federal Transit Administration	FTA
Federal Transportation Improvement Program	FTIP
Freeway Service Patrol	FSP
High Occupancy Vehicle	HOV
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Measure M2
Progress Report
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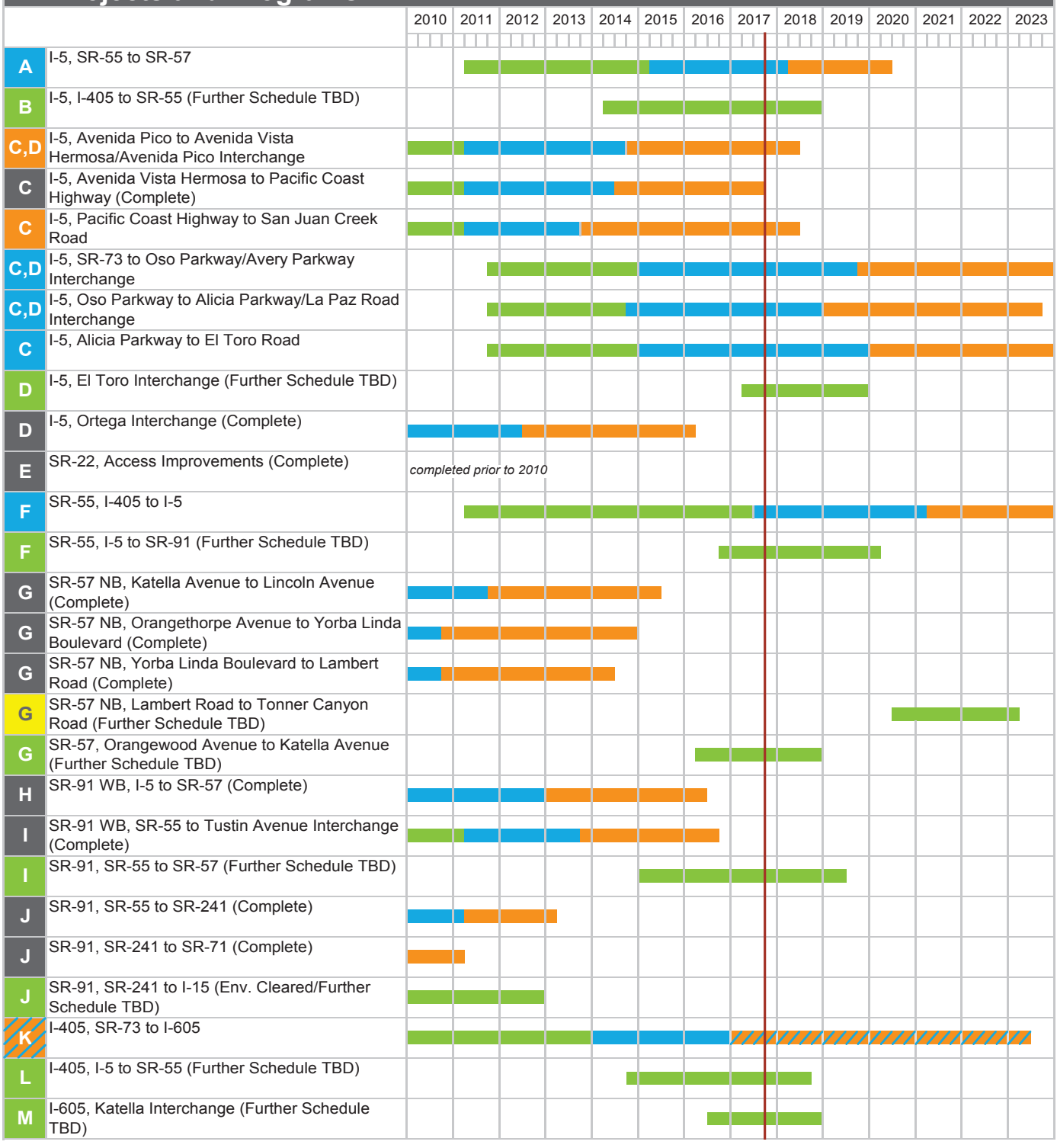

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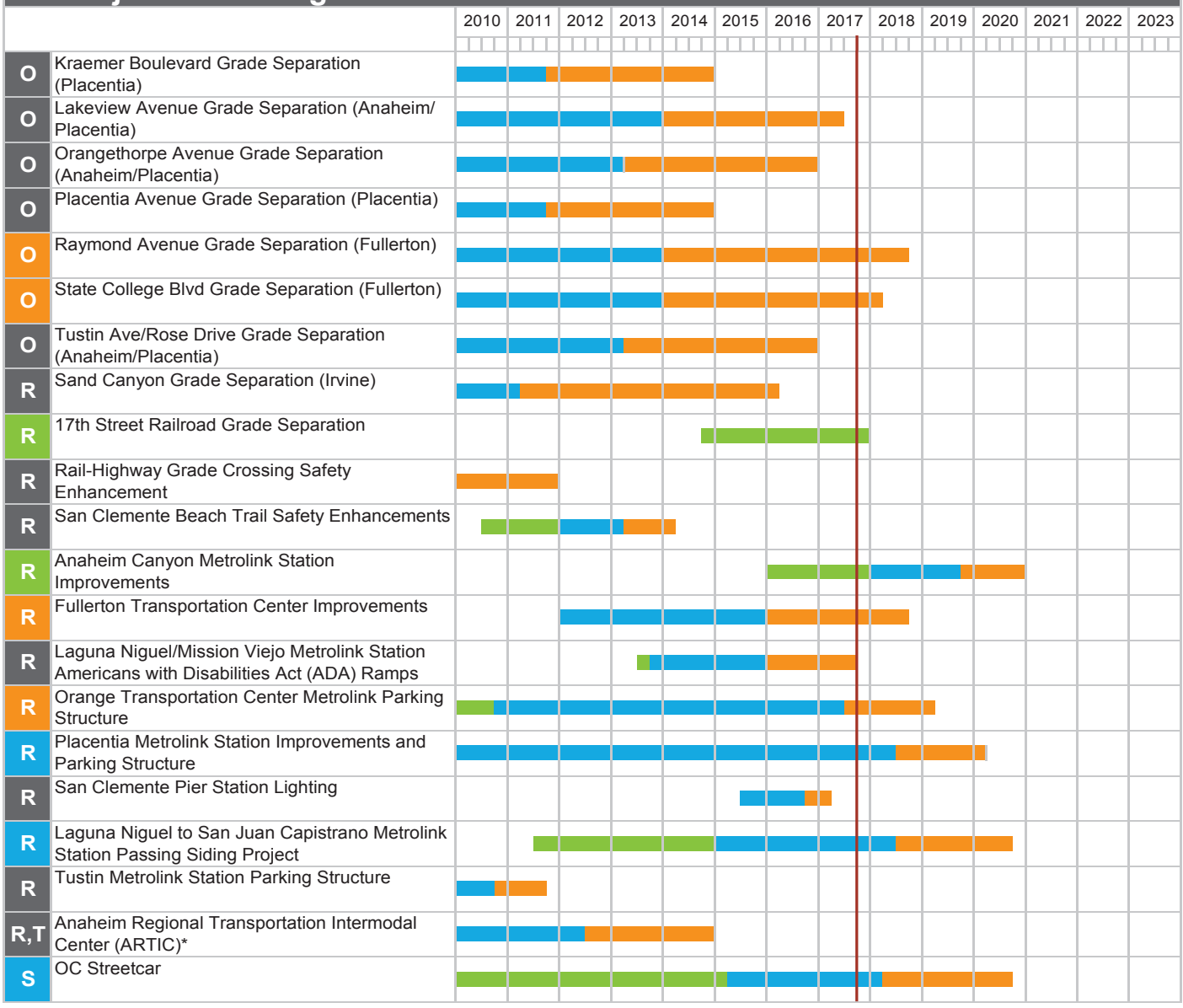
M2 Projects and Programs



*Projects managed by local agencies.

Shown schedules are subject to change.

Key:

- One to Watch
- At Risk

M2 Delivery Risk Update

This section discusses the risks and challenges related to overall Measure M2 and Next 10 Plan delivery that the Measure M Program Management Office is watching – complete with associated explanations and proposed actions. The below risks have been identified in the Board of Directors (Board)-adopted Next 10 Delivery Plan.

	Delivery Risk	Explanation	Proposed Action
Financial			
1	The inability to scale the Freeway Program to available revenue and still deliver the promise results in added pressure to contain project scopes. Additionally, there are large freeway capital projects moving forward in the Updated Next 10 timeframe with cost escalation risks.	Management of project scopes and schedules is key to the successful delivery of the overall Freeway Program. Given the magnitude of upcoming projects (e.g. Project K), any length of delay with associated cost escalation can be impactful and will need to be managed.	OCTA will work closely with the California Department of Transportation (Caltrans) and involved parties to seek cost-saving measures on freeway projects through changes in design parameters where possible. Tight monitoring of project schedules and scopes will be required to ensure delivery of the entire Freeway Program.
2	The long-term impact of the Great Recession resulted in a $10.8 billion decrease (or 44% reduction) in forecasted sales tax revenues, now totaling $13.5 billion. If sales tax revenue continues to come in lower than projections, this will further impact delivery.	The original projection in 2005 was $24.3 billion. With the revised Board-adopted forecast methodology in place to ensure more accurate assumptions, the new lower forecast results in a greater reliance on external funding in order to deliver the Freeway Program.	Incorporate net excess 91 Express Lanes revenue for eligible projects not to exceed the total costs of projects. Continue to actively pursue all available state and federal revenue. Identify lower cost freeway alternative options for Board consideration as appropriate.
3	Sustain Metrolink train service, as an attractive alternative to driving in Orange County.	Operational cost of Metrolink service continues to grow as the system ages, track-sharing arrangements with Burlington Northern Santa Fe are revised, and new air quality requirements are enacted. These changes increase costs which could impact the level of service in the long term.	Staff will continue to work closely with Metrolink and our partners to ensure cost increases are minimized while service is optimized.
Organizational			
4	Availability of specialized staff, given the scope of Right-of-Way (ROW) activities for various freeway construction activities.	Timely ROW acquisition and utility clearance have proven to be key factors in reducing risk on construction projects. Early acquisition is challenged by the heavy demand on Caltrans' ROW resources. This is further challenged by a change in meeting frequency by the California Transportation Commission (CTC), a necessary step in ROW settlement.	Expert and timely coordination between OCTA and Caltrans are imperative to manage this risk. Staff is currently working with Caltrans to ensure ROW resource needs are met through determining project lead responsibility for projects as they move forward. If resource issues become a problem, OCTA could consider taking full responsibility for ROW activities.

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	Delivery Risk	Explanation	Proposed Action
5	New operational responsibilities with the OC Streetcar.	With the implementation of the OC Streetcar service, OCTA will be increasing its overall role in operations.	OCTA holds a strong track record in operating various transportation systems including both a fixed and demand-based bus network. Additionally, OCTA will look to augment staff's capabilities to operate the OC Streetcar through procuring a turnkey operator/maintainer and a manager to oversee the daily operations.
Policy			
6	New statewide directives create additional hurdles for the Freeway Program in particular.	With new statewide directives focused on greenhouse gas reductions, it is becoming more difficult to environmentally clear the remaining nine freeway projects that add general purpose lanes. Additionally, within the recently completed Caltrans managed lanes study, inclusion of managed lanes is suggested for M2 project corridors where the promise to the voters is the addition of a general purpose lane. Projects currently in the environmental phase are at possible risk.	OCTA will need to ensure that when freeway improvement projects are being reviewed for environmental clearance, they are viewed as part of a larger suite of transportation improvements. OCTA staff will work closely with Caltrans to emphasize the importance of keeping the promise to the voters.
Market			
7	The Next 10 Market Conditions Forecast and Risk Analysis identified strong potential for an increased cost environment during the Next 10 delivery years.	Four near-term cost risks were identified: neighboring county transportation construction programs, construction wage pressures, sustained low statewide unemployment, and residential construction demand and the effect on the public works construction market.	OCTA staff will monitor and track key early warning indicators as recommended through the completed Market Analysis and will provide the Board annual updates on changes to risk factors.

Next 10 Plan Update

Contact: Tami Warren, PMO Manager
(714) 560-5590

Last year, on November 14, 2016, the Board approved the Next 10 Delivery Plan, a ten-year plan that outlines projects and programs for all modes of transportation to be delivered on an expedited schedule between 2017 and the year 2026. The plan identified ten deliverables for what is to be accomplished, with the overarching goal of successfully delivering the M2 Program by 2041 as promised.

Final sales tax receipts for FY 2016-17 were received this quarter and incorporated into the M2 sales tax forecast model. On September 11, 2017, the Board received a presentation on the most recent 2017 sales tax revenue forecast of $13.5 billion, representing a $700 million reduction from the sales tax forecast of $14.2 billion assumed in the adopted Next 10 Plan. This quarter, staff reviewed and revised the Next 10 Plan revenue, expense, and schedule sequencing assumptions and prepared a plan update to go to the Board on November 13, 2017.

On September 11, 2017, the Board was presented with a Next 10 Market Conditions Forecast and Risk Analysis report conducted by contracted economists. The Board directed staff to develop a plan to monitor and track key early warning indicators and provide OCTA information on changes to the risk factors. Staff is working with the consultant to determine the indicators to track. These include building permits, construction employment and wages, the number of project bidders and trends in bid amounts, construction commodity costs, executive opinion, and consumer sentiment. A summary of the monitoring effort will be presented to the Board at a minimum bi-annually and if noteworthy, more frequent updates will be provided through these M2 quarterly progress reports.

Updated Next 10 Plan Deliverables (scheduled for approval on November 13, 2017)

1. Deliver $3.1 billion of freeway improvements approved through construction (Projects A-M).

The M2 freeway program currently consists of 27 projects or project segments. At the point of Next 10 adoption, nine were already complete, and another nine designated to be complete within the Next 10 time-frame. Together, the nine segments designated for completion make up the $3.1 billion delivery promise. Nine segments are expected to be completed by 2026. Currently, the I-5 between Avenida Vista Hermosa to the Pacific Coast Highway is completed. All other projects are in design or construction: two segments of I-5 between Avenida Pico and San Juan Creek Road (Project C); one project on I-405 between SR-55 and I-605 (Project K); another four segments on I-5, one between SR-55 and SR-57 and the other three between SR-73 and El Toro Road (Projects A and C); and one segment on SR-55 between I-405 and I-5 (Project F). For more details, see previous page (Project Schedules) and the project updates contained in the following pages.

2. Invest approximately $1.2 billion more in revenues, bringing the completed Freeway Program improvements to $4.3 billion (Projects A-M). Project I is a priority.

The final nine remaining project segments (of the 27 total) are on track to be environmentally cleared by 2020,

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making them "shelf ready" for future advancement as revenues become available. The Next 10 Plan designated another $1.2 billion (in addition to the $3 billion promised above) toward moving one or two projects from the nine into construction by 2026. Congestion levels, readiness, and cost risk are factors that will determine which environmentally cleared projects will be recommended to the Board to advance into the construction phase. Project I (between SR-55 and SR-57) meets the above criteria and was designated as a priority project by the Board in the Next 10 Plan.

3. Allocate $1 billion, with $400 million in competitive funding to local jurisdictions to expand roadway capacity and synchronize signals (Project O and P) and $600 million in flexible funding to local jurisdictions to help maintain aging streets or for use on other transportation needs, as appropriate (Project Q).

Since M2 inception, OCTA invested approximately $263 million in M2 funds into the Regional Capacity Program (Project O), $72.1 million in Regional Traffic Signal Synchronization Program (Project P), and $296.9 million in the Local Fair Share Program (Project Q). Since the adoption of the Next 10 Plan, a total of $52.6 million in Local Fair Share funds have been distributed to local agencies. On August 14, 2017, the Board approved the release of the 2018 Call for Projects that will make available approximately $32 million for Project O and $8 million for Project P.

a. Complete the remaining three grade separation projects (Project O).
When the Next 10 was adopted, grade separation projects under construction included: Raymond Avenue, State College Boulevard, and Lakeview Avenue. Lakeview Avenue grade separation was completed in June 2017. Construction on Raymond Avenue is expected to be completed in summer of 2018 and State College Boulevard is expected to be complete in winter of 2018. To date, the Board has approved $664 million in committed M2 and external funds for all seven of the OC Bridges Program grade separation projects.

4. Extend Metrolink service from Orange County into Los Angeles County, contingent upon cooperation and funding participation from route partners; complete six rail station improvements (Project R).

The Riverside County Transportation Commission (RCTC), Los Angeles County Metropolitan Transportation Authority (Metro), and OCTA continue to work together to secure approval of a Memorandum of Understanding (MOU) with Burlington Northern Santa Fe (BNSF) Railway, which is necessary to operate train service on BNSF-owned tracks. Metrolink is the lead in the discussions with the BNSF Railway to evaluate the current shared use and indemnification/liability agreements that govern the use of each agency's respective railroad rights of way. Special counsel has been brought in to assist in these discussions.

Within this program, funding is provided for rail corridor and station improvements to accommodate increased train service and commuter use - including station upgrades, parking expansions, and safety enhancements. The Next 10 Plan identifies six projects to be completed by 2026, which include: Laguna Niguel/Mission Viejo Metrolink station ADA ramps (completed September 2017), Orange Metrolink station parking structure (construction 3% complete), Placentia Metrolink station (construction to begin spring 2018), Anaheim Canyon Metrolink station improvement project (construction to begin late 2019), Fullerton Transportation Center elevators (construction 5% complete), and San Clemente Pier Metrolink/Amtrak station lighting (completed March 2017). For more details, see the project updates contained in the following pages.

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5. Complete design and construction, secure vehicles, and begin operating the OC Streetcar (Project S) and work with local agencies to consider recommendations from planning studies to guide development of future transit connections (Project S).

OC Streetcar

To date, the Board has approved up to $306.4 million for the OC Streetcar project, including preliminary studies, environmental, project development and construction. The Federal Transit Administration (FTA) has shown strong support for this project, as shown by ascribing an overall medium-high rating to it in their Fiscal Year 2018 Annual New Starts Report. The full Notice to Proceed for design was issued in February 2016. Approval for entry into the New Starts Engineering phase was obtained from the FTA in January 2017. On May 22, 2017, the Board directed staff to enter into a Full Funding Grant Agreement with the FTA for the OC Streetcar project. See page 29 for more information.

OC Transit Vision

During this quarter the "Transit Opportunity Corridors" were developed and presented to the Board. The Transit Investment Framework was also used to help develop short-term changes to bus service which will be implemented in February 2018. In the upcoming quarter, staff will be presenting results of the opportunity corridor evaluation and potential next steps to the OCTA Board. Staff will also be soliciting public feedback on the corridor evaluation and other potential project recommendations. Completed project documents can be downloaded from the project website at www.octa.net/octransitvision. The OC Transit Vision Plan is expected to be complete in January 2018.

Harbor Corridor Transit Study

During the quarter, the Harbor Study team evaluated the performance of twelve (12) conceptual transit alternatives against a predetermined set of evaluation criteria. Transportation modeling was performed in order to estimate ridership in future years for each of the twelve alternatives. The project development team (PDT) held a monthly coordination meeting in August to review some of the preliminary modeling results. Due to delays in processing the evaluation results the schedule for the OCTA Board update was delayed. The item is now scheduled to be presented to the Transit Committee in December and the Board in January 2018.

6. Provide up to $115 million in funding to expand mobility choices for seniors and persons with disabilities (Project U).

Since M2 inception, more than $50 million in Project U funds has been provided for the Senior Mobility Program (SMP), the Senior Non-emergency Medical Transportation Program (SNEMT), and the Fare Stabilization Program. Included in this amount, approximately $11 million has been provided for the SMP, SNEMT, and Fare Stabilization programs since the Next 10 Plan adoption. See page 31 for more information.

7. Work with local agency to develop a plan for the next community circulator projects to provide grant opportunities for local agencies to implement effective local transit services (Project V).

Since 2013, the Board has approved approximately $36.86 million to fund 23 community-based transit service projects and 7 planning grants. Approved projects service areas in 19 cities and the County of Orange: Anaheim, Costa Mesa, County of Orange, Dana Point, Fountain Valley, Garden Grove, Huntington Beach, Irvine, La Habra, Laguna Beach, Laguna Niguel, Lake Forest, Mission Viejo, Newport Beach, Placentia, Rancho Santa Margarita, San

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Clemente, San Juan Capistrano, Tustin, and Westminster. OCTA receives ridership reports from local agencies on a regular basis to monitor the success of these services against performance measures adopted by the Board. Staff continuously monitors these services to ensure the performance standards are met and provide reports to the Board on a regular basis. Projects that don't meet the standards are brought before the Board with recommendations that include discontinuing service. For more details on program performance and service see page 32.

8. Allocate up to $7 million in funding to improve the top 100 busiest bus stops and support the modernization of the bus system to enhance the customer experience (Project W).

Between M2 inception and Next 10 Plan adoption, the Board approved up to $1,205,666 for supporting 51 city-initiated improvements and $370,000 for OCTA-initiated improvements. The City of Anaheim postponed development of eight stops and will move forward in a future funding cycle. Of the remaining 43 stops, 14 stops have been completed to date and the remainder 29 stops are underway by the City of Santa Ana. The $370,000 contribution was invested towards a mobile ticketing application to make it more convenient for bus customers to purchase bus passes, obtain trip information, and board buses by enabling riders to use smart phone devices to display bus passes as proof of payment. Following implementation of the existing projects, staff will work with local agencies to assess future funding needs. Future funding recommendations will be brought to the Board.

9. Ensure the ongoing preservation of purchased open space (Preserves) which provides comprehensive mitigation of the environmental impacts of freeway improvements and higher-value environmental benefits in exchange for streamlined project approvals (Projects A-M).

The Freeway Mitigation Program is proceeding as planned, with seven properties (Preserves) acquired (1,300 acres), and 12 restoration projects approved for funding by the Board, totaling approximately 350 acres. These Preserves and restoration projects are folded into the OCTA Natural Community Conservation Plan/Habitat Conservation Plan (Conservation Plan), which contributes mitigation to streamline the permitting process for M2 freeway projects. The program's Conservation Plan and Final Environmental Impact Report and Environmental Impact Statement (EIR/EIS) were approved by the Board in November 2016. The final permits were approved by the Wildlife Agencies in June 2017. As part of the Conservation Plan process, an endowment is required to be established to pay for the long-term management of the Preserves. As anticipated, the first deposit for the endowment was made in early 2017. Staff will continue to oversee and manage the Preserves until a long-term manager(s) is established. Management of the Preserves includes the development and release of Preserve specific resource management plans. Additionally, staff will monitor the progress of all restoration projects and provide status updates to the Environmental Oversight Committee until each project is implemented.

10. Work with the Environmental Cleanup Allocation Committee (ECAC) to develop the next tiers of water quality programs, with a goal of providing $40 million in grants to prevent the flow of trash, pollutants, and debris into waterways from transportation facilities. In addition, focus on improving water quality on a regional scale that encourages partnerships among the local agencies as part of the Environmental Cleanup Program (ECP) (Project X).

Prior to Next 10 adoption, the Board awarded approximately $48 million for 154 Tier 1 and 22 Tier 2 projects. On August 14, 2017, the Board approved approximately $3.1 to 16 Tier 1 projects. Staff is working with the ECAC and the County of Orange to determine the best timing for the next Tier 2 call based on projected cash flow and local jurisdictions' interest in potential viable Tier 2 projects.

Interstate 5 (I-5) Projects

Project A

I-5, SR-55 to SR-57

Contact: Rose Casey, Highways
(714) 560-5729

Status: Design complete. Bid package preparation underway.

Summary: This project will increase high occupancy vehicle (HOV) capacity by adding a second HOV lane in both directions along I-5 between SR-55 and SR-57 in Santa Ana. This quarter, OCTA staff and the OCTA consultant worked with the Caltrans to obtain Office Engineer Acceptance, expected in November 2017. In August 2017, the OCTA Board approved replacing $28.9 million in State Transportation Improvement Program (STIP) funds with $28.9 million in Congestion Mitigation and Air Quality (CMAQ) funds. The Federal Transportation Improvement Program (FTIP) Amendment #17-13 was approved on September 13, 2017. The OCTA Board approved the OCTA/Caltrans Construction Cooperative Agreement and authorized the release of the Request for Proposals (RFP) for consultant construction management services on July 24, 2017. The Board is scheduled to approve consultant construction management selection and amendment No. 1 to the OCTA/Caltrans Co-op on November 13, 2017. Due to changes in scope and STIP funding delays, this project is marked "red" in the Capital Action Plan (CAP), signifying a delay of over three months beyond the original schedule.

Project B

I-5, I-405 to SR-55

Contact: Rose Casey, Highways
(714) 560-5729

Status: Environmental Phase Underway - 69% Complete

Summary: This project will add one general purpose lane in each direction of the I-5 corridor and improve the interchanges in the area between SR-55 and SR-133 (near the El Toro "Y" and I-405) in Tustin and Irvine. The environmental study will consider the addition of one general purpose lane on I-5 between just north of I-405 to SR-55. Additional features of Project B include improvements to various interchange ramps. Auxiliary lanes could be added in some areas and re-established in other areas within the project limits. During the quarter, the consultant continued working on technical studies and obtained Caltrans approval on several technical studies. The final Environmental Document (ED) is expected to be complete in October 2018.

Project C & Part of Project D

I-5, Avenida Pico to Avenida Vista Hermosa/Avenida Pico Interchange

Contact: Rose Casey, Highways
(714) 560-5729

Status: Construction Underway - 79% Complete

Summary: This segment adds a carpool lane in each direction on I-5 between Avenida Pico and Avenida Vista Hermosa in San Clemente, and also includes major improvements to the Avenida Pico Interchange (part of Project D), which will also add bicycle lanes in both directions of Avenida Pico. Construction began in February 2015. During the quarter, construction of the main line roadway section and ramps continued. Avenida Pico paving, sidewalks, driveways and curb and gutters work started and is planned to be finished by early December. Relocation of utilities and traffic signals are ongoing. Construction is scheduled to be complete in mid-2018.

I-5, Avenida Vista Hermosa to Pacific Coast Highway

Contact: Rose Casey, Highways
(714) 560-5729

Status: PROJECT COMPLETE

Summary: This segment adds a carpool lane in each direction of I-5 between Avenida Vista Hermosa and Pacific Coast Highway (PCH) in San Clemente, and also includes reconstructing on and off ramps at Avenida Vista Hermosa and Camino de Estrella. Construction began in September 2014. During the quarter, construction was completed (July 2017). The added carpool lanes will be open to traffic when the segments at either side of this improvement (Avenida Pico to Avenida Vista Hermosa and Pacific Coast Highway to San Juan Creek Road) are complete, which is anticipated in early 2018.

I-5, Pacific Coast Highway to San Juan Creek Road

Contact: Rose Casey, Highways
(714) 560-5729

Status: Construction Underway - 93% Complete

Summary: This segment will add one carpool lane in each direction of the I-5 between PCH and San Juan Creek Road in the cities of San Clemente, Dana Point, and San Juan Capistrano. Project improvements also include reconstructing on and off ramps at PCH/Camino Las Ramblas. Construction began in March 2014. During the quarter, work on the median continued and installation of irrigation systems were started. In the fall of 2015, the Board was informed that a soil issue was identified, which would delay project completion. As a result, this project is marked “red” in the CAP, signifying a delay of more than three months, with a revised completion date extending at least 19 months past the original schedule (September 2016). Construction work is scheduled to be complete in early 2018.

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Project C & Part of Project D continued from previous page...

I-5, SR-73 to Oso Parkway/Avery Parkway Interchange

Contact: Rose Casey, Highways
(714) 560-5729

Status: Design Phase Underway - 95% Complete

Summary: This project will make improvements along I-5 between SR-73 and Oso Parkway in the cities of Laguna Hills, Laguna Niguel, and Mission Viejo. The proposed improvements include the addition of a general purpose lane in each direction and reconstruction of the Avery Parkway Interchange (part of Project D). During the quarter, Caltrans approved the ROW maps, the appraisal consultant was selected and began work, and the E-76 package to begin ROW work was approved. Staff continued to coordinate with Caltrans to finalize and approve the Fact Sheet. With 95 percent Plans, Specifications, and Estimates (PS&E) submitted to Caltrans on June 14, 2017, the plans identify a higher cost estimate due to unit price increases, rise in Caltrans support costs, and schedule changes to address bird nesting season restrictions. The Board received a staff report on July 6th with the project cost changes and approved additional funding. This segment is included in the 2018 STIP project recommendations, which was approved by the Board in September and expected to be adopted by the CTC in March 2018. Design work is anticipated to be complete in 2018. Due to extended ROW coordination, this project is marked "red" in the Capital Action Plan (CAP), signifying a delay of over three months beyond the original schedule.

I-5, Oso Parkway to Alicia Parkway/La Paz Road Interchange

Contact: Rose Casey, Highways
(714) 560-5729

Status: Design Phase Underway - 95% Complete

Summary: This project will make improvements along I-5 between Oso Parkway and Alicia Parkway in the cities of Mission Viejo, Laguna Hills, and Lake Forest. The proposed improvements include the addition of a general purpose lane in each direction and reconstruction of the La Paz Road Interchange. The design phase is currently underway. Major activities this quarter included continued coordination on the aesthetics concept plan, off-site sound walls, service contract with Southern California Regional Rail Authority (SCRRA) and Metrolink, and with Caltrans on ROW and utilities. The 100% Design Submittal is scheduled for December 2017. Due to extended ROW coordination, this project is marked "red" in the CAP, signifying a delay of over three months beyond the original schedule.

I-5, Alicia Parkway to El Toro Road

Contact: Rose Casey, Highways
(714) 560-5729

Status: Design Phase Underway - 95% Complete

Summary: This project will make improvements along I-5 between Alicia Parkway to El Toro Road in the cities of Lake Forest, Laguna Hills, Laguna Woods and Mission Viejo, including the extension of the second HOV lane from El Toro Road to Alicia Parkway. Major activities this quarter included continued coordination with Caltrans and the Orange County Parks Department regarding the planned work at Aliso Creek and the continued development of a plan to address potential impacts to Avenida De La Carlota and Southern California Edison power lines therein. Meetings have been held with all utility agencies to determine the need, extent and schedules for third party relocations/protection. The E-76 package to allow Caltrans to begin work was approved on August 31, 2017 by Federal Highway Administration (FHWA). Due to extended ROW coordination with Caltrans and delayed design start date, this project is marked "red" in the CAP, signifying a delay of over three months beyond the original schedule.

Project D

This project will update and improve key I-5 interchanges at Avenida Pico, Ortega Highway, Avery Parkway, La Paz, and at El Toro Road. Three interchange improvements at La Paz, Avery Parkway, and Avenida Pico are part of Project C.

I-5, El Toro Road Interchange

Contact: Rose Casey, Highways
(714) 560-5729

Status: Environmental Phase Underway - 20% Complete

Summary: This project includes four different alternatives that consider modifications to the existing interchange, which range from a I-5 southbound direct connector to El Toro Road to modifications in how existing off ramp intersections operate. The E-76 package to allow Caltrans to begin work was approved in April 2017 by FHWA and work began in May 2017. An update by Caltrans on this project was presented to the OCTA Board in May 2017 and the next update is expected in early 2018. Work during the quarter included reducing the Alternatives being studied for construction to three and related coordination with the adjoining cities of Laguna Hills, Lake Forest and Laguna Woods. The environmental phase is anticipated to be completed in late 2019.

I-5, Ortega Highway Interchange

Contact: Rose Casey, Highways
(714) 560-5729

Status: **PROJECT COMPLETE**

Summary: Construction began in February 2013 to reconstruct the SR-74 Ortega Highway Bridge over I-5, and improve local traffic flow along SR-74 and Del Obispo Street in the City of San Juan Capistrano. All lanes on the new bridge were opened to traffic on September 4, 2015. A dedication ceremony was held on October 1, 2015. The project was officially completed on January 15, 2016.

State Route 22 (SR-22) Project

Project E

SR-22, Access Improvements

Contact: Rose Casey, Highways
(714) 560-5729

Status: **PROJECT COMPLETE**

Summary: Completed in 2008, Project E made improvements at three key SR-22 interchanges (Brookhurst Street, Euclid Street, and Harbor Boulevard) in the City of Garden Grove to reduce freeway and street congestion in the area. This M2 project was completed early as a “bonus project” provided by the original Measure M (M1).

State Route 55 (SR-55) Projects

Project F

SR-55, I-405 to I-5

Contact: Rose Casey, Highways
(714) 560-5729

Status: Environmental Phase Complete and Design Phase Underway - 3% Complete

Summary: This project will widen SR-55 in the cities of Irvine, Santa Ana, and Tustin. The final ED and Project Report were approved and signed on August 31, 2017 and September 11, 2017 respectively. The final Fact Sheet is anticipated to be signed in early November 2017. On August 10, 2017 Caltrans executed the Design Cooperative Agreement with OCTA and initiated the 35% design. With OCTA staff oversight, Caltrans is refining the geometrics to eliminate and minimize the potential ROW risk and costs. Additionally, on September 11th the Board authorized the Chief Executive Officer to negotiate and execute a ROW Cooperative Agreement with Caltrans and approved staff consultant selection for PS&E services. During the quarter, staff briefed the Board on the ROW assumptions and potential ROW risk and costs. The project is marked “red” in the CAP, signifying a delay of more than three months. This project has been delayed by more than four years from its original schedule due to differences in project determination between OCTA and Caltrans.

SR-55, I-5 to SR-91

Contact: Rose Casey, Highways
(714) 560-5729

Status: Environmental Phase Underway - 13% Complete

Summary: This project will add capacity between I-5 and SR-22, and provide operational improvements between SR-22 and SR-91 in the cities of Orange, Santa Ana, Tustin, and Anaheim. The environmental study will consider the addition of one general purpose lane in each direction to SR-55 between SR-22 and the I-5, and provide operational improvements on SR-55 between SR-22 and SR-91. During the quarter, a traffic study was conducted and a focus meeting was held with Caltrans to discuss design options. The environmental phase is anticipated to be complete in 2020.

State Route 57 (SR-57) Projects

Project G

SR-57 NB, Katella Avenue to Lincoln Avenue

Contact: Rose Casey, Highways
(714) 560-5729

Status: **PROJECT COMPLETE**

Summary: This project increased capacity and improved operations on northbound SR-57 between Katella Avenue and Lincoln Avenue in the City of Anaheim with the addition of a new 3-mile general purpose lane, on- and off-ramp improvements, and sound walls. Bridges at Katella Avenue and Douglas Road were also widened in the northbound direction. The project opened to traffic on November 19, 2014 and completed on April 21, 2015.

SR-57 NB, Orangethorpe Avenue to Yorba Linda Boulevard

Contact: Rose Casey, Highways
(714) 560-5729

Status: **PROJECT COMPLETE**

Summary: This project increased capacity and improved operations on northbound SR-57 with a new 2.5-mile northbound general-purpose lane between Orangethorpe Avenue in the City of Placentia to Yorba Linda Boulevard in the City of Fullerton. In addition to the new lane, capital improvements include reconstruction of northbound on- and off-ramps, widening of seven bridges, and the addition of soundwalls. The new general purpose lane was opened to traffic on April 28, 2014. The project was completed on November 6, 2014.

SR-57 NB, Yorba Linda Boulevard to Lambert Road

Contact: Rose Casey, Highways
(714) 560-5729

Status: **PROJECT COMPLETE**

Summary: Completed on May 2, 2014, this project improved capacity, operations, and traffic flow on SR-57 with the addition of a new 2.5-mile northbound general-purpose lane between Yorba Linda Boulevard in the City of Fullerton and Lambert Road in the City of Brea. Additional project benefits include on- and off-ramp improvements, the widening and seismic retrofit (as required) of six bridges in the northbound direction and the addition of soundwalls. Existing lanes and shoulders were also widened to standard widths, enhancing safety for motorists. The new general purpose lane was opened to traffic on September 23, 2013.

Continues on the next page...

Project G continued from previous page...

SR-57 NB, Lambert Road to Tonner Canyon Road

Contact: Rose Casey, Highways
(714) 560-5729

Status: Conceptual Phase Complete, Further Schedule TBD

Summary: Caltrans previously completed a Project Study Report/Project Development Support document for the Lambert Road to Tonner Canyon Road segment, which will add a truck-climbing lane from Lambert Road to Tonner Canyon Road in the City of Brea. Environmental phase is expected to begin in 2020. Future work will be planned so that it coincides with related work by LA Metro across the county line. Funding for environmental phase for this project was proposed to be included in the 2016 STIP but was removed due to funding constraints. Staff will evaluate alternative funding sources.

SR-57 NB, Orangewood Avenue to Katella Avenue

Contact: Rose Casey, Highways
(714) 560-5729

Status: Environmental Phase Underway - 25% Complete

Summary: This project will add capacity in the northbound direction of SR-57 from Orangewood Avenue to Katella Avenue in the cities of Anaheim and Orange. Improvements under study include adding a northbound general purpose lane to join the northbound general purpose lane which was opened to traffic in 2014 between Katella Avenue and Lincoln Avenue. During the quarter, technical studies continued and were provided to OCTA and Caltrans for review and comments. The environmental phase is anticipated to be complete in late 2018.

State Route 91 (SR-91) Projects

Project H

SR-91 WB, I-5 to SR-57

Contact: Rose Casey, Highways
(714) 560-5729

Status: **PROJECT COMPLETE**

Summary: This project increased capacity in the westbound direction of SR-91 by adding an additional general purpose lane in the westbound direction between Anaheim and Fullerton, and provided operational improvements at on and off-ramps between Brookhurst Street and State College Boulevard. Construction is 100 percent complete, as of June 23, 2016. Consultant-supplied construction management services ended on September 29, 2016. The general purpose lane was opened to traffic on March 7, 2016.

Project I

SR-91, SR-55 to Tustin Avenue Interchange

Contact: Rose Casey, Highways
(714) 560-5729

Status: **PROJECT COMPLETE**

Summary: This project improved traffic flow at the SR-55/SR-91 interchange by adding a westbound auxiliary lane beginning at the northbound SR-55 to westbound SR-91 connector through the Tustin Avenue interchange in the City of Anaheim. The project was intended to relieve weaving congestion in the area and included reconstruction of the westbound side of the Santa Ana River Bridge to accommodate the additional lane. The bypass lane was open to traffic on May 14, 2016. Construction is 100 percent complete. Contract Acceptance was granted on October 31, 2016.

SR-91, SR-55 to SR-57

Contact: Rose Casey, Highways
(714) 560-5729

Status: Environmental Phase Underway - 47% Complete

Summary: This project will improve traffic flow and operations along SR-91 within the cities of Fullerton and Anaheim. The study will look at the addition of one general purpose lane eastbound between SR-57 and SR-55, and one general purpose lane westbound from Glassell Street to State College Boulevard. Additional features of this project include improvements to various interchanges. Auxiliary lanes will be added in some segments and re-established in others within the project limits. This quarter, the consultant continued working on technical documents. M2 and federal funds would pay for the mainline freeway improvements and future funding would need to be identified for connector portions of the project. Due to Caltrans requiring extra work to study interchange improvements outside of the completed project study report, the project is marked “red” in the CAP with a delay of more than one year from its original schedule. The environmental phase is expected to be complete in mid-2019.

Project J

SR-91, SR-55 to SR-241

Contact: Rose Casey, Highways
(714) 560-5729

Status: **PROJECT COMPLETE**

Summary: This completed Project J segment added six miles in the westbound and eastbound direction to a key stretch of SR-91 between SR-55 and SR-241 in the cities of Anaheim and Yorba Linda. In addition to adding 12 lane miles to SR-91, the project also delivered a much needed second eastbound exit lane at the Lakeview Avenue, Imperial Highway and Yorba Linda Boulevard/Weir Canyon Road off-ramps. Beyond these capital improvements, crews completed work on safety barriers, lane striping and soundwalls. Completion of this project in March 2013 means a total of 18 lane miles have been added to SR-91 since December 2010.

Continues on the next page...

Project J continued from previous page...

SR-91 EB, SR-241 to SR-71

Status: **PROJECT COMPLETE**

Contact: Rose Casey, Highways
(714) 560-5729

Summary: Completed in January 2011, this segment added six miles through a key stretch of SR-91 between Orange County's SR-241 and Riverside County's SR-71. The project improves mobility and operations by reducing traffic weaving from traffic exiting at SR-71 and Green River Road. An additional eastbound general purpose lane on SR-91 was added and all existing eastbound lanes and shoulders were widened. Because this project was shovel-ready, OCTA was able to obtain American Recovery and Reinvestment Act (ARRA) funding for this M2 project, saving M2 revenues for future projects.

SR-91, SR-241 to I-15

Contact: Rose Casey, Highways
(714) 560-5729

Status: RCTC's Design-Build - Initial Phase Complete March 20, 2017

Summary: The purpose of this project is to extend the 91 Express Lanes eastward from its current terminus in Anaheim to I-15 in Riverside County. This project will also add one general purpose lane in each direction of SR-91, from SR-71 to I-15, and construct various interchange and operational improvements. On March 20, 2017, the RCTC contractors completed a $1.3 billion freeway improvement project. While the portion of this project between SR-241 and the Orange County/Riverside County line is part of OCTA's M2 Project J, the matching segment between the county line and SR-71 is part of RCTC's Measure A. With RCTC's first project effort to extend the 91 Express Lanes and add a general purpose lane east of SR-71, construction of the final additional general purpose lane between SR-241 and SR-71 will take place post-2035. The ultimate project widens all SR-91 general purpose lanes to standard lane and shoulder widths from SR-241 to SR-71 (RCTC is responsible for the lane improvements between Green River and SR-71 while OCTA will be responsible for the lane improvements west of Green River to SR-241). To maintain synchronization, these general purpose lanes improvements, which span both counties, will be scheduled to ensure coordinated delivery of both portions of the project, and will provide a continuous segment that stretches from SR-241 to SR-71. This action is consistent with the 2017 SR-91 Implementation Plan.

Interstate 405 (I-405) Projects

Project K

I-405, SR-73 to I-605

Contact: Rose Casey, Highways
(714) 560-5729

Status: Design-Build Underway

Summary: OCTA and Caltrans are working together to widen I-405 through the cities of Costa Mesa, Fountain Valley, Garden Grove, Huntington Beach, Los Alamitos, Seal Beach, and Westminster. These improvements will add one

Continues on the next page...

Project K continued from previous page...

general purpose lane, add a second HOV lane to be combined with the existing HOV lane providing a dual express lane facility, and improve the local interchanges along the corridor from SR-73 to I-605. *

On July 17, the Secretary of Transportation approved the Transportation Infrastructure Finance and Innovation Act (TIFIA) loan. On July 26, OCTA closed the TIFIA loan with the US Department of Transportation. Of the total $629 million TIFIA loan, $153.9 million is the M2 project share which is a direct benefit to the M program as the loan will be repaid with toll revenue and not with M2 funds. With the financing for the project in place, OCTA issued Notice to Proceed No. 2 (NTP2) on July 27. NTP2 is a full notice to proceed for all activities, including construction.

A RFP for toll lanes system integrator was released on August 28, 2017. Award of this contract is anticipated for early 2018. The toll lanes system integrator will work closely with the design-builder to deliver fully functional express lanes in 2023.

During the quarter, work continued on public outreach, ROW acquisition, utility coordination, and environmental permitting. Other work includes review of design-builder submittals, including design submittals, quality management plan, transportation management plan, and other administrative plans necessary to be completed prior to commencement of construction. The design-builder continued their pre-construction investigations, including utility potholing to positively locate utilities and geotechnical borings to analyze soil conditions throughout the project site. Construction is expected to begin in early 2018 and be complete in 2023.

* The general purpose lane portion of the project is a M2 project and will be funded by a combination of local, state and federal funds, with the express lanes portion of the project financed and primarily paid for by those who choose to pay a toll and use the 405 Express Lanes.

Project L

I-405, I-5 to SR-55

Status: Environmental Phase Underway - 84% Complete

Summary: This project will add one general purpose lane in each direction of the I-405 corridor and improve the interchanges in the area between I-5 and SR-55 in Irvine. Additional features of Project L include improvements to various interchanges, auxiliary lanes and ramps. During the quarter, the consultant continued working on technical studies and obtained approval on a number of engineering technical studies. The final ED is expected to be complete in July 2018.

Interstate 605 (I-605) Project

Project M

I-605, Katella Interchange Improvements

Contact: Rose Casey, Highways
(714) 560-5729

Status: Environmental Phase Underway - 66% Complete

Summary: This project will improve freeway access and arterial connection to I-605 at Katella Avenue in the City of Los Alamitos and the County of Orange. Improvements under this project may include enhancements at the on-ramps and off-ramps in addition to operational improvements on Katella Avenue at the I-605 Interchange. The remaining two build alternatives include modification of interchange ramps and lane configurations on Katella Avenue from Coyote Creek Channel to Civic Center Drive. During the quarter, the consultant continued working on technical studies and received approval on several technical studies. The final ED is anticipated to be completed in November 2018.

Freeway Service Patrol

Project N

Freeway Service Patrol

Contact: Sue Zuhlke, Motorist Services
(714) 560-5574

Status: Service Ongoing

Summary: M2's Freeway Service Patrol (FSP) began operation in June 2012 and provides tow truck service for motorists with disabled vehicles on the freeway system to help quickly clear freeway lanes and minimize congestion. During the quarter, the midday service provided assistance to 1,293 motorists, weekend service provided assistance to 688 motorists, and construction service provided assistance to 321 motorists. Since inception, M2 and construction-funded FSP has provided a total of 61,814 assists to motorists on the Orange County freeway system.

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Project O

Regional Capacity Program

Contact: May Hout, Planning
(714) 560-5905

Status: 2018 Call for Projects in Progress

Summary: This program, in combination with required local matching funds, provides funding for improvements on Orange County's Master Plan of Arterial Highways. On August 14, 2017, the Board approved the release of the 2018 eighth Call for Projects that will make approximately $32 million available to fund additional road improvements throughout the County. One-on-one meetings are being held with local agencies to assist in the preparation and submittal of grant applications. Applications for funding are due by October 20, 2017. Since 2011, 135 projects totaling more than $263 million have been awarded by the Board to date.

OC Bridges Railroad Program

This program will build seven grade separations (either under or over passes) where high volume streets are impacted by freight trains along the BNSF Railroad in North County. A status for each of the seven projects is included below. As of the end of this quarter, five are complete (Kraemer, Placentia, Orangethorpe, Tustin/Rose, and Lakeview), and the two remaining projects are scheduled to be completed in 2018.

Kraemer Boulevard Grade Separation

Contact: Rose Casey, Highways
(714) 560-5729

Status: **PROJECT COMPLETE**

Summary: The project located at Kraemer Boulevard railroad crossing is grade separated and open to traffic. The project separated the local street from railroad tracks in the City of Placentia by building an underpass for vehicular traffic. The grade separation was opened to traffic on June 28, 2014, and an event was held on July 8, 2014 to commemorate the opening. Project acceptance by the City of Anaheim and the City of Placentia, respectively, occurred in December 2014 and the cities assumed full maintenance responsibilities. In December 2015, the one-year warranty period expired with no issues or repairs identified.

Lakeview Avenue Grade Separation

Contact: Rose Casey, Highways
(714) 560-5729

Status: **CONSTRUCTION COMPLETE**

Summary: The project located at Lakeview Avenue railroad crossing grade separated the local street from railroad tracks in the cities of Anaheim and Placentia by building a bridge for vehicular traffic over the railroad crossing and reconfiguring the intersection of Lakeview Avenue and Orangethorpe Avenue. Construction began on July 1, 2014.

Continues on the next page...

Project O continued from previous page...

The new Atwood Channel Bridge was completed in late February 2017. Lakeview Avenue (north of Orangethorpe Avenue), closed since February 25, 2015, reopened with the connector road in late July 2016. Lakeview Avenue (south of Orangethorpe Avenue), closed since March 2015, reopened on June 6, 2017. Construction acceptance from the cities of Anaheim and Placentia was obtained on June 2, 2017 and OCTA has turned over the maintenance responsibilities to the cities and commenced the one year warranty. Minor construction punchlist items were completed and close-out activities will be ongoing till the end of the year.

Orangethorpe Avenue Grade Separation

Contact: Rose Casey, Highways
(714) 560-5729

Status: **PROJECT COMPLETE**

Summary: The project located at Orangethorpe Avenue railroad crossing is grade separated and open to traffic. The project separated the local street from railroad tracks in the cities of Placentia and Anaheim by building a bridge for vehicular traffic over the railroad tracks. On May 17, 2016, a joint-grand opening event was held to commemorate the opening to traffic for the Orangethorpe and Tustin/Rose Grade Separation projects. OCTA oversaw construction of the project which was completed during the quarter. Final construction activities included landscaping, irrigation, survey monumentation, and construction close-out activities. Construction was completed in October 2016 and construction acceptance was obtained from the cities of Anaheim and Placentia on October 25, 2016. OCTA has turned over the maintenance responsibilities to the cities and commenced the one-year warranty.

Placentia Avenue Grade Separation

Contact: Rose Casey, Highways
(714) 560-5729

Status: **PROJECT COMPLETE**

Summary: The project located at Placentia Avenue railroad crossing is grade separated and open to traffic. This project separated the local street from railroad tracks in the city of Placentia by building an underpass for vehicular traffic. An event was held on March 12, 2014, to commemorate the opening to traffic. Project acceptance by the City of Anaheim and the City of Placentia, respectively, occurred in December 2014, and the cities assumed full maintenance responsibilities. In December 2015, the one-year warranty period expired with no issues or repairs identified.

Raymond Avenue Grade Separation

Contact: Rose Casey, Highways
(714) 560-5729

Status: Construction Underway - **88% Complete**

Summary: The project located at Raymond Avenue railroad crossing will grade separate the local street from railroad tracks in the City of Fullerton by taking vehicular traffic under the railroad crossing. The City of Fullerton is managing construction and OCTA is providing construction oversight, public outreach, railroad coordination, and ROW support. Construction began on June 2, 2014. Activities this quarter continue to include retaining walls,

Continues on the next page...

Project O continued from previous page...

pump station, electrical, street lighting, traffic signal, and roadway excavation, pavement, and striping. An 80 day temporary closure of Raymond Avenue to through traffic started on July 17, 2017 and ended just after the end of the quarter on October 2, 2017. Construction is expected to be completed by spring 2018.

State College Boulevard Grade Separation

Contact: Rose Casey, Highways
(714) 560-5729

Status: Construction Underway - **92% Complete**

Summary: The project located at State College Boulevard railroad crossing will grade separate the local street from railroad tracks in the City of Fullerton by taking vehicular traffic under the railroad crossing. The City of Fullerton is managing the construction and OCTA is providing construction oversight, public outreach, railroad coordination, and ROW support. Construction activities this quarter continue to include work on retaining walls, pump station, electrical, storm drain, street lighting, traffic signal, and roadway excavation, pavement and striping. State College Boulevard, north of the railroad bridge, was re-opened to vehicular traffic on January 4, 2017 following closure since January 2015. State College Boulevard is anticipated to be opened to through traffic the first week of November 2017. Construction is expected to be completed by the end of 2017.

Tustin Avenue/ Rose Drive Grade Separation

Contact: Rose Casey, Highways
(714) 560-5729

Status: **PROJECT COMPLETE**

Summary: The project located at Tustin Avenue/Rose Drive railroad crossing is grade separated and open to traffic. The project separated the local street from railroad tracks in the cities of Placentia and Anaheim by building a bridge over the railroad crossing for vehicular traffic. On May 17, 2016, a joint-grand opening event was held to commemorate the opening to traffic for the Orangethorpe and Tustin/Rose Grade Separation projects. OCTA oversaw construction of the project, which was completed during the quarter. Final construction activities included traffic signal controller, landscaping, irrigation, survey monumentation, and construction close-out and warranty activities. Construction was completed in October 2016 and construction acceptance was obtained from the cities of Anaheim and Placentia on October 25, 2016. OCTA has turned over the maintenance responsibilities to the cities and commenced the one-year warranty.

Project P

Contact: Anup Kulkarni, Planning
(714) 560-5867

Regional Traffic Signal Synchronization Program

Status: Ongoing (See current projects' statuses illustrated on the map on the next page)

Summary: This program provides funding and assistance to implement multi-agency signal synchronization. The target of the program is to regularly coordinate signals for 2,000 intersections along 750 miles of roadway as the basis for synchronized operation across Orange County. The program will enhance the efficiency of the street grid and reduce travel delay.

To date, OCTA and local agencies have synchronized more than 2,000 intersections along more than 540 miles of streets (or 59 completed projects). There have been seven rounds of funding to date, providing a total of 81 projects with more than $89.17 million in funding awarded by the Board.

On August 14, 2017, the Board approved the release of the 2018 Call for Projects Regional Traffic Signal Synchronization Program, making approximately $8 million available for signal synchronization projects. The Call for Projects will close on October 20, 2017. Project applications will be reviewed and analyzed against the scoring criteria over the next few months. A report recommending new projects for funding is anticipated to go to the Board in April of 2018.

Project Q

Contact: Vicki Austin, Finance
(714) 560-5692

Local Fair Share Program

Status: Ongoing

Summary: In order to help cities and the County of Orange keep up with the rising cost of repairing the aging street system, this program provides flexible funding intended to augment, not replace, existing transportation expenditures of the cities and the County. All local agencies have been found eligible to receive Local Fair Share funds. On a bi-monthly basis, 18 percent of net revenues are allocated to local agencies by formula. Approximately $296.9 million in Local Fair Share payments have been provided to local agencies as of the end of this quarter.

See pages 49-50 for funding allocation by local agency.

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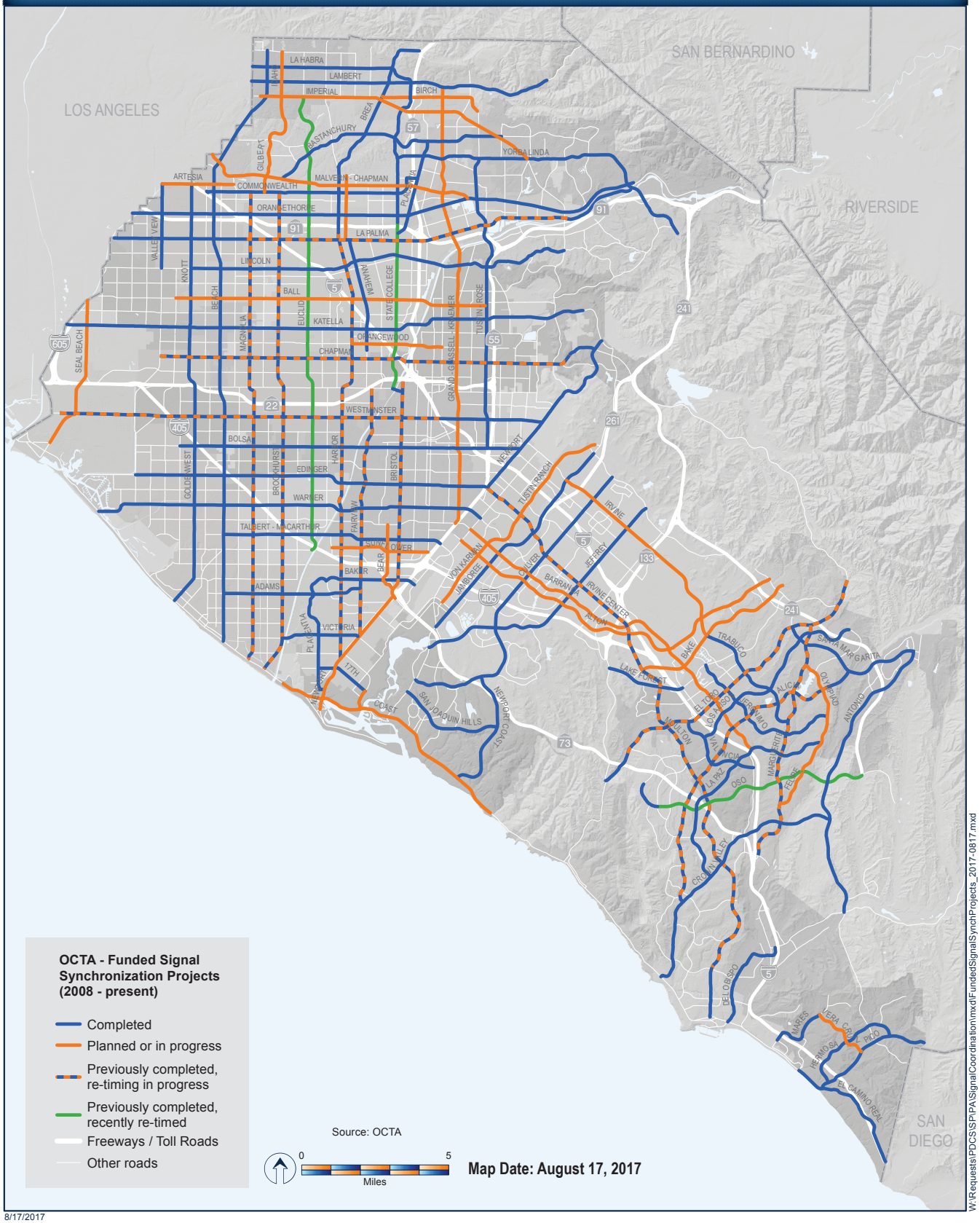
OCTA - Funded Signal Synchronization Projects (2008 - present)



OCTA - Funded Signal Synchronization Projects (2008 - present)

- Completed
- Planned or in progress
- Previously completed, re-timing in progress
- Previously completed, recently re-timed
- Freeways / Toll Roads
- Other roads

Source: OCTA

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Miles

Map Date: August 17, 2017

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Project R

High Frequency Metrolink Service

Project R will increase rail services within the County and provides additional Metrolink service north of Fullerton to Los Angeles. The program provides for track improvements, the addition of trains and parking capacity, upgraded stations, and safety enhancements to allow cities to establish quiet zones along the tracks. This program also includes funding for grade crossing improvements at high volume arterial streets, which cross Metrolink tracks.

Metrolink Grade Crossing Improvements

Contact: Jennifer Bergener, Rail
(714) 560-5462

Status: **PROJECT COMPLETE**

Summary: Enhancement of the designated 52 Orange County at-grade rail-highway crossings was completed as part of the Metrolink Service Expansion Program (MSEP) in October 2012. Completion of the safety improvements provided each corridor city with the opportunity to establish a "quiet zone" at their respective crossings. Quiet zones are intended to prohibit the sounding of train horns through designated crossings, except in the case of emergencies, construction work, or safety concerns identified by the train engineer. The cities of Anaheim, Dana Point, Irvine, Orange, Santa Ana, San Clemente, San Juan Capistrano, and Tustin have established quiet zones within their communities.

Metrolink Service Expansion Program

Contact: Jennifer Bergener, Rail
(714) 560-5462

Status: Service Ongoing

Summary: Following the completion of the Metrolink Service Expansion Program (MSEP) improvements in 2012, OCTA deployed a total of ten new Metrolink intra-county trains operating between Fullerton and Laguna Niguel/ Mission Viejo, primarily during the midday and evening hours. Efforts to increase ridership through a redeployment of the trains without significantly impacting operating costs have been underway since 2014. In April 2015, several schedule changes added a connection between the 91 Line and the intra-county service at Fullerton to allow a later southbound peak evening departure from Los Angeles to Orange County. Monitoring of ridership on these trains has shown that boardings have increased by 15 percent over the last three years.

Part of OCTA's re-deployment plan involves providing new trips from Orange County to Los Angeles. Staff continues to work with BNSF, RCTC, and Metro to address track-sharing issues, operating constraints and funding that will impact the options for redeployment. Metrolink is the lead in negotiations with the BNSF Railway to evaluate the current shared use and indemnification/liability agreements that govern the use of each agencies respective railroad rights of way. These discussions are ongoing and special counsel has been brought in to assist. Operation of

Continues on the next page...

Project R continued from previous page...

additional Metrolink trains to Los Angeles is contingent on addressing indemnification and liability agreements and the completion of a triple track project on the BNSF Railway between Fullerton and Los Angeles, which is currently anticipated to be in late 2017.

Rail Corridor & Station Improvements

Additionally under the Metrolink Service Expansion Program, funding is provided for rail line and station improvements to accommodate increased service. Rail station parking lot expansions, better access to platforms, among other improvements have been made or are underway. For schedule information on station improvement projects, please see the CAP pages at the back of this report.

Anaheim Canyon Metrolink Station Improvements

This OCTA-led project will include construction of a second main track and platform, lengthening the existing platform, and improved pedestrian circulation. The project will also include the addition of benches, shade structures, and ticket vending machines. During this quarter, the Board selected HNTB Corporation to prepare final plans specifications and estimates in August. The project is expected to be bid in June 2019 and construction of the project is expected to begin in October 2019 with completion anticipated in December 2020.

Fullerton Transportation Center Elevator Improvements - 5% Complete

Completed early on, a new 5-level parking structure was constructed to provide additional transit parking at the Fullerton Transportation Center for both intercity rail service and commuter rail passengers. This City-led project was completed on June 19, 2012. After completion, an elevator upgrade project was initiated with leftover savings. The elevator project will modify the existing pedestrian bridge to add two new traction elevators, one on each side. The City of Fullerton is the lead on this project as well. Shoring and excavation for the elevator pits have been completed this quarter. The City of Fullerton is now projecting the completion of the project to be in September of 2018. Due to sub-contractor issues and utility conflicts, this project is marked “red” in the CAP signifying a delay of more than three months.

Laguna Niguel/Mission Viejo Metrolink Station Americans with Disabilities Act Ramps - PROJECT COMPLETE

The Laguna Niguel/Mission Viejo station accessibility improvements project was completed in September 2017. Improvements include new ADA-compliant access ramps on either side of the pedestrian undercrossing and a unisex ADA-compliant restroom, vending machine room, and three passenger canopies.

Orange Transportation Center Metrolink Parking Structure

This project will include a 611-space, 5-level shared use parking structure that will be located on Lemon Street between Chapman Avenue and Maple Street in Orange. The City of Orange is the lead for the design phase. OCTA is the lead for the construction phase of this project. A construction contract was awarded by the OCTA Board on June 12, 2017. Construction began on July 17, 2017. During excavation, contaminated soils were encountered and

Continues on the next page...

Project R continued from previous page...

will need to be mitigated. This work will be done on a time and material basis and a change order will be presented to the Board in October for approval. The project is expected to be completed in early 2019.

Placentia Metrolink Station Improvements and Parking Structure

Plans for the proposed Placentia Metrolink Station Project were near completion when the City of Placentia requested to modify them to include a parking structure to be built where surface parking had been designed. On June 27, 2016, the Board approved a new Cooperative Agreement with the City of Placentia that revised the scope of the project and budget. There will now be a parking structure as part of the project and the City of Placentia will contribute towards the cost. Design plans at 90% have been completed and are being reviewed by the construction management consultant. It is anticipated that the plans will be ready to advertise in April 2018. This project's ability to move into construction is subject to finalizing a track sharing agreement with BNSF.

San Clemente Pier Station Lighting - PROJECT COMPLETE

This project was completed on March 17, 2017, and is in the closeout phase. OCTA was the lead for design and installation of this project which added lighting to the existing platform and new decorative hand rails at the San Clemente Pier Station.

Laguna Niguel to San Juan Capistrano Passing Siding Project

Currently in the design phase, this project will add approximately 1.8-miles of new passing siding railroad track adjacent to the existing mainline track, which will enhance operational efficiency of passenger services within the LOSSAN rail corridor. The 90 percent design plans have been reviewed by SCRRA and the City of San Juan Capistrano. The design will progress to 100 percent as project issues were resolved last quarter. Completion of the design phase is expected in December 2017 and construction is expected to begin in late-2018. This project is marked "red" in the CAP, signifying a delay of more than three months.

Tustin Metrolink Station Parking Structure - 100% Complete

Also completed early on, this project provided additional parking at the Tustin Metrolink Station to meet increased requirements associated with the MSEP by constructing a new 4-story parking structure with approximately 735 spaces, plus on-site surface parking. The parking structure was opened to the public on September 22, 2011.

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Project R continued from previous page...

Additional rail corridor improvements include: completion of the San Clemente Beach Trail Audible Warning System (AWS) project, which provides additional safety improvements and AWS devices at seven pedestrian grade crossings along the beach trail (AWS activation occurred on June 24, 2016); completed Project Study Reports or environmental clearance for six potential grade separation projects along the LOSSAN corridor (State College Avenue, Ball Road, 17th Street, Santa Ana Boulevard, Grand Avenue, and Orangethorpe Avenue); replacement of the San Juan Creek railroad bridge in the City of San Juan Capistrano, which will also accommodate a future bike trail on the south end along the creek (design is 60 percent complete); the Control Point project at Fourth Street in the City of Santa Ana, which will provide rail operational efficiencies; the Railroad ROW Slope Stabilization project, which includes eight locations within the OCTA-owned LOSSAN rail corridor that have been identified for improvements to prevent future erosion and slope instability; video surveillance, and continued implementation of Positive Train Control.

Sand Canyon Grade Separation

Status: **PROJECT COMPLETE**

Contact: Rose Casey, Highways
(714) 560-5729

Summary: The project located at Sand Canyon Avenue railroad crossing is grade separated and open to traffic. The project separated the local street from railroad tracks in the City of Irvine by constructing an underpass for vehicular traffic. The westbound lanes were opened to traffic on June 12, 2014, and the eastbound lanes were opened to traffic on July 14, 2014. A road opening ceremony was held on August 11, 2014. The project is completed and construction acceptance was obtained from the City of Irvine on January 15, 2016. The project completed the one-year warranty period and no repairs were identified. The project was closed out in mid-January 2017.

Project S

Transit Extensions to Metrolink

In order to broaden the reach of Metrolink to other Orange County cities, communities, and activity centers, Project S includes a competitive program which allows cities to apply for funding to connect passengers to their final destination via transit extension. There are currently two areas of this program: a fixed guideway program (street car) and a rubber tire transit program.

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Project S continued from previous page...

OC Streetcar Project

Contact: Jennifer Bergener, Rail
(714) 560-5462

Status: Design Phase Underway - 89% Complete

Summary: The OC Streetcar Project will serve the Santa Ana Regional Transportation Center (SARTC) through downtown Santa Ana, and the Civic Center to Harbor Boulevard in the City of Garden Grove.

During the quarter, the designer responded to comments by OCTA, the cities of Santa Ana and Garden Grove and other project stakeholders on the 90 percent design plans for the streetcar infrastructure and facilities. The designer also initiated its internal quality assurance review of the design plans with oversight by OCTA's quality assurance manager. Upon completion of the designer's internal audit, OCTA will conduct an audit of plans and specifications prior to Invitation for Bid (IFB) release. On August 14, 2017, the Board approved a pre-qualification process as a means of securing qualified contractors to provide construction services. Work is proceeding on preparation of the procurement documents for the Construction IFB including responding to questions from potential bidders on the pre-qualification process. The IFB is scheduled to be released in November 2017.

Work was finalized on a series of technical readiness documents and financial plans with FTA's Project Management Oversight Consultant (PMOC). Approval on project readiness from FTA's PMOC is expected for October 2017. This approval is the final step prior to the negotiation and approval of a Full Funding Grant Agreement.

Terms for utility relocation were agreed upon with the two remaining utility companies, Southern California Edison (SCE) and the Orange County Sanitation District (OCSD), needed for the Project. These agreed upon terms will be reflected in letters of intent to be approved by SCE and OCSD in October 2017. With the City of Santa Ana approving the resolution of necessity last quarter for the properties required for the maintenance and storage facility, the eminent domain proceedings were initiated and continued during the current reporting period. Negotiations continued with property owners for relocation assistance for the residential and commercial tenants. Staff continued to coordinate with representatives of the Orange County Flood Control District and the United States Army Corp of Engineers (AOCE) to obtain the permits required for the Santa Ana River Bridge.

Staff met with the California Public Utilities Commission (CPUC) and conducted a thorough field diagnostic review of the alignment. The CPUC made several requests for additional project safety modifications such as raised medians and protected left turns. CPUC approval of the grade crossings is required prior to the initiation of the construction work.

The vehicle manufacturing and delivery procurement continued with interviews of proposers conducted in September. A best and final offer request will be issued in October with a contract award anticipated for February 2018.

Work continued on development of the scope of services for the operations and maintenance contractor. OCTA is hosting an industry forum in November 2017 as an opportunity to gain industry input on the scope of services for potential inclusion into the procurement.

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Project S continued from previous page...

Bus and Station Van Extension Projects

Contact: May Hout, Planning
(714) 560-5905

Status: Service Ongoing for Anaheim Canyon Metrolink Bus Connection

Summary: Bus and Station Van Extension projects help enhance the frequency of service in the Metrolink corridor by linking communities within the central core of Orange County. To date, the Board has approved one round of funding for bus and van extension projects, totaling over $730,000. One project located within the City of Anaheim and three proposals within the City of Lake Forest were approved for funding by the Board on July 23, 2012. Currently, one project is in service and three projects have been canceled.

The Anaheim Canyon Metrolink Station Bus Connection began service in February 2013, and currently serves approximately 90 passengers per day between the station and the Anaheim Resort area. The three City of Lake Forest projects have been canceled. In December 2013, service associated with Invensys Incorporated in the City of Lake Forest was canceled at the request of the participant, and the funds have been returned to the program for use in future calls for projects. The Panasonic Avionics Corporation station vanpool project was amended (approved by the Board in December 2015) to utilize Project V funding, allowing the City of Lake Forest's established shuttle program to provide trips between the Irvine Metrolink Station and the Panasonic employment center as an alternative to providing vanpool services. The vanpool connection from the Irvine Metrolink Station to the Oakley employment center began in December 2012 and was canceled in April 2016 due to low ridership.

Project T

Convert Metrolink Stations to Regional Gateways that Connect Orange County with High-Speed Rail Systems

Contact: Jennifer Bergener, Rail
(714) 560-5462

Status: **PROJECT COMPLETE**

Summary: This project constructed the Anaheim Regional Transportation Intermodal Center (ARTIC) located at 2626 East Katella Avenue in the City of Anaheim. In addition to providing transit connections for OCTA bus service, Metrolink and Amtrak service, shuttle and charter bus service, taxis, bikes, and other public and private transportation services, ARTIC also accommodates future high-speed rail trains. The City of Anaheim, which led the construction effort, opened the facility to rail and bus service on December 6, 2014. A ribbon-cutting ceremony was held on December 8, 2014, with a grand opening celebration hosted on December 13, 2014. This facility replaced the former Anaheim Station that was located on the opposite side of the freeway in the Angel Stadium parking lot.

Project U

Project U expands mobility choices for seniors and persons with disabilities, and includes the SMP, the SNEMT, and the Fare Stabilization Program. Since inception, a total of approximately $52.9 million in Project U funding has been provided under M2.

Senior Mobility Program (SMP)

Contact: Curt Burlingame, Transit
(714) 560-5921

Status: Ongoing

Summary: This program provides one percent of net M2 revenues to continue and expand local community transportation service for seniors under the SMP. Since inception, more than $15.1 million and 1,800,000 boardings have been provided for seniors traveling to medical appointments, nutrition programs shopping destinations, and senior and community center activities. This quarter, approximately $438,000 was paid* out to the 31 participating cities during the month of September.

Senior Non-emergency Medical Transportation Program (SNEMT)

Contact: Curt Burlingame, Transit
(714) 560-5921

Status: Ongoing

Summary: This program provides one percent of net M2 revenues to supplement existing county-wide senior non-emergency medical transportation services. Since inception, more than $16.5 million and 619,200 SNEMT boardings have been provided. This quarter, approximately $462,000 in SNEMT funding was paid* to the County of Orange in the month of September.

**Payments are made every other month (January, March, May, July, September, and November). July payments are based on June accruals, and therefore counted as June payments. The amount totaled for one fiscal year quarter either covers one or two payments, depending on the months that fall within that quarter.*

Fare Stabilization Program

Contact: Sean Murdock, Finance
(714) 560-5685

Status: Ongoing

Summary: Between years 2011-2015, one percent of net M2 revenues was dedicated to stabilize fares and provide fare discounts for bus services and specialized ACCESS services for seniors and persons with disabilities. Effective January 28, 2016, an amendment to the M2 Ordinance No. 3, adjusted this amount to 1.47 percent of net M2 revenues to be dedicated to the Fare Stabilization Program.

Continues on the next page...

Project U continued from previous page...

Approximately $940,000 in revenue was allocated this quarter to support the Fare Stabilization Program. The amount of funding utilized each quarter varies based on ridership. During this quarter, based on the 3,594,281 program-related fixed route and ACCESS services boardings, approximately $680,000 was utilized. Since inception of the program, more than $18.7 million and 86,315,000 program-related boardings have been provided.

Project V

Contact: May Hout, Planning
(714) 560-5905

Community Based Transit/Circulators

Status: Service Updates

Summary: This project establishes a competitive program for local jurisdictions to develop local bus transit services such as community based circulators and shuttles that complement regional bus and rail services, and meet needs in areas not adequately served by regional transit. On June 24, 2013, the Board approved the first round of funding for $9.8 million to fund five funding proposals from the cities of Dana Point, Huntington Beach, La Habra, Laguna Beach, and Lake Forest. Funding was approved to implement vanpool services from local employment centers to transportation hubs, special event and seasonal services that operate during heavy traffic periods, and local community circulators that carry passengers between various shopping, medical, and transportation-related centers. Prior to the second Call for Projects, Project V Guidelines were revised in 2015, per Board direction, to encourage more local agency participation.

On June 13, 2016 the Board approved $26.7 million in Project V funds for 17 transit service projects and $323,780 for seven planning grants. OCTA staff has completed agreements with the local agencies to implement these projects. OCTA receives ridership reports from local agencies on a regular basis to monitor the success of these services against performance measures adopted by the Board. In August 2017, a Project V notice of cancellation was sent to the City of La Habra for the La Habra Express service since the service did not meet the minimum performance standards set forth in the Project V Guidelines. To date, the City of Westminster's Little Saigon Shuttle service has been discontinued. The City of Garden Grove is no longer pursuing the planning study that would have evaluated ridership demand for expansion of Westminster's circulator route into the City of Garden Grove. Staff will continue to monitor these services to ensure the performance standards are met and will provide reports to the Board on a regular basis.

Project W

Contact: May Hout, Planning
(714) 560-5905

Safe Transit Stops

Status: City-Initiated Improvements Underway or Complete; Mobile Ticketing in Use

Summary: This project provides funding for passenger amenities at the 100 busiest transit stops across the County, determined by average daily weekday passenger boardings. Stop improvements are designed to ease transfers between bus lines and provide passenger amenities such as improved shelters and lighting. On July 14, 2014, the Board determined that 80 percent of available Project W funding ($4.47 million) would be designated for supporting city-initiated projects, and the remaining 20 percent ($1.12 million) would be directed towards the development and implementation of regional, customer-facing technologies that benefit the 100 busiest stops. On the same date, the Board approved up to $1,205,666 for city-initiated improvements and $370,000 for OCTA-initiated improvements in fiscal year 2014-15.

According to October 2012 ridership data, 15 cities (containing at least one of the 100 busiest stops) are eligible for Safe Transit Stops funding. Seven cities applied for funds, and 51 projects were approved for funding per the July 2014 Board approval. The City of Anaheim was not able to implement the improvements for their projects and will reapply for funds during the next Call for Projects. The remaining 43 projects are moving forward. The cities of Irvine, Westminster, Costa Mesa, Orange, and Brea have completed their projects. The City of Santa Ana awarded their contract in June 2016 and anticipate completed installation of the shelters and other amenities by December 2017. Staff will continue to monitor and report on progress.

For OCTA-initiated improvements, the $370,000 investment has been contributed towards a mobile ticketing application (app) that will make it more convenient for bus customers to purchase bus passes, obtain trip information, and board buses by allowing riders to use their smart phones to display proof of payment or “mobile ticketing.” The smart phone app was launched on June 15, 2016, for OC Fair and Express Bus users and received positive reviews. The app went system-wide in February 2017 - expanding mobile ticketing to include regular fixed route, college pass, and reduced fare purchases (for seniors and persons with disabilities).

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Project X

Environmental Cleanup Program

Contact: Dan Phu, Planning
(714) 560-5907

Status: Ongoing

Summary: This program implements street and highway-related water quality improvement programs and projects that assist agencies countywide with federal Clean Water Act standards for urban runoff. It is intended to augment, not replace existing transportation-related water quality expenditures and to emphasize high-impact capital improvements over local operations and maintenance costs. The ECAC is charged with making recommendations to the Board on the allocation of funds for the ECP. These funds are allocated on a countywide, competitive basis to assist agencies in meeting the Clean Water Act standards for controlling transportation-related pollution.

Project X is composed of a two-tiered funding process focusing on early priorities (Tier 1), and a second program designed to prepare for more comprehensive capital investments (Tier 2). To date, there have been seven rounds of funding under the Tier 1 grants program. A total of 154 projects, amounting to approximately $20.1 million, have been awarded by the Board since 2011. There have been two rounds of funding under the Tier 2 grants program. A total of 22 projects in the amount of $27.89 million have been awarded by the Board since 2013. To date, 33 of the 34 Orange County cities plus the County of Orange have received funding under this program. Board approval of the release of the eighth Tier 1 Call for Projects is anticipated in spring 2018 in the amount of approximately $2.8 million.

Staff continues to work with the ECAC and the County of Orange to recommend the appropriate timing for the next Tier 2 Call for Projects.

Part of Projects A-M

Contact: Dan Phu, Planning
(714) 560-5907

Freeway Mitigation Program

Status: Biological Permits Issued and Conservation Plan in Place

Summary: On June 19, 2017, the United States Fish and Wildlife Service and the California Department of Fish and Wildlife (Wildlife Agencies) finalized the issuance of their respective biological opinion, findings, and associated permits, as well as signed the Conservation Plan Implementing Agreement. Receipt of these permits represent the culmination of years of collaboration and support by the Board, environmental community, and Wildlife Agencies. As a result, the M2 environmental process will be streamlined allowing OCTA to move forward with the M2 freeway projects (as described in the Conservation Plan) with little additional coordination from the Wildlife Agencies. The Conservation Plan also includes a streamlined process for coordination with CDFW for streambed alteration

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Part of Projects A-M continued from previous page...

agreements will also be reduced. This is needed for portions of freeway projects that cross through streams and riverbeds. The OCTA Conservation Plan is unique as it is only the second state/federal conservation plans approved in Orange County.

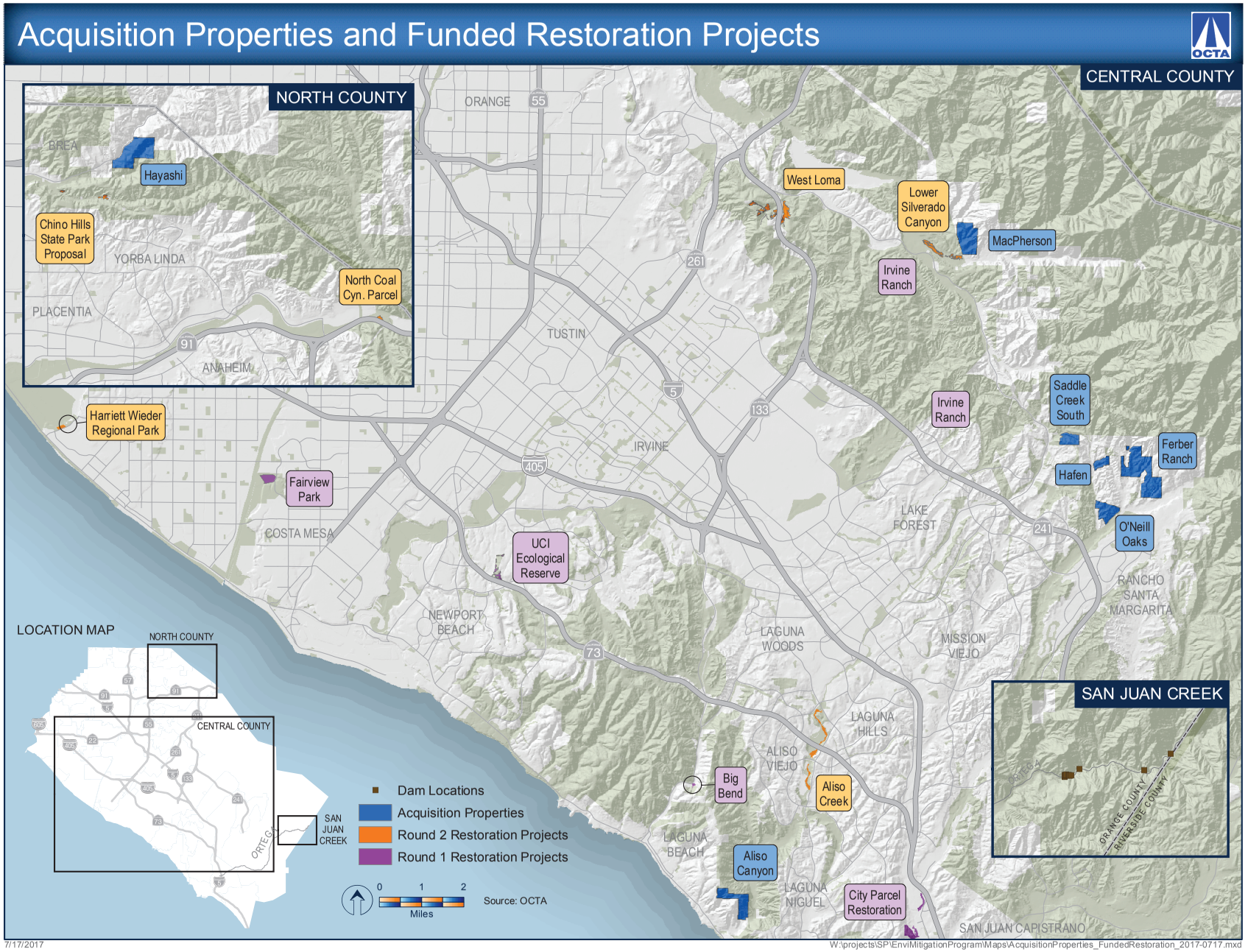
The program is proceeding as planned, with seven properties (Preserves) acquired (1,300 acres), and 12 restoration projects approved for funding by the Board, totaling approximately 350 acres. The restoration project plans have been approved by the wildlife agencies and are currently at various stages of implementation. The Board has authorized $42 million (inclusive of setting aside funds for long-term land management) for property acquisitions, $10.5 million to fund habitat restoration activities, and $2.5 million for conservation plan development and program support, for a total of approximately $55 million.

As part of the Conservation Plan process, an endowment is required to be established to pay for the long-term management of the Preserves. It is estimated that it will take up to fifteen years to fully fund the endowment, deposits are made on a fiscal year (July 1 through June 30) basis. As anticipated, the first annual deposit of $2.9 million for the endowment was made in early 2017. A second deposit was made in August 2017. Staff will continue to oversee and manage the Preserves until a long-term manager(s) is established.

To date, five of the seven Preserve resource management plans (RMPs) have been completed and were finalized in September 2017. These RMPs guide the management of the Preserves as outlined within the Conservation Plan. OCTA released the remaining two RMPs to the public on August 31, 2017. These two RMPs are available for review and comment for a 90-day period (deadline to comment is December 1, 2017). In September, the Board authorized funding to advance the streamlined federal clean water permitting requirements. Concurrently, OCTA is working with the State Water Resources Control Board to comply with the state clean water permit requirements. OCTA anticipates the streamlined processes will be effective by the end of 2017. Additionally, staff will continue to monitor the progress of all restoration projects and provide status updates to the Environmental Oversight Committee until each project is implemented. A list of scheduled 2017 wilderness Preserve hiking and equestrian riding tours is available on the M2 website at www.PreservingOurLegacy.org.

As part of the safeguards in place for the M2 Program, a 12-member Environmental Oversight Committee (EOC) makes recommendations on the allocation of environmental freeway mitigation funds and monitors the implementation of the Conservation Plan between OCTA and state and federal Wildlife Agencies. The EOC has led efforts with policy recommendations to the Board and has operated in an open and transparent manner that has garnered the trust of stakeholders, ranging from the environmental community to the recreational community to Orange County citizens.

See map of Preserves and funded restoration properties on the following page.


Acquisition Properties and Funded Restoration Projects
OCTA
NORTH COUNTY
CENTRAL COUNTY
SAN JUAN CREEK
Hayashi
Chino Hills State Park Proposal
North Coal Cyn. Parcel
Harriett Wieder Regional Park
Fairview Park
UCI Ecological Reserve
West Loma
Lower Silverado Canyon
MacPherson
Irvine Ranch
Saddle Creek South
Ferber Ranch
Hafen
O'Neill Oaks
Big Bend
Aliso Creek
Aliso Canyon
City Parcel Restoration
BREA
YORBA LINDA
PLACENTIA
ANAHEIM
ORANGE
TUSTIN
IRVINE
COSTA MESA
NEWPORT BEACH
LAKE FOREST
RANCHO SANTA MARGARITA
LAGUNA WOODS
MISSION VIEJO
LAGUNA HILLS
ALISO VIEJO
LAGUNA BEACH
LAGUNA NIGUEL
SAN JUAN CAPISTRANO
ORTEGA
ORANGE COUNTY
RIVERSIDE COUNTY
LOCATION MAP
Dam Locations
Acquisition Properties
Round 2 Restoration Projects
Round 1 Restoration Projects
0 1 2
Miles
Source: OCTA
7/17/2017
W:\projects\SP\EnviMitigationProgram\Maps\AcquisitionProperties_FundedRestoration_2017-0717.mxd

OCGO
Local Tax Dollars at Work

Program Management Office

Contact: Tami Warren, PMO Manager
(714) 560-5590

The Measure M (M1 and M2) Program Management Office (PMO) provides interdivisional coordination for all M-related projects and programs. To ensure agency-wide compliance, the PMO holds a bi-monthly committee meeting comprised of executive directors and key staff from each of the divisions, who meet to review significant issues and activities within the Measure M programs. This quarter, the focus of the PMO has been on several major items, including the following.

Next 10 Delivery Plan

This quarter, the final sales tax receipts for FY 2016-17 were received and incorporated into the M2 sales tax forecast model. On September 11, 2017, the Board received a presentation on the most recent 2017 sales tax revenue forecast of $13.5 billion, representing a $700 million reduction from the sales tax forecast of $14.2 billion assumed in the adopted Next 10 Plan. During the quarter, staff reviewed the Next 10 Plan revenue, expense, and schedule sequencing assumptions and prepared a plan update scheduled to go to the Board on November 13, 2017.

M2 Awareness and Signage

Due to the 2012-2015 M2 Performance Assessment findings regarding a lack of M2 awareness and public perception, staff began developing M2 Signage Guidelines. These uniform guidelines were intended to detail signage procedures for each of the M2 programs (Freeway, Streets & Roads, Transit, and Environmental projects) and were designed to create a common brand across all modes. The effort was stalled due to concern over the continued use of Measure M in Orange County. However, the passage of LA Metro's "Measure M" prompted staff to bring a proposal forward to the Board to change the measure's logo. Based on the 2016 focus group and the existing Board-approved family of OCTA logos, the recommended name and logo is OC Go. With the most common and visible use of the Measure M logo being on freeway funding signs and local street funding signs, staff brought initial concepts to the Legislative and Communications Committee (L&C Committee) for discussion on July 20, 2017. Based on L&C Committee feedback, staff revised the signage to emphasize "local" tax dollars and condense messaging to enhance readability. On September 25, 2017, The Board approved the OC Go identity and updated signage designs. In the next quarter, staff will work with Caltrans for final approval on future highway signage, finalize the M2 Signage Guidelines, and launch an OC Go Public Awareness Program. While a full transition from M2 to OC Go signage in Measure M2 programs and projects will take time, staff anticipates it will be completed during 2018.

OCTA Monitoring Structure for Federal Compliance

As a recipient and a "pass-through" agency of FTA and FHWA funding, OCTA is responsible for complying with all federal regulations. This evaluation is important to M2 projects and programs that are funded with federal monies, ensuring compliance requirements are met and internal protocols are completed efficiently. In June, OCTA selected Sjoberg Evashenk, Inc. to conduct a review of OCTA's monitoring structure for federal compliance. During this quarter, the consultant conducted onsite visits, began an analysis of OCTA's structure, and began a peer review of similar agencies (San Diego Association of Governments, Arizona Department of Transportation, Valley Metro Regional Public Transportation Authority, and Santa Clara Valley Transportation Authority). The goal is to look for efficiencies and determine a preferred structure that works in OCTA's environment. Initial findings and reports are expected in fall 2017.

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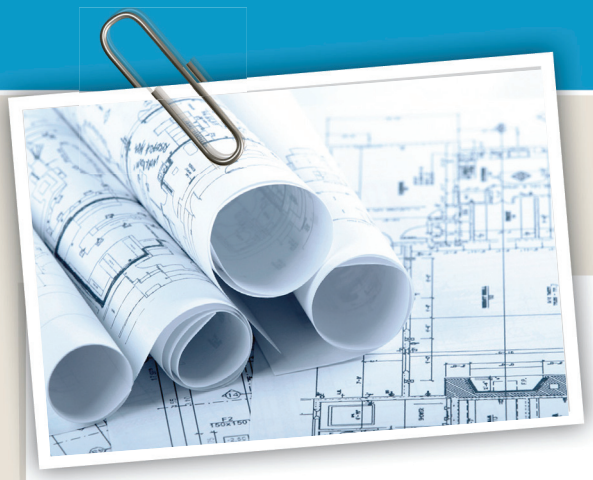

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Market Conditions Forecast and Risk Analysis

On September 11, 2017, the Board was presented with a Next 10 Market Conditions Forecast and Risk Analysis Report conducted by Dr. Wallace Walrod and Dr. Marlon Boarnet. The consultant's analysis identifies a strong potential for OCTA to experience an increasing cost environment during the Next 10 delivery years. Four near-term cost risks were identified: neighboring county transportation construction programs, construction wage pressures, sustained low statewide unemployment, and residential construction demand and the effect on the public works construction market. The Board directed staff to develop a plan to monitor and track key early warning indicators and provide OCTA information on changes to the risk factors. Staff is working with the consultant to determine the indicators to track. These may include building permits, construction employment and wages, the number of project bidders and trends in bid amounts, construction commodity costs, executive opinion, and consumer sentiment. A summary of the monitoring effort will be presented to the Board at a minimum bi-annually and if noteworthy, more frequent updates will be provided through these M2 quarterly progress reports.

M2 Administrative Cost Safeguards

M2 includes a one percent cap on administrative expenses for salaries and benefits of OCTA administrative staff on an annual basis. In a legal opinion on M2, it was determined that in years where administrative salaries and benefits are above one percent, only one percent can be allocated with the difference borrowed from other, non-Measure M fund sources. Conversely, in years where administrative salaries and benefits are below one percent, OCTA can still allocate the full one percent for administrative salaries and benefits but may use the unused portion to repay the amount borrowed from prior years in which administrative salaries and benefits were above one percent.

Based on the original M2 revenue projections, OCTA expected to receive $24.3 billion in M2 funds, with one percent of total revenues available to fund administrative salaries and benefits over the life of the program. As M2 revenue projections declined (currently $13.5 billion or 44 percent lower) as a result of economic conditions, the funds available to support administrative salaries and benefits have also declined from the original expectations. While revenue has declined, the administrative effort needed to deliver M2 remains the same. Additionally, the initiation of the Early Action Plan (EAP) in 2007 required administrative functions four years prior to revenue collection. While the EAP resulted in project savings and significant acceleration of the program, administrative functions were required during this time with associated administrative costs.

As a result, OCTA has incurred higher than one percent administrative costs. The Board approved the use of the Orange County Unified Transportation Trust (OCUTT) fund to cover costs above the one percent, with the understanding that those funds will be repaid with interest in future years that OCTA administrative costs fall below the one percent cap. As of June 30, 2012, OCTA had borrowed approximately $5.2 million from OCUTT. Over the last few years, OCTA has experienced underruns in the one percent administration cap and has made payments to OCUTT to reduce the outstanding balance. As of this quarter's 2017 Taxpayer Oversight Committee Report, the outstanding balance was $2.0 million.

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Staff continues to meet quarterly to review all labor costs to ensure proper cost allocation under M2. After the quarter ended, staff met on October 18, 2017, to review labor reports for this quarter to ensure costs attributed to the one percent cap were accurately reported and there were no misplaced project related costs, as well as to ensure project costs were applied to the correct projects. Staff will meet again on January 17, 2018, to conduct this quarterly review.

Taxpayer Oversight Committee

The M2 Ordinance requires a Taxpayer Oversight Committee (TOC) to oversee the implementation of the M2 plan and ensure compliance with all requirements of Measure M2 Ordinance No. 3. With the exception of the elected Auditor/ Controller of Orange County who is identified as the chair of the TOC in Ordinance, all other members are not elected or appointed officials. Members are recruited and screened for expertise and experience independently by the Orange County Grand Jurors Association, and are selected from the qualified pool by lottery. The TOC meets every other month. The TOC upholds the integrity of the measure by monitoring the use of Measure M funds and ensuring compliance. The responsibilities of the 11-member Measure M TOC are to:

- Ensure all transportation revenue collected from Measure M is spent on the projects approved by the voters as part of the plan
- Ratify any changes in the plan and recommend any major changes go back to the voters for approval
- Participate in ensuring that all jurisdictions in Orange County conform with the requirements of Measure M before receipt of any tax monies for local projects
- Hold annual public meetings regarding the expenditure and status of funds generated by Measure M
- Review independent audits of issues regarding the plan and performance of the Orange County local Transportation Authority regarding the expenditure of Measure M sales tax monies
- Annually certify whether Measure M funds have been spent in compliance with the plan.

Two subcommittees have been formed to assist the TOC with their safeguard responsibilities: the Annual Eligibility Review (AER) Subcommittee and the Audit Subcommittee. The AER Subcommittee meets a few times per year, as needed, to ensure local jurisdictions have submitted the following documents in order to be deemed eligible to receive M2 funding: Congestion Management Program, Mitigation Fee Program, Local Traffic Signal Synchronization Plan, Pavement Management Plan, and an Expenditure Report. The Audit Subcommittee meets bi-monthly and is responsible for reviewing the quarterly M2 Revenue and Expenditure Reports and the Annual Measure M Audit, as well as any other items related to Measure M audits.

This quarter, the TOC met on August 8, 2017 to elect a new Co-Chair and hear presentations on the I-405 Improvement Project and Environmental Mitigation Program. OCTA staff also provided the committee with information on the Next 10 review and plans provide an updated plan to the Board in the fall of 2017.

M2 Financing and Schedule of Funding

Contact: Sean Murdock, Finance
(714) 560-5685

Revenue Forecast and Collection

OCTA contracts with three universities (Chapman University; University of California, Los Angeles; and California State University, Fullerton) to provide a long-range forecast of taxable sales to forecast Measure M2 revenues for purposes of planning projects and program expenditures. In the past, OCTA has taken an average of the three university taxable sales projections to develop a long-range forecast of Measure M2 taxable sales. On March 28, 2016, as part of the FY 2016-17 budget development process, the Board approved a new sales tax forecast methodology. This methodology includes a more conservative approach by utilizing a five-year forecast from MuniServices, Inc. Historically, MuniServices, Inc. has been more conservative than the three universities over the first five years of M2 revenue collection (2011-2016).

Revenue forecast information is updated quarterly based on the actual revenues received for the previous quarter. As required by law, OCTA pays the State Board of Equalization a fee to collect the sales tax. The M2 Ordinance estimated this fee to be 1.5 percent of the revenues collected over the life of the program.

Current Forecast

Based on long term forecasts received in July 2017, OCTA staff forecasts total nominal sales tax collections over the life of M2 to be approximately $13.5 billion. Original projections in 2005 estimated total nominal M2 sales tax collections at $24.3 billion. Based on the current estimated forecast of $13.5 billion, sales tax revenue will run approximately $10.8 billion (44 percent) less than the original 2005 projection. The revenue forecast for the life of the M2 Program will vary as actual sales tax revenue data is incorporated.

Final sales tax receipts through the fourth quarter of fiscal year 2016-17 (June 30, 2017) were received at the end of the first quarter (September 2017) and reflected a growth in sales tax revenue of 2.63 percent over the same period of the prior fiscal year. The growth, while positive, is less than the budgeted sales tax growth rate of 4.4 percent for fiscal year 2016-17. With the 2017 revised sales tax revenue forecast, it is anticipated that next quarter the sales tax receipts will be more in line with what is budgeted. Staff will continue to closely monitor sales tax receipts.

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Schedule 1

Measure M2
Schedule of Revenues, Expenditures and Changes in Fund Balance
as of September 30, 2017
(Unaudited)

($ in thousands)	Quarter Ended Sept 30, 2017	Year to Date Sept 30, 2017 *(A)*	Period from Inception to Sept 30, 2017 *(B)*
Revenues:			
Sales taxes	$ 77,999	$ 77,999	$ 1,837,088
Other agencies' share of Measure M2 costs:			
Project related	23,807	23,807	570,159
Non-project related	-	-	454
Interest:			
Operating:			
Project related	62	62	190
Non-project related	2,529	2,529	21,592
Bond proceeds	823	823	45,717
Debt service	18	18	141
Commercial paper	-	-	393
Right-of-way leases	-	-	907
Proceeds on sale of assets held for resale	-	-	6,804
Donated assets held for resale	-	-	2,071
Miscellaneous:			
Project related	-	-	270
Non-project related	-	-	100
Total revenues	105,238	105,238	2,485,886
Expenditures:			
Supplies and services:			
State Board of Equalization (SBOE) fees	900	900	20,391
Professional services:			
Project related	151	151	311,509
Non-project related	82	82	17,280
Administration costs:			
Project related	2,229	2,229	55,686
Non-project related :			
Salaries and Benefits	640	640	20,640
Other	1,235	1,235	32,813
Other:			
Project related	5	5	4,854
Non-project related	21	21	3,913
Payments to local agencies:			
Project related	21,170	21,170	752,444
Capital outlay:			
Project related	46,890	46,890	677,857
Non-project related	-	-	31
Debt service:			
Principal payments on long-term debt	-	-	34,560
Interest on long-term debt and commercial paper	10,519	10,519	147,398
Total expenditures	83,842	83,842	2,079,376
Excess (deficiency) of revenues over (under) expenditures	21,396	21,396	406,510
Other financing sources (uses):			
Transfers out:			
Project related	(868)	(868)	(30,785)
Transfers in:			
Project related	1,973	1,973	81,481
Non-project related	(1,973)	(1,973)	-
Bond proceeds	-	-	358,593
Total other financing sources (uses)	(868)	(868)	409,289
Excess (deficiency) of revenues over (under) expenditures and other sources (uses)	$ 20,528	$ 20,528	$ 815,799

Schedule 2

Measure M2
Schedule of Calculations of Net Revenues and Net Bond Revenues (Debt Service)
as of September 30, 2017
(Unaudited)

($ in thousands)	Quarter Ended Sept 30, 2017 (actual)	Year to Date Sept 30, 2017 (actual)	Period from Inception through Sept 30, 2017 (actual)	Period from October 1, 2017 through March 31, 2041 (forecast)	Total
		(C.1)	*(D.1)*	*(E.1)*	*(F.1)*
Revenues:					
Sales taxes	$ 77,999	$ 77,999	$ 1,837,088	$ 11,648,404	$ 13,485,492
Operating interest	2,529	2,529	21,592	173,655	195,247
Subtotal	80,528	80,528	1,858,680	11,822,059	13,680,739
Other agencies share of M2 costs	-	-	454	-	454
Miscellaneous	-	-	100	-	100
Total revenues	80,528	80,528	1,859,234	11,822,059	13,681,293
Administrative expenditures:					
SBOE fees	900	900	20,391	176,772	197,163
Professional services	82	82	13,504	79,820	93,324
Administration costs :					
Salaries and Benefits	640	640	20,640	117,831	138,471
Other	1,235	1,235	32,813	196,236	229,049
Other	21	21	3,913	20,085	23,998
Capital outlay	-	-	31	-	31
Environmental cleanup	494	494	28,832	229,031	257,863
Total expenditures	3,372	3,372	120,124	819,775	939,899
Net revenues	$ 77,156	$ 77,156	$ 1,739,110	$ 11,002,284	$ 12,741,394
		(C.2)	*(D.2)*	*(E.2)*	*(F.2)*
Bond revenues:					
Proceeds from issuance of bonds	$ -	$ -	$ 358,593	$ 1,885,000	$ 2,243,593
Interest revenue from bond proceeds	823	823	45,717	99,993	145,710
Interest revenue from debt service funds	18	18	141	4,747	4,888
Interest revenue from commercial paper	-	-	393	-	393
Total bond revenues	841	841	404,844	1,989,740	2,394,584
Financing expenditures and uses:					
Professional services	-	-	3,776	13,195	16,971
Bond debt principal	-	-	34,560	2,201,066	2,235,626
Bond debt and other interest expense	10,519	10,519	147,398	1,000,356	1,147,754
Total financing expenditures and uses	10,519	10,519	185,734	3,214,617	3,400,351
Net bond revenues (debt service)	$ (9,678)	$ (9,678)	$ 219,110	$ (1,224,877)	$ (1,005,767)

Schedule 3

Measure M2
Schedule of Revenues and Expenditures Summary
as of September 30, 2017
(Unaudited)

Project	Description	Net Revenues through Sept 30, 2017	Total Net Revenues
	(G)	*(H)*	*(I)*
	($ in thousands)		
	Freeways (43% of Net Revenues)		
A	I-5 Santa Ana Freeway Interchange Improvements	$ 68,547	$ 502,204
B	I-5 Santa Ana/SR-55 to El Toro	43,783	320,769
C	I-5 San Diego/South of El Toro	91,445	669,961
D	I-5 Santa Ana/San Diego Interchange Upgrades	37,628	275,678
E	SR-22 Garden Grove Freeway Access Improvements	17,501	128,222
F	SR-55 Costa Mesa Freeway Improvements	53,379	391,078
G	SR-57 Orange Freeway Improvements	37,730	276,426
H	SR-91 Improvements from I-5 to SR-57	20,418	149,593
I	SR-91 Improvements from SR-57 to SR-55	60,745	445,038
J	SR-91 Improvements from SR-55 to County Line	51,367	376,332
K	I-405 Improvements between I-605 to SR-55	156,463	1,146,306
L	I-405 Improvements between SR-55 to I-5	46,627	341,605
M	I-605 Freeway Access Improvements	2,917	21,370
N	All Freeway Service Patrol	21,877	160,278
	Freeway Mitigation	37,391	273,940
	Subtotal Projects	747,818	5,478,800
	Net (Bond Revenue)/Debt Service	-	-
	Total Freeways	$ 747,818	$ 5,478,800
	%		
	Street and Roads Projects (32% of Net Revenues)		
O	Regional Capacity Program	$ 173,913	$ 1,274,155
P	Regional Traffic Signal Synchronization Program	69,562	509,640
Q	Local Fair Share Program	313,040	2,293,451
	Subtotal Projects	556,515	4,077,246
	Net (Bond Revenue)/Debt Service	-	-
	Total Street and Roads Projects	$ 556,515	$ 4,077,246
	%		

Continues on following page...

Schedule 3

Measure M2
Schedule of Revenues and Expenditures Summary
as of September 30, 2017
(Unaudited)

	Expenditures through Sept 30, 2017 (J)	Reimbursements through Sept 30, 2017 (K)	Net M2 Cost (L)
	$ 6,102	$ 1,991	$ 4,111
	6,987	4,335	2,652
	103,019	41,415	61,604
	1,836	527	1,309
	4	-	4
	8,866	23	8,843
	46,276	11,069	35,207
	33,655	824	32,831
	18,840	2,390	16,450
	6,932	5,294	1,638
	165,017	14,617	150,400
	7,644	4,893	2,751
	1,395	16	1,379
	2,158	-	2,158
	49,179	2,107	47,072
	457,910	89,501	368,409
	38,407	-	38,407
	$ 496,317	$ 89,501	$ 406,816
			32.6%
	$ 676,744	$ 407,635	$ 269,109
	39,222	4,879	34,343
	298,248	77	298,171
	1,014,214	412,591	601,623
	42,659	-	42,659
	$ 1,056,873	$ 412,591	$ 644,282
			51.6%

Continues on following page...

Schedule 3

Measure M2
Schedule of Revenues and Expenditures Summary
as of September 30, 2017
(Unaudited)

Project	Description	Revenues through Sept 30, 2017	Total Revenues
	(G)	*(H.1)*	*(I.1)*
	($ in thousands)		
	Transit Projects (25% of Net Revenues)		
R	High Frequency Metrolink Service	$ 160,862	$ 1,270,765
S	Transit Extensions to Metrolink	153,523	1,124,770
T	Metrolink Gateways	27,244	65,124
U	Expand Mobility Choices for Seniors and Persons with Disabilities	54,537	441,810
V	Community Based Transit/Circulators	34,773	254,760
W	Safe Transit Stops	3,838	28,119
	Subtotal Projects	434,777	3,185,348
	Net (Bond Revenue)/Debt Service	-	-
	Total Transit Projects	$ 434,777	$ 3,185,348
	%		
	Measure M2 Program	$ 1,739,110	$ 12,741,394
	Environmental Cleanup (2% of Revenues)		
X	Clean Up Highway and Street Runoff that Pollutes Beaches	$ 37,174	$ 273,615
	Net (Bond Revenue)/Debt Service	-	-
	Total Environmental Cleanup	$ 37,174	$ 273,615
	%		
	Taxpayer Safeguards and Audits		
	Collect Sales Taxes (1.5% of Sales Taxes)	$ 27,556	$ 202,282
	%		
	Oversight and Annual Audits (1% of Revenues)	$ 18,587	$ 136,807
	%		

Continues on following page...

Schedule 3

Measure M2
Schedule of Revenues and Expenditures Summary
as of September 30, 2017
(Unaudited)

	Expenditures through Sept 30, 2017 (J)	Reimbursements through Sept 30, 2017 (K)	Net M2 Cost (L)
	$ 164,483	$ 95,932	$ 68,551
	13,274	2,133	11,141
	98,212	60,956	37,256
	51,757	88	51,669
	4,178	363	3,815
	275	26	249
	332,179	159,498	172,681
	23,857	-	23,857
	$ 356,036	$ 159,498	$ 196,538
			15.8%
	$ 1,909,226	$ 661,590	$ 1,247,636
	$ 28,832	$ 292	$ 28,540
	-	-	-
	$ 28,832	$ 292	$ 28,540
			1.5%
	$ 20,391	$ -	$ 20,391
			1.1%
	$ 20,640	$ 2,053	$ 18,587
			1.0%

M2 Funds		
ENTITY	1st Quarter FY 2017/18	FUNDS TO DATE
ALISO VIEJO	$101,914.83	$3,694,304.94
ANAHEIM	$916,364.85	$32,140,554.08
BREA	$145,796.84	$5,367,975.18
BUENA PARK	$221,842.82	$8,531,241.36
COSTA MESA	$381,122.65	$13,528,102.51
CYPRESS	$136,343.08	$5,006,717.23
DANA POINT	$88,662.36	$3,058,247.30
FOUNTAIN VALLEY	$160,503.39	$5,844,617.54
FULLERTON	$339,084.16	$12,178,400.60
GARDEN GROVE	$387,834.04	$13,955,603.99
HUNTINGTON BEACH	$498,457.44	$18,160,750.28
IRVINE	$728,099.33	$24,751,735.93
LAGUNA BEACH	$66,484.43	$2,382,458.15
LAGUNA HILLS	$88,716.34	$3,192,107.10
LAGUNA NIGUEL	$173,674.85	$6,276,629.15
LAGUNA WOODS	$32,602.06	$1,202,245.07
LA HABRA	$136,077.87	$4,953,371.83
LAKE FOREST	$208,453.54	$7,348,714.95

ENTITY	1st Quarter FY 2017/18	FUNDS TO DATE
LA PALMA	$38,186.17	$1,599,671.96
LOS ALAMITOS	$34,048.45	$1,213,505.90
MISSION VIEJO	$242,085.31	$8,784,717.03
NEWPORT BEACH	$280,383.44	$10,274,844.83
ORANGE	$428,088.81	$15,389,967.35
PLACENTIA	$123,904.94	$4,446,262.24
RANCHO SANTA MARGARITA	$110,728.46	$3,972,871.74
SAN CLEMENTE	$148,172.62	$5,213,647.44
SAN JUAN CAPISTRANO	$98,668.84	$3,555,348.89
SANTA ANA	$735,487.30	$25,990,822.91
SEAL BEACH	$61,953.49	$2,386,254.49
STANTON	$77,630.50	$2,819,956.27
TUSTIN	$237,154.01	$8,323,910.02
VILLA PARK	$13,649.75	$488,748.42
WESTMINSTER	$224,056.17	$8,005,053.87
YORBA LINDA	$157,304.78	$5,612,558.70
COUNTY UNINCORPORATED	$504,325.25	$17,224,111.17
TOTAL M2 FUNDS	**$8,327,863.17**	**$296,876,030.42**

Measure M2
Progress Report
CAPITAL ACTION PLAN

Grey = Milestone achieved

Green = Forecast milestone meets or exceeds plan

Yellow = Forecast milestone is one to three months later than plan

Red = Forecast milestone is over three months later than plan

Non-bolded = Planned/Baseline **Bold = Forecasted/Actual**

Capital Projects*	Cost Budget/ Forecast (in millions)	Schedule (Planned/**Forecasted**)			
		Begin Environmental	Begin Design	Begin Construction	Complete Construction
FREEWAY PROJECTS					
I-5, SR-55 to SR-57	$38.1	Jul-11	Jun-15	Dec-17	Feb-20
Project A	**$39.9**	**Jun-11**	**Jun-15**	**Apr-18**	**Jun-20**
I-5, I-405 to SR-55	TBD	May-14	TBD	TBD	TBD
Project B	**TBD**	**May-14**	**TBD**	**TBD**	**TBD**
I-5, Avenida Pico to Avenida Vista Hermosa	$113.0	Jun-09	Jun-11	Dec-14	Aug-18
Project C	**$89.5**	**Jun-09**	**Jun-11**	**Dec-14**	**May-18**
I-5, Avenida Vista Hermosa to Pacific Coast Highway	$75.6	Jun-09	Jun-11	Dec-13	Mar-17
Project C	**$71.4**	**Jun-09**	**Jun-11**	**Jun-14**	**Jul-17**
I-5, Pacific Coast Highway to San Juan Creek Road	$70.7	Jun-09	Jun-11	Oct-13	Sep-16
Project C	**$71.3**	**Jun-09**	**Jun-11**	**Dec-13**	**Apr-18**
I-5, SR-73 to Oso Parkway	$151.9	Sep-11	Mar-15	Dec-18	Jan-24
Project C & D	**$190.5**	**Oct-11**	**Mar-15**	**Oct-19**	**Oct-24**
I-5, Oso Parkway to Alicia Parkway	$196.2	Sep-11	Nov-14	Jun-18	Feb-23
Project C & D	**$191.0**	**Oct-11**	**Nov-14**	**Dec-18**	**Aug-23**
I-5, Alicia Parkway to El Toro Road	$133.6	Sep-11	Mar-15	May-19	Jun-23
Project C	**$166.5**	**Oct-11**	**Mar-15**	**Feb-20**	**Mar-24**
I-5, El Toro Road Interchange	TBD	Apr-17	TBD	TBD	TBD
Project D	**TBD**	**Apr-17**	**TBD**	**TBD**	**TBD**
I-5, Ortega Interchange	$90.9	Sep-05	Jan-09	Aug-12	Sep-15
Project D	**$75.1**	**Sep-05**	**Jan-09**	**Aug-12**	**Jan-16**
I-5, Ortega Interchange (Landscape)	N/A	N/A	N/A	N/A	N/A
Project D	**N/A**	**N/A**	**Jan-14**	**Sep-15**	**Sep-16**

*Status through September 2017. For detailed project information, please refer to the individual project section within this report.

Grey = Milestone achieved

Green = Forecast milestone meets or exceeds plan

Yellow = Forecast milestone is one to three months later than plan

Red = Forecast milestone is over three months later than plan

Non-bolded = Planned/Baseline **Bold = Forecasted/Actual**

Capital Projects*	Cost Budget/ Forecast (in millions)	Schedule (Planned/**Forecasted**)			
		Begin Environmental	Begin Design	Begin Construction	Complete Construction
SR-55, I-405 to I-5	TBD	Feb-11	TBD	TBD	TBD
Project F	**$410.9**	**May-11**	**Sep-17**	**May-21**	**Jun-25**
SR-55, I-5 to SR-91	TBD	Dec-16	TBD	TBD	TBD
Project F	**TBD**	**Dec-16**	**TBD**	**TBD**	**TBD**
SR-57 Northbound (NB), Orangewood Avenue to Katella Avenue	TBD	Apr-16	TBD	TBD	TBD
Project G	**TBD**	**Apr-16**	**TBD**	**TBD**	**TBD**
SR-57 (NB), Katella Avenue to Lincoln Avenue	$78.7	Apr-08	Jul-08	Aug-11	Sep-14
Project G	**$38.5**	**Apr-08**	**Aug-08**	**Oct-11**	**Apr-15**
SR-57 (NB), Katella Avenue to Lincoln Avenue (Landscape)	N/A	N/A	N/A	N/A	N/A
Project G	**N/A**	**N/A**	**May-09**	**Sep-17**	**Nov-18**
SR-57 (NB), Orangethorpe Avenue to Yorba Linda Boulevard	$80.2	Aug-05	Feb-08	Oct-10	May-14
Project G	**$52.6**	**Aug-05**	**Feb-08**	**Oct-10**	**Nov-14**
SR-57 (NB), Yorba Linda Boulevard to Lambert Road	$79.3	Aug-05	Feb-08	Oct-10	Sep-14
Project G	**$55.5**	**Aug-05**	**Feb-08**	**Oct-10**	**May-14**
SR-57 (NB), Orangethorpe Avenue to Lambert Road (Landscape)	N/A	N/A	N/A	N/A	N/A
Project G	**N/A**	**N/A**	**Oct-14**	**Mar-18**	**May-19**
SR-57 (NB), Lambert Road to Tonner Canyon	TBD	TBD	TBD	TBD	TBD
Project G	**TBD**	**Aug-18**	**TBD**	**TBD**	**TBD**
SR-91 Westbound (WB), I-5 to SR-57	$78.1	Jul-07	Oct-09	Nov-12	Apr-16
Project H	**$59.6**	**Jul-07**	**Mar-10**	**Jan-13**	**Jun-16**

*Status through September 2017. For detailed project information, please refer to the individual project section within this report.

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Yellow = Forecast milestone is one to three months later than plan

Red = Forecast milestone is over three months later than plan

Non-bolded = Planned/Baseline **Bold = Forecasted/Actual**

Capital Projects*	Cost Budget/ Forecast (in millions)	Schedule (Planned/**Forecasted**)			
		Begin Environmental	Begin Design	Begin Construction	Complete Construction
SR-91 Westbound (WB), I-5 to SR-57 (Landscape)	N/A	N/A	N/A	N/A	N/A
Project H	**N/A**	**N/A**	**Nov-14**	**Mar-17**	**Dec-17**
SR-91, SR-56 to SR-57	TBD	Jan-15	TBD	TBD	TBD
Project I	**TBD**	**Jan-15**	**TBD**	**TBD**	**TBD**
SR-91 (WB), SR-55 to Tustin Avenue Interchange	$49.9	Jul-08	Jul-11	Oct-13	Jul-16
Project I	**$42.8**	**Jul-08**	**Jun-11**	**Oct-13**	**Jul-16**
SR-91, SR-55 to SR-241	$128.4	Jul-07	Jun-09	Sep-11	Dec-12
Project J	**$79.6**	**Jul-07**	**Apr-09**	**May-11**	**Mar-13**
SR-91, SR-55 to SR-241 (Landscape)	N/A	N/A	N/A	N/A	N/A
Project J	**N/A**	**N/A**	**May-12**	**Oct-13**	**Feb-15**
SR-91 Eastbound, SR-241 to SR-71	$104.5	Mar-05	Jul-07	Jul-09	Nov-10
Project J	**$57.8**	**Mar-05**	**Jul-07**	**Aug-09**	**Jan-11**
I-405, SR-73 to I-605 (Design-Build)	$1,900.0	Mar-09	Mar-14	Nov-16	May-23
Project K	**$1,900.0**	**Mar-09**	**Mar-14**	**Nov-16**	**May-23**
I-405, I-5 to SR-55	TBD	Dec-14	TBD	TBD	TBD
Project L	**TBD**	**Dec-14**	**TBD**	**TBD**	**TBD**
I-605, I-605/Katella Interchange	TBD	Aug-16	TBD	TBD	TBD
Project M	**TBD**	**Aug-16**	**TBD**	**TBD**	**TBD**

 *Status through September 2017. For detailed project information, please refer to the individual project section within this report.

Grey = Milestone achieved

Green = Forecast milestone meets or exceeds plan

Yellow = Forecast milestone is one to three months later than plan

Red = Forecast milestone is over three months later than plan

Non-bolded = Planned/Baseline **Bold = Forecasted/Actual**

Capital Projects*	Cost Budget/ Forecast (in millions)	Schedule (Planned/**Forecasted**)			
		Begin Environmental	Begin Design	Begin Construction	Complete Construction
GRADE SEPARATION PROJECTS					
Kraemer Boulevard Railroad Grade Separation (Placentia)	$70.4	Jan-01	Jan-09	Aug-11	Oct-14
Project O	**$63.5**	**Jan-01**	**Feb-09**	**Sep-11**	**Dec-14**
Lakeview Avenue Railroad Grade Separation (Anaheim/Placentia)	$70.2	Jan-01	Feb-09	May-13	Mar-17
Project O	**$107.4**	**Jan-01**	**Feb-09**	**Nov-13**	**Jun-17**
Orangethorpe Avenue Railroad Grade Separation (Anaheim/Placentia)	$117.4	Jan-01	Feb-09	May-12	Sep-16
Project O	**$108.6**	**Jan-01**	**Feb-09**	**Jan-13**	**Oct-16**
Placentia Avenue Railroad Grade Separation (Placentia)	$78.2	Jan-01	Jan-09	Jun-11	Nov-14
Project O	**$64.6**	**Jan-01**	**Jan-09**	**Jul-11**	**Dec-14**
Raymond Avenue Railroad Grade Separation (Fullerton)	$77.2	Feb-09	Mar-10	May-13	Aug-18
Project O	**$124.8**	**Feb-09**	**Mar-10**	**Feb-14**	**Aug-18**
State College Boulevard Railroad Grade Separation (Fullerton)	$73.6	Dec-08	Jul-06	May-13	May-18
Project O	**$97.0**	**Dec-08**	**Jul-06**	**Feb-14**	**Jan-18**
Tustin Avenue/Rose Drive Railroad Grade Separation (Anaheim/Placentia)	$103.0	Jan-01	Feb-09	Aug-12	May-16
Project O	**$98.3**	**Jan-01**	**Feb-09**	**Feb-13**	**Oct-16**
Sand Canyon Avenue Railroad Grade Separation (Irvine)	$55.6	N/A	Jan-04	Feb-11	May-14
Project R	**$61.8**	**N/A**	**Jan-04**	**Feb-11**	**Jan-16**
17th Street Railroad Grade Separation	TBD	Oct-14	TBD	TBD	TBD
Project R	**TBD**	**Oct-14**	**TBD**	**TBD**	**TBD**

*Status through September 2017. For detailed project information, please refer to the individual project section within this report.

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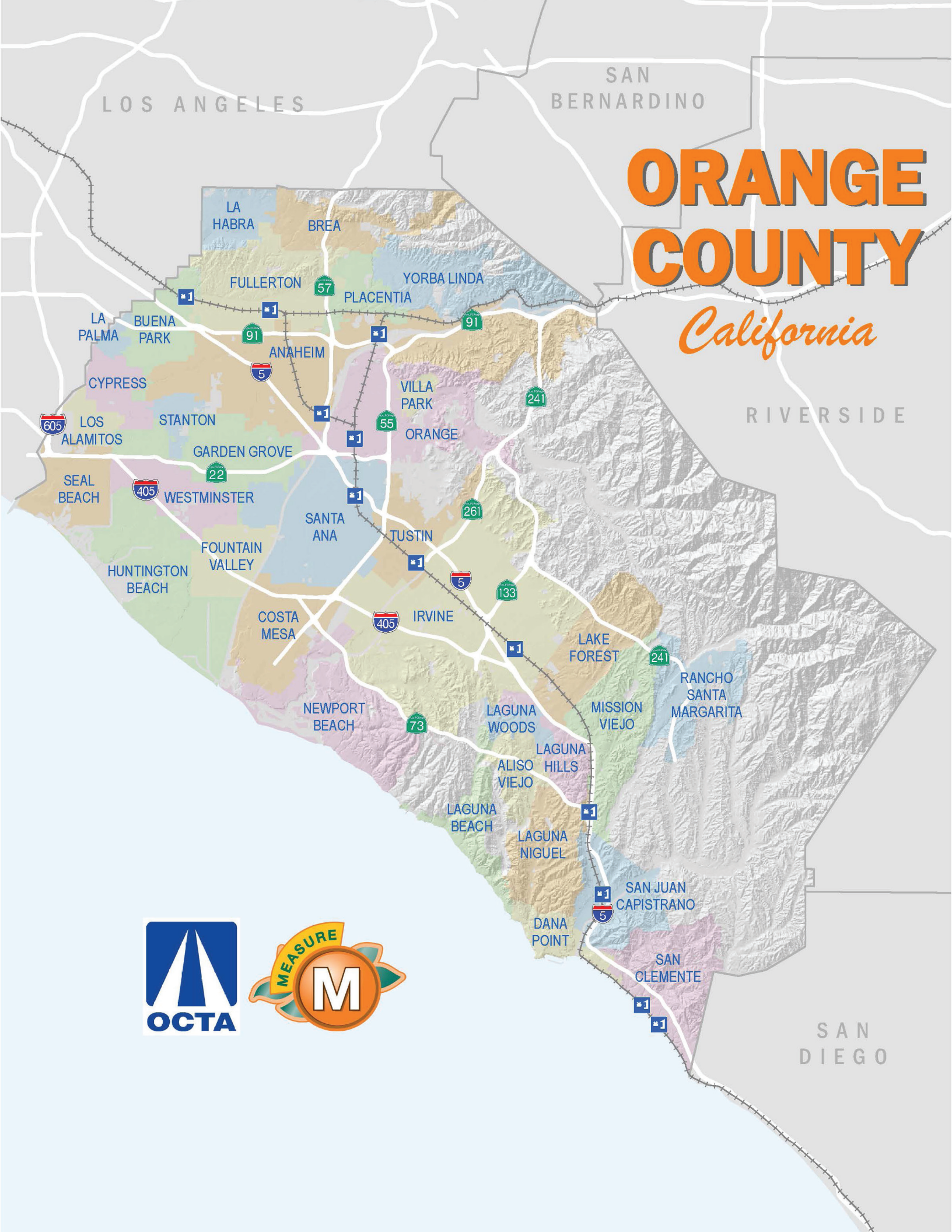

ORANGE COUNTY
California
LOS ANGELES
SAN BERNARDINO
RIVERSIDE
SAN DIEGO
LA HABRA
BREA
FULLERTON
YORBA LINDA
PLACENTIA
LA PALMA
BUENA PARK
ANAHEIM
CYPRESS
VILLA PARK
LOS ALAMITOS
STANTON
ORANGE
GARDEN GROVE
SEAL BEACH
WESTMINSTER
SANTA ANA
TUSTIN
FOUNTAIN VALLEY
HUNTINGTON BEACH
COSTA MESA
IRVINE
LAKE FOREST
RANCHO SANTA MARGARITA
NEWPORT BEACH
LAGUNA WOODS
MISSION VIEJO
LAGUNA HILLS
ALISO VIEJO
LAGUNA BEACH
LAGUNA NIGUEL
SAN JUAN CAPISTRANO
DANA POINT
SAN CLEMENTE
OCTA
MEASURE M

COMMITTEE TRANSMITTAL

December 11, 2017

To: Members of the Board of Directors

From: Laurena Weinert, Clerk of the Board

Subject: Fiscal Year 2017-18 Measure M2 Annual Eligibility Review

Regional Planning and Highways Committee Meeting of December 4, 2017

Present: Directors Do, Delgleize, Donchak, M. Murphy, and Nelson
Absent: Directors Spitzer and Steel

Committee Vote

This item was passed by the Members present.

Committee Recommendation

Approve all local jurisdictions as conditionally eligible for Measure M2 net revenues for fiscal year 2017-18, and direct staff to return with eligibility findings for local jurisdictions, pending the adoption and submittal of fiscal year 2016-17 expenditure reports by local jurisdictions.

December 4, 2017

To: Regional Planning and Highways Committee

From: Darrell Johnson, Chief Executive Officer

Subject: Fiscal Year 2017-18 Measure M2 Annual Eligibility Review

Overview

Measure M2 requires all local jurisdictions in Orange County to satisfy eligibility requirements in order to receive Measure M2 net revenues. Fiscal year 2017-18 eligibility documentation has been reviewed and is presented for Board of Directors' review and approval.

Recommendation

Approve all local jurisdictions as conditionally eligible for Measure M2 net revenues for fiscal year 2017-18, and direct staff to return with eligibility findings for local jurisdictions, pending the adoption and submittal of fiscal year 2016-17 expenditure reports by local jurisdictions.

Background

Local jurisdictions are required to meet eligibility requirements and submit eligibility verification packages to Orange County Transportation Authority (OCTA) staff annually in order to remain eligible to receive Measure M2 (M2) net revenues. There are 13 eligibility requirements local jurisdictions must meet. However, not all of the eligibility requirements require verification each year. The 13 eligibility requirements and submittal schedule are identified in Attachment A.

The Taxpayer Oversight Committee (TOC) is responsible for reviewing five of the 13 eligibility requirements and designating the Annual Eligibility Review (AER) Subcommittee to review the Congestion Management Plan (CMP), Mitigation Fee Program, Local Signal Synchronization Plan (LSSP), Pavement Management Plan (PMP), and expenditure reports. The remaining eight eligibility requirements are reviewed by OCTA staff.

Discussion

All 35 local jurisdictions submitted the appropriate eligibility verification documents prior to the June 30th deadline. OCTA staff reviewed the submittals to ensure completion and accuracy.

The AER Subcommittee convened on September 12, 2017 to review and discuss four eligibility components namely the CMP, LSSP, Mitigation Fee Programs, and in addition, 14 PMP submittals. The AER Subcommittee found these submittals to be in compliance with the Measure M2 Ordinance (M2 Ordinance) and recommend approval to the TOC.

The AER Subcommittee members expressed concerns about the downward trend in pavement conditions based on the seven-year projections provided in the current PMPs for the cities of Anaheim and Los Alamitos. While the AER Subcommittee members affirmed that the PMP submittals were in compliance with ordinance requirements, the AER Subcommittee members noted that it is important to continue to address the condition of pavement on an ongoing basis to avoid further deterioration and asked staff to communicate their concerns. OCTA staff will be sending out letters to the cities of Anaheim (Attachment B) and Los Alamitos (Attachment C) to express concerns raised by the committee members.

The AER Subcommittee presented recommendations of eligibility compliance to the TOC on October 10, 2017, for review and approval. The TOC found all local jurisdictions to be in compliance with the M2 Ordinance and recommended conditional eligibility approval for fiscal year (FY) 2017-18, pending the review of expenditure reports as further described below. The eligibility review and findings for FY 2017-18 M2 eligibility are summarized in Attachment D.

The M2 eligibility for FY 2017-18 is conditional, pending the review and approval of expenditure reports for FY 2016-17. All local jurisdictions must adopt an annual expenditure report that tracks financial activity for M2 funds, including interest earned, developer traffic impact fees, and funds expended by the jurisdiction that satisfy maintenance of effort requirements. Upon staff review, the AER Subcommittee, and the TOC, expenditure reports will be presented to the Board for a final eligibility finding in summer 2018.

Summary

All local jurisdictions in Orange County have submitted FY 2017-18 eligibility packages that are consistent with the M2 Ordinance. The TOC has reviewed and approved the appropriate documentation and found that all local jurisdictions conditionally meet the eligibility requirements for FY 2017-18.

Attachments

A. Measure M2 Eligibility Requirements and Submittal Schedule Summary, For Fiscal Year 2017-18
B. Draft Letter to Ms. Linda Andal, Interim City Manager, City of Anaheim, Dated December 11, 2017, RE: Pavement Condition Concerns Expressed by the Annual Eligibility Review Subcommittee
C. Draft Letter to Mr. Bret Plumlee, City Manager, City of Los Alamitos, Dated December 11, 2017, RE: Pavement Condition Concerns Expressed by the Annual Eligibility Review Subcommittee
D. Fiscal Year 2017-18, Measure M2 Eligibility Review Summary

Prepared By:

May Hout
Senior Transportation Funding Analyst
(714) 560-5905

Approved By:

Kia Mortazavi
Executive Director, Planning
(714) 560-5741

ATTACHMENT A

Measure M2 Eligibility Requirements and Submittal Schedule Summary For Fiscal Year 2017-18

Compliance Category	Frequency	Required
Capital Improvement Program	Annual (June 30th)	✓
Circulation Element/Master Plan of Arterial Highways Consistency	Biennial (June 30th)	✓
Congestion Management Program	Odd-Numbered Year (i.e. June 2017, 2019)	✓
Expenditure Report	Annual (December 29)[1]	✓
Local Signal Synchronization Plan	Every Three Years	✓
Maintenance of Effort	Annual (June 30th)	✓
Mitigation Fee Program (MFP)	Biennial (June 30th)[2]	✓
No Supplanting of Developer Fees	Annual (June 30th)	✓
Pavement Management Plan (PMP)	Every Two Years (June 30th)[3]	✓
Timely Submittal of Project Final Reports	Within Six Months of Project Completion	✓
Timely Use of Net Revenues	Annual (June 30th)	✓
Traffic Forum Participation	Annual	✓
Transit and Non-Motorized Transportation Land-Use Planning Strategies	Annual (June 30th)	✓

[1]The City of Huntington Beach follows a federal fiscal year (October 1st - September 30th) and must submit the Measure M2 Expenditure Report by March 30.

[2]A jurisdiction must submit their updated program and revised fee schedule or process methodology when the jurisdiction updates their MFP and/or nexus study.

[3]The 14 agencies update respective PMPs on odd-numbered fiscal years, while 21 agencies update on even-numbered fiscal years.

ATTACHMENT B

December 11, 2017

Ms. Linda Andal
Interim City Manager
City of Anaheim
200 South Anaheim Boulevard
Anaheim, CA 92805

RE: **Pavement Condition Concerns Expressed by the Annual Eligibility Review Subcommittee**

Dear Ms. Andal:

As you know, local agencies are required to submit eligibility verification packages to the Orange County Transportation Authority (OCTA) annually in order to remain eligible to receive Measure M2 net revenues. The Taxpayer Oversight Committee (TOC) is responsible for reviewing eligibility requirements and designates a subcommittee to review this information that includes the Pavement Management Plan (PMP).

Upon review of the City of Anaheim's (City) 2017 PMP submittal, members of the TOC expressed concerns about the downward trend in the City's pavement conditions based on the seven-year projections provided in the current PMP. While this does not impact the City's eligibility status, the TOC believes that it is important for the City to proactively address the projected decline in pavement conditions to avoid further street deterioration.

OCTA also encourages successful PMP implementation by providing a 10 percent local match reduction incentive for competitive grant applications submitted through the Regional Capacity Program if the local agency can either improve network average Pavement Condition Index (PCI) by one point with no reductions in average PCI for MPAH or locals; or show average PCI within highest 20 percent countywide (PCI of 75 of higher) from the previous PMP submittal.

If you have any questions, please contact Kia Mortazavi, Executive Director, Planning, at (714) 560-5741.

Sincerely,

Darrell Johnson
Chief Executive Officer

DJ:mh

c: Kia Mortazavi, OCTA
Kurt Brotcke, OCTA

ATTACHMENT C

December 11, 2017

Mr. Bret Plumlee
City Manager
City of Los Alamitos
3191 Katella Avenue
Los Alamitos, CA 90720

RE: **Pavement Condition Concerns Expressed by the Annual Eligibility Review Subcommittee**

Dear Mr. Plumlee:

As you know, local agencies are required to submit eligibility verification packages to the Orange County Transportation Authority (OCTA) annually in order to remain eligible to receive Measure M2 net revenues. The Taxpayer Oversight Committee (TOC) is responsible for reviewing eligibility requirements and designates a subcommittee to review this information that includes the Pavement Management Plan (PMP).

Upon review of the City of Los Alamitos' (City) 2017 PMP submittal, members of the TOC expressed concerns about the downward trend in the City's pavement conditions based on the seven-year projections provided in the current PMP. While this does not impact the City's eligibility status, the TOC believes that it is important for the City to proactively address the projected decline in pavement conditions to avoid further street deterioration.

OCTA also encourages successful PMP implementation by providing a 10 percent local match reduction incentive for competitive grant applications submitted through the Regional Capacity Program if the local agency can either improve network average Pavement Condition Index (PCI) by one point with no reductions in average PCI for MPAH or locals; or show average PCI within highest 20 percent countywide (PCI of 75 of higher) from the previous PMP submittal.

If you have any questions, please contact Kia Mortazavi, Executive Director, Planning, at kmortazavi@octa.net or (714) 560-5741.

Sincerely,

Darrell Johnson
Chief Executive Officer

DJ:mh

c: Kia Mortazavi, OCTA
Kurt Brotcke, OCTA

Fiscal Year 2017-18
Measure M2 Eligibility Review Summary

Agency	Capital Improvement Program	Circulation Element/ MPAH Consistency	Congestion Management Program	Expenditure Report	Land-Use Planning Strategies	Local Signal Synchronization Plan	Maintenance of Effort	Mitigation Fee Program	No Supplanting of Developer Fees	[1] Pavement Management Plan	Timely Submittal of Final Reports	Timely Use of Net Revenues	Traffic Forum
Aliso Viejo	Satisfactory	Satisfactory	Satisfactory	Pending	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory	N/A	Satisfactory	Satisfactory	✓
Anaheim	Satisfactory	Satisfactory	Satisfactory	Pending	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory	✓
Brea	Satisfactory	Satisfactory	Satisfactory	Pending	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory	✓
Buena Park	Satisfactory	Satisfactory	Satisfactory	Pending	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory	N/A	Satisfactory	Satisfactory	✓
Costa Mesa	Satisfactory	Satisfactory	Satisfactory	Pending	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory	N/A	Satisfactory	Satisfactory	✓
County of Orange	Satisfactory	Satisfactory	Satisfactory	Pending	Satisfactory	Satisfactory	N/A	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory	✓
Cypress	Satisfactory	Satisfactory	Satisfactory	Pending	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory	✓
Dana Point	Satisfactory	Satisfactory	Satisfactory	Pending	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory	✓
Fountain Valley	Satisfactory	Satisfactory	Satisfactory	Pending	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory	N/A	Satisfactory	Satisfactory	✓
Fullerton	Satisfactory	Satisfactory	Satisfactory	Pending	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory	N/A	Satisfactory	Satisfactory	✓
Garden Grove	Satisfactory	Satisfactory	Satisfactory	Pending	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory	N/A	Satisfactory	Satisfactory	✓
Huntington Beach	Satisfactory	Satisfactory	Satisfactory	Pending	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory	N/A	Satisfactory	Satisfactory	✓
Irvine	Satisfactory	Satisfactory	Satisfactory	Pending	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory	✓
La Habra	Satisfactory	Satisfactory	Satisfactory	Pending	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory	✓
La Palma	Satisfactory	Satisfactory	Satisfactory	Pending	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory	N/A	Satisfactory	Satisfactory	✓
Laguna Beach	Satisfactory	Satisfactory	Satisfactory	Pending	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory	N/A	Satisfactory	Satisfactory	✓
Laguna Hills	Satisfactory	Satisfactory	Satisfactory	Pending	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory	N/A	Satisfactory	Satisfactory	✓
Laguna Niguel	Satisfactory	Satisfactory	Satisfactory	Pending	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory	N/A	Satisfactory	Satisfactory	✓
Laguna Woods	Satisfactory	Satisfactory	Satisfactory	Pending	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory	N/A	Satisfactory	Satisfactory	✓
Lake Forest	Satisfactory	Satisfactory	Satisfactory	Pending	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory	✓
Los Alamitos	Satisfactory	Satisfactory	Satisfactory	Pending	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory	✓
Mission Viejo	Satisfactory	Satisfactory	Satisfactory	Pending	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory	N/A	Satisfactory	Satisfactory	✓
Newport Beach	Satisfactory	Satisfactory	Satisfactory	Pending	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory	✓
Orange	Satisfactory	Satisfactory	Satisfactory	Pending	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory	N/A	Satisfactory	Satisfactory	✓
Placentia	Satisfactory	Satisfactory	Satisfactory	Pending	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory	N/A	Satisfactory	Satisfactory	✓
Rancho Santa Margarita	Satisfactory	Satisfactory	Satisfactory	Pending	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory	N/A	Satisfactory	Satisfactory	✓
San Clemente	Satisfactory	Satisfactory	Satisfactory	Pending	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory	✓
San Juan Capistrano	Satisfactory	Satisfactory	Satisfactory	Pending	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory	✓
Santa Ana	Satisfactory	Satisfactory	Satisfactory	Pending	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory	N/A	Satisfactory	Satisfactory	✓
Seal Beach	Satisfactory	Satisfactory	Satisfactory	Pending	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory	N/A	Satisfactory	Satisfactory	✓
Stanton	Satisfactory	Satisfactory	Satisfactory	Pending	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory	✓
Tustin	Satisfactory	Satisfactory	Satisfactory	Pending	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory	✓
Villa Park	Satisfactory	Satisfactory	Satisfactory	Pending	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory	N/A	Satisfactory	Satisfactory	✓
Westminster	Satisfactory	Satisfactory	Satisfactory	Pending	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory	N/A	Satisfactory	Satisfactory	✓
Yorba Linda	Satisfactory	Satisfactory	Satisfactory	Pending	Satisfactory	Satisfactory	Satisfactory	Satisfactory	Satisfactory	N/A	Satisfactory	Satisfactory	✓
Totals	35	35	35	-	35	35	35	35	35	14	35	35	35

Acronyms:
MPAH - Master Plan of Arterial Highways
PMP- Pavement Management Plan
N/A - Not applicable

[1] 14 agencies update respective PMPs on odd-numbered fiscal years, while 21 agencies update on even-numbered fiscal years.

ATTACHMENT D

COMMITTEE TRANSMITTAL

December 11, 2017

To: Members of the Board of Directors

From: Laurena Weinert, Clerk of the Board

Subject: Measure M2 Environmental Cleanup Program Updates and Next Steps

Regional Planning and Highways Committee Meeting of December 4, 2017

Present: Directors Do, Delgleize, Donchak, M. Murphy, and Nelson
Absent: Directors Spitzer and Steel

Committee Vote

This item was passed by the Members present.

Committee Recommendation

Direct staff to return in early 2018 with updated Environmental Cleanup Program funding guidelines for a 2018 call for projects.

December 4, 2017

To: Regional Planning and Highways Committee

From: Darrell Johnson, Chief Executive Officer

Subject: Measure M2 Environmental Cleanup Program Updates and Next Steps

Overview

The Orange County Transportation Authority's Environmental Cleanup Program provides Measure M2 funding for water quality improvement projects to address transportation-generated pollution. In May 2010, the Orange County Transportation Authority Board of Directors approved a two-tiered approach to fund the Measure M2 Environmental Cleanup Program over a seven-year period. The Board of Directors recently approved the funding recommendations for the seventh call for projects in August 2017. A status update of the funded projects and next steps in the Environmental Cleanup Program are discussed herein.

Recommendation

Direct staff to return in early 2018 with updated Environmental Cleanup Program funding guidelines for a 2018 call for projects.

Background

In May 2010, the Orange County Transportation Authority (OCTA) Board of Directors (Board) approved a two-tiered approach to fund the Measure M2 (M2) Environmental Cleanup Program (ECP). The funding plan called for up to $19.5 million in Tier 1 grants on a "pay-as-you-go" basis through seven funding cycles. Approximately $2.8 million has been available for each cycle of Tier 1 calls for projects (call). OCTA just completed the seventh cycle in fiscal year (FY) 2017-18. In addition, the Board approved up to $38 million in Tier 2 grants through two to three cycles of calls. Two call cycles have been completed under the Tier 2 grants program.

ECP funds are available for all 34 cities and the County of Orange to purchase equipment and upgrades for existing catch basins and other related best management practices (BMP) that supplement current requirements. Examples include screens, filters, and inserts for catch basins, as well as other

devices designed to remove trash, debris, and other pollutants. Proposed projects must demonstrate a direct nexus to the reduction of transportation-related pollution, as included in the Measure M Ordinance and further defined by the Environmental Cleanup Allocation Committee (ECAC) and approved by the Board.

The Tier 1 Grant Program is designed to mitigate the more visible forms of pollution. This includes the trash and debris that collects on roadways and in storm drains prior to being deposited in waterways and the ocean. Tier 1 consists of funding for equipment and upgrades to existing catch basins and related devices such as screens, filters, and inserts.

The Tier 2 Grant Program consists of funding regional, multi-jurisdictional, and capital-intensive projects. Examples include constructed wetlands, detention/infiltration basins, and bioswales. The purpose of the Tier 2 Program is to strategically focus on areas which have the greatest need for water quality improvement projects as they relate to the transportation infrastructure. These projects are generally much larger in scale and help to mitigate pollutants including litter and debris, heavy metals, organic chemicals, bacteria, and sediment.

The ECAC was envisioned in the Measure M2 Ordinance to oversee the following:

- A competitive grant process to fund the highest priority capital improvement projects,
- A process requiring the funds allocated for projects and programs to supplement, and not supplant, funding from other sources for transportation related water quality projects and programs,
- Recommendations of funding allocations for proposed projects and programs,
- An annual reporting procedure and a method to assess the completed water quality projects.

Discussion

The Board has approved funding for 154 Tier 1 projects through seven calls, totaling approximately $20.1 million and 22 Tier 2 projects through two calls, totaling approximately $27.9 million. Attachment A includes project types and funding details for each Tier 1 and Tier 2 call. To date, the County and all 34 cities have participated in the ECP. The County and 33 cities have received funding for projects, as shown in Attachment B and Attachment C.

Staff has estimated that over 602 million cubic feet of trash have been captured as a result of the installation of Tier 1 devices since the inception of the Tier 1 Program in 2011. This is equivalent to over 2,600 forty-foot shipping containers. Over time, the volume of trash captured is expected to increase. It is estimated that the funded Tier 2 projects, once fully functional, will have an annual groundwater recharge potential of approximately 157 million gallons of water from infiltration or through pumped and treated recharge facilities.

The ECP is a sales tax revenue-generated program providing funding thru 2041 for water quality improvement projects. An important role of the ECAC is to consider changes in legislation and compliance with the M2 Ordinance. For example, the M2 Ordinance states that "environmental cleanup revenues allocated for projects and programs shall supplement and not supplant funding from other sources for transportation related water quality projects and programs." This language has been an important factor in considering funding as projects are thoroughly vetted during each call to ensure they meet the intent and spirit of the M2 Ordinance.

The M2 Ordinance states the specific program objective is to assist the County and cities in their efforts "to meet federal Clean Water Act standards for urban runoff." The Clean Water Act in California is administered through the State Water Resources Control Board (SWRCB, issuer of Trash Provisions) and Regional Water Quality Control Board, (issuer of Municipal Stormwater Permits). Recently, the SWRCB adopted "Trash Provisions", which establish a statewide water quality objective for trash removal and implementation provisions using a land-use based compliance approach that targets high trash generating areas. The Trash Provisions, like the Municipal Stormwater Permits, do not have dedicated funding provided by the regulatory agency; therefore, associated funding provided through the M2 Program would not be supplanting, nor would existing funding be replaced. The ECAC thoroughly discussed the Trash Provisions and determined that funding of trash control equipment and devices is consistent with the intent of the ECP.

Concurrently, OCTA staff has been coordinating with County staff to facilitate project development efforts for Tier 2-type projects that offer regional water quality benefits. Tier 2 projects offer tremendous benefits from a water quality standpoint. However, they are also much more complicated since they involve higher costs, multiple jurisdictions, as well as complex planning and engineering efforts. Recognizing these challenges, OCTA retained a consultant in 2010 to assess water quality project opportunities within the eleven watersheds in the County to identify strategically effective areas to maximize M2 investments to improve water quality.

Since then, the County's Watersheds Program has built upon OCTA's effort by preparing two water quality plans: the South Orange County Water Quality Improvement Plan (SOCWQIP) and the North Orange County Watershed Management Plan (NOCWMP). The SOCWQIP was completed in fall 2017, and the NOCWMP is under development and is anticipated to be completed in 2018. These plans will assist OCTA in conceptualizing potential larger scale water quality projects with a transportation nexus. OCTA can then share potential project concepts with local jurisdictions, the County, and other potential project sponsors to further develop the projects.

Next Steps

In order to continue the success of the ECP, a robust pool of potential Tier 2-type projects should be developed. The ECAC engaged in discussions of the disposition of the ECP over the next decade. The ECAC agreed that going forward in the immediate timeframe, the demand for Tier 2 funding is not anticipated to warrant the need for debt issuance since OCTA has not had to utilize debt issuance in the past. It is anticipated there would be sufficient demand and funds available for annual Tier 1-type calls with approximately $2.8 million available each year. Given the uncertain nature of the sales tax revenues/projections, staff will need to continue to monitor the availability of funds for the ECP. As OCTA continues coordination efforts with the County to assist local jurisdictions in further developing Tier 2-type projects, it is anticipated that there may be sufficient funds to issue two Tier 2 calls during the next decade (potentially 2021 and 2025).

In early 2018, staff will present updated ECP funding guidelines to the ECAC, and anticipates the ECAC to endorse the release of a call beginning in March 2018. The call will focus on Tier 1-type projects and staff anticipates approximately $2.8 million will be available.

Summary

The OCTA ECP provides M2 funding for water quality improvement projects to address transportation-generated pollution. In May 2010, the OCTA Board approved a two-tiered approach to fund the M2 ECP over a seven-year period which concluded in August 2017. Moving forward, the ECP can continue with annual calls. Funding availability will determine the scale of projects that could potentially be funded.

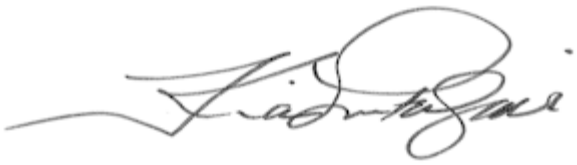
Attachments

A. Tier 1 and Tier 2 Funded Project Types and Funding Allocation
B. OCTA Environmental Cleanup Program Funding by Agency - Tier 1
C. OCTA Environmental Cleanup Program Funding by Agency - Tier 2

Prepared by:

Alison Army
Principal Transportation Analyst
(714) 560-5537

Approved by:



Kia Mortazavi
Executive Director, Planning
(714) 560-5741

Tier 1 and Tier 2 Funded Project Types and Funding Allocation

Tier 1 Funded Project Types								
Call Cycle	Screens/ Filters	CDS/ GSRD[1]	Trash Skimmer/Boom	Detention/ Infiltration	Irrigation/ Landscape	Runoff Diversion	Total Projects Funded	Total Allocation
FY 2011-12	20	7	1		6		34	$2,861,786[2]
FY 2012-13	15	6	1		10		33	$2,764,244[3]
FY 2013-14	15	3		1		1	19	$2,831,240
FY 2014-15	15	2		1			18	$2,834,361[4]
FY 2015-16	16	1		1			18	$2,865,899
FY 2016-17	13	1	2				16	$2,769,943
FY 2017-18	14	1		1			16	$3,130,251
Tier 1 Totals	108	21	4	4	16	1	154	$20,057,724

[1]CDS/GSRD = Continuous Deflective Separator/Gross Solids Removal Device
[2]One project was cancelled in the amount of $11,989
[3] Three projects were cancelled in the total amount of $290,202
[4] One project was cancelled in the amount of $200,000

Tier 2 Funded Project Types								
Call Cycle	Detention/ Infiltration	Bioswale	Runoff Diversion	CDS[1]	Modular Wetland	Constructed Wetland	Total Projects Funded	Total Allocation
FY 2012-13	2	2	3	1			8	$12,708,314[2]
FY 2013-14	3	4	3		2	2	14	$15,186,531[3]
Tier 2 Totals	*5*	6	6	1	2	2	22	$27,894,845

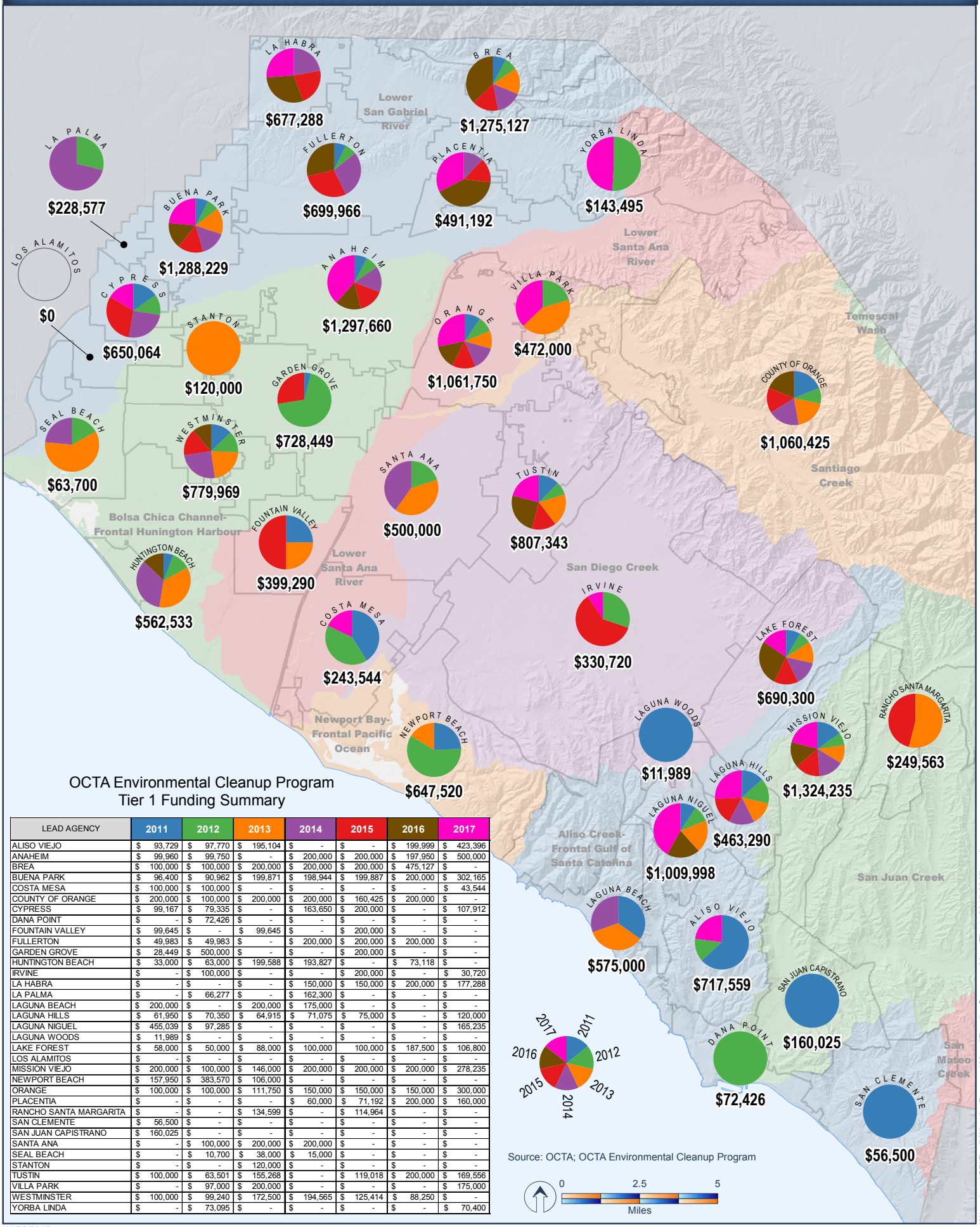
[1]CDS = Continuous Deflective Separator
[2] One project was cancelled in the amount of $470,236
[3] One project was cancelled in the amount of $635,955

Call - Call for projects
FY - Fiscal year

ATTACHMENT A

ATTACHMENT B

OCTA Environmental Cleanup Program Funding by Agency - Tier 1



OCTA Environmental Cleanup Program
Tier 1 Funding Summary

LEAD AGENCY	2011	2012	2013	2014	2015	2016	2017
ALISO VIEJO	$ 93,729	$ 97,770	$ 195,104	$ -	$ -	$ 199,999	$ 423,396
ANAHEIM	$ 99,960	$ 99,750	$ -	$ 200,000	$ 200,000	$ 197,950	$ 500,000
BREA	$ 100,000	$ 100,000	$ 200,000	$ 200,000	$ 200,000	$ 475,127	$ -
BUENA PARK	$ 96,400	$ 90,962	$ 199,871	$ 198,944	$ 199,887	$ 200,000	$ 302,165
COSTA MESA	$ 100,000	$ 100,000	$ -	$ -	$ -	$ -	$ 43,544
COUNTY OF ORANGE	$ 200,000	$ 100,000	$ 200,000	$ 200,000	$ 160,425	$ 200,000	$ -
CYPRESS	$ 99,167	$ 79,335	$ -	$ 163,650	$ 200,000	$ -	$ 107,912
DANA POINT	$ -	$ 72,426	$ -	$ -	$ -	$ -	$ -
FOUNTAIN VALLEY	$ 99,645	$ -	$ 99,645	$ -	$ 200,000	$ -	$ -
FULLERTON	$ 49,983	$ 49,983	$ -	$ 200,000	$ 200,000	$ 200,000	$ -
GARDEN GROVE	$ 28,449	$ 500,000	$ -	$ -	$ 200,000	$ -	$ -
HUNTINGTON BEACH	$ 33,000	$ 63,000	$ 199,588	$ 193,827	$ -	$ 73,118	$ -
IRVINE	$ -	$ 100,000	$ -	$ -	$ 200,000	$ -	$ 30,720
LA HABRA	$ -	$ -	$ -	$ 150,000	$ 150,000	$ 200,000	$ 177,288
LA PALMA	$ -	$ 66,277	$ -	$ 162,300	$ -	$ -	$ -
LAGUNA BEACH	$ 200,000	$ -	$ 200,000	$ 175,000	$ -	$ -	$ -
LAGUNA HILLS	$ 61,950	$ 70,350	$ 64,915	$ 71,075	$ 75,000	$ -	$ 120,000
LAGUNA NIGUEL	$ 455,039	$ 97,285	$ -	$ -	$ -	$ -	$ 165,235
LAGUNA WOODS	$ 11,989	$ -	$ -	$ -	$ -	$ -	$ -
LAKE FOREST	$ 58,000	$ 50,000	$ 88,000	$ 100,000	100,000	$ 187,500	$ 106,800
LOS ALAMITOS	$ -	$ -	$ -	$ -	$ -	$ -	$ -
MISSION VIEJO	$ 200,000	$ 100,000	$ 146,000	$ 200,000	$ 200,000	$ 200,000	$ 278,235
NEWPORT BEACH	$ 157,950	$ 383,570	$ 106,000	$ -	$ -	$ -	$ -
ORANGE	$ 100,000	$ 100,000	$ 111,750	$ 150,000	$ 150,000	$ 150,000	$ 300,000
PLACENTIA	$ -	$ -	$ -	$ 60,000	$ 71,192	$ 200,000	$ 160,000
RANCHO SANTA MARGARITA	$ -	$ -	$ 134,599	$ -	$ 114,964	$ -	$ -
SAN CLEMENTE	$ 56,500	$ -	$ -	$ -	$ -	$ -	$ -
SAN JUAN CAPISTRANO	$ 160,025	$ -	$ -	$ -	$ -	$ -	$ -
SANTA ANA	$ -	$ 100,000	$ 200,000	$ 200,000	$ -	$ -	$ -
SEAL BEACH	$ -	$ 10,700	$ 38,000	$ 15,000	$ -	$ -	$ -
STANTON	$ -	$ -	$ 120,000	$ -	$ -	$ -	$ -
TUSTIN	$ 100,000	$ 63,501	$ 155,268	$ -	$ 119,018	$ 200,000	$ 169,556
VILLA PARK	$ -	$ 97,000	$ 200,000	$ -	$ -	$ -	$ 175,000
WESTMINSTER	$ 100,000	$ 99,240	$ 172,500	$ 194,565	$ 125,414	$ 88,250	$ -
YORBA LINDA	$ -	$ 73,095	$ -	$ -	$ -	$ -	$ 70,400

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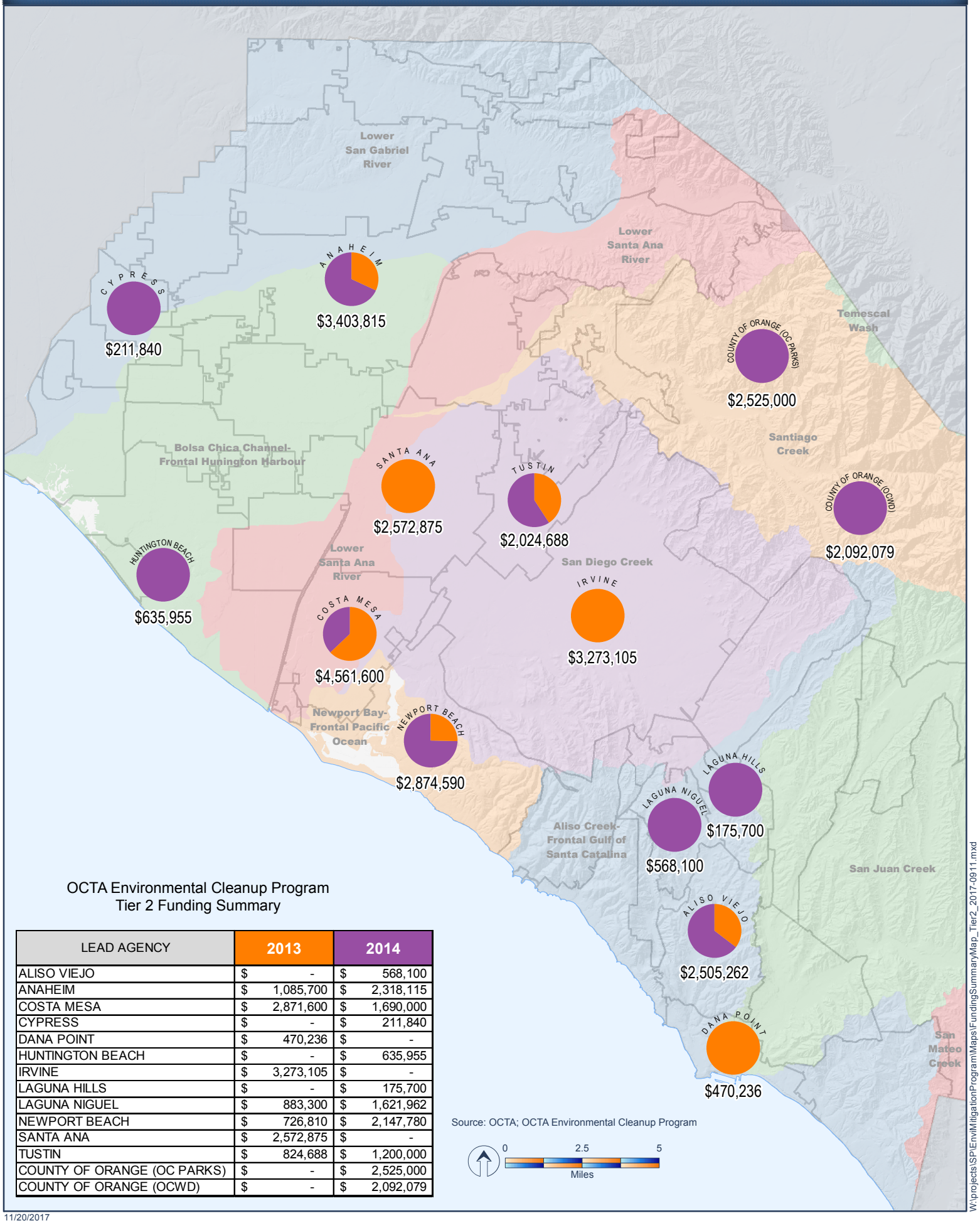
11/20/2017

OCTA Environmental Cleanup Program Funding by Agency - Tier 2



OCTA Environmental Cleanup Program
Tier 2 Funding Summary

LEAD AGENCY	2013	2014
ALISO VIEJO	$ -	$ 568,100
ANAHEIM	$ 1,085,700	$ 2,318,115
COSTA MESA	$ 2,871,600	$ 1,690,000
CYPRESS	$ -	$ 211,840
DANA POINT	$ 470,236	$ -
HUNTINGTON BEACH	$ -	$ 635,955
IRVINE	$ 3,273,105	$ -
LAGUNA HILLS	$ -	$ 175,700
LAGUNA NIGUEL	$ 883,300	$ 1,621,962
NEWPORT BEACH	$ 726,810	$ 2,147,780
SANTA ANA	$ 2,572,875	$ -
TUSTIN	$ 824,688	$ 1,200,000
COUNTY OF ORANGE (OC PARKS)	$ -	$ 2,525,000
COUNTY OF ORANGE (OCWD)	$ -	$ 2,092,079

Source: OCTA; OCTA Environmental Cleanup Program

0 2.5 5
Miles

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11/20/2017

COMMITTEE TRANSMITTAL

December 11, 2017

To: Members of the Board of Directors

From: Laurena Weinert, Clerk of the Board

Subject: Measure M2 Environmental Mitigation Program Update

Regional Planning and Highways Committee Meeting of December 4, 2017

Present: Directors Do, Delgleize, Donchak, M. Murphy, and Nelson
Absent: Directors Spitzer and Steel

Committee Vote

This item was passed by the Members present.

Staff Recommendation

Receive and file as an information item.

December 4, 2017

To: Regional Highways and Planning Committee

From: Darrell Johnson, Chief Executive Officer

Subject: Measure M2 Environmental Mitigation Program Update

Overview

Measure M2 includes a program to deliver comprehensive mitigation for the environmental impacts of freeway projects in exchange for streamlined project approvals from the state and federal resources agencies. To date, the Environmental Mitigation Program has acquired conservation properties and provided funding for habitat restoration projects as part of the Natural Community Conservation Plan/Habitat Conservation Plan. On a parallel path, the Orange County Transportation Authority has developed a similar approach to work with the State Water Resources Control Board and the United States Army Corps of Engineers to obtain state and federal clean water permits to facilitate the implementation of the Measure M2 freeway projects as a co-benefit. A status report of these efforts and program update is presented.

Recommendation

Receive and file as an information item.

Background

Measure M2 (M2) includes an innovative comprehensive Environmental Mitigation Program (EMP) to address the biological impacts of M2 freeway projects. This was achieved through a Natural Community Conservation Plan/Habitat Conservation Plan (NCCP/HCP), approved by the California Department of Fish and Wildlife and the United States Fish and Wildlife Service (Wildlife Agencies). An endowment was also established for the maintenance and operation of the seven conservation properties (Preserves), as committed in the NCCP/HCP. Deposits began in March 2017 for the endowment that is anticipated to be funded over a ten to 12-year period. These actions allow for streamlined permitting of M2 projects.

On a parallel path, staff from the Orange County Transportation Authority (OCTA) and the California Department of Transportation (Caltrans) have been coordinating with the State Water Resources Control Board (State Board) and the United States Army Corps of Engineers (Corps), collectively referred to as Regulatory Agencies. This coordination has defined a process to utilize some of the same mitigation within the NCCP/HCP to also obtain state and federal clean water permits. This programmatic approach will further streamline the Regulatory Agencies permit process for the M2 freeway projects. It is anticipated that the Regulatory Agencies will issue these permits (and/or authorization letter) to OCTA and Caltrans in 2017. A status report on the program is presented.

Discussion

NCCP/HCP Update

The NCCP/HCP was approved by the Board of Directors (Board) at their meeting on November 28, 2016. In June 2017, the Wildlife Agencies issued the permits to OCTA. As a result, the M2 environmental process will be streamlined allowing OCTA to move forward with the M2 freeway projects (as described in the NCCP/HCP).

As part of the NCCP/HCP process, a $34.5 million endowment is required to be established to fund the long-term management of the Preserves. Payments began in March 2017. The second deposit into the endowment was made in August 2017, and a quarterly investment report was brought to the Board on November 13, 2017. Staff will continue to oversee and provide endowment updates to the Finance and Administration Committee and Environmental Oversight Committee (EOC) on a regular basis.

In compliance with the NCCP/HCP, resource management plans (RMPs) have been developed for each of the conservation properties within the Preserves. These Preserves are depicted in Attachment A. The RMPs provide guidelines for the management and monitoring of the Preserves in accordance with the goals and objectives outlined in the NCCP/HCP. Key components of the RMPs include guidance for ongoing protection, preservation, and adaptive management of the natural resources found within each Preserve.

In September 2017, five of the seven OCTA Preserve RMPs were finalized. These include: Ferber Ranch, Hafen, MacPherson, O'Neill Oaks, and Saddle Creek South. OCTA publicly released the remaining two Preserve RMPs (Aliso Canyon and Hayashi) on August 30, 2017. These RMPs were available for public review for a 90-day period through December 1, 2017. OCTA held two public meetings on October 5, 2017 and October 25, 2017, in Laguna Niguel and Brea to solicit public input, and a workshop at the regularly scheduled EOC meeting on October 4, 2017. The RMPs and comment forms are posted online at www.OCTA.net/RMP. OCTA anticipates finalizing these RMPs by mid-2018.

Clean Water Act Permits Update

The construction of the M2 freeway projects is anticipated to result in impacts to jurisdictional waters of the state and United States. These impacts will require that OCTA obtain Sections 401 and 404 clean water permits from the Regulatory Agencies, which will require mitigation. To maximize the benefits of the NCCP/HCP, OCTA is utilizing some of that same mitigation to obtain Regulatory Agencies' authorizations. These authorizations will enable OCTA to utilize the mitigation, as well as lay out a standard process for project level 401 and 404 permit issuance. Funding to cover the Regulatory Agency requirements in lieu of project-level permit funding was authorized by the Board on September 11, 2017. Staff anticipates these permits will be issued to OCTA and Caltrans in 2017.

OCTA will continue to manage the Preserves until a long-term manager(s) is in place. Staff will continue to monitor the progress of all restoration projects and provide status updates to the EOC until each project is implemented. Attachment B includes a more comprehensive list of EMP tasks to be implemented in 2018 and the coming years.

Summary

M2 includes an EMP that provides funding for programmatic mitigation to off-set impacts of the 13 freeway projects. To expedite the delivery of the freeway projects, this program was initiated to implement early project mitigation through property acquisition and habitat restoration. This program is administered through a NCCP/HCCP, which was completed and approved by the Board in November 2016. To maximize the benefits of the NCCP/HCP, OCTA is utilizing some of that same mitigation to obtain clean water act permits. Staff anticipates these permits will be issued to OCTA and Caltrans in 2017. A status report on the program is presented.

Attachments

A. OCTA NCCP/HCP Preserves and Funded Restoration Projects
B. Environmental Mitigation Program Ongoing Tasks

Prepared by:

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Approved by:

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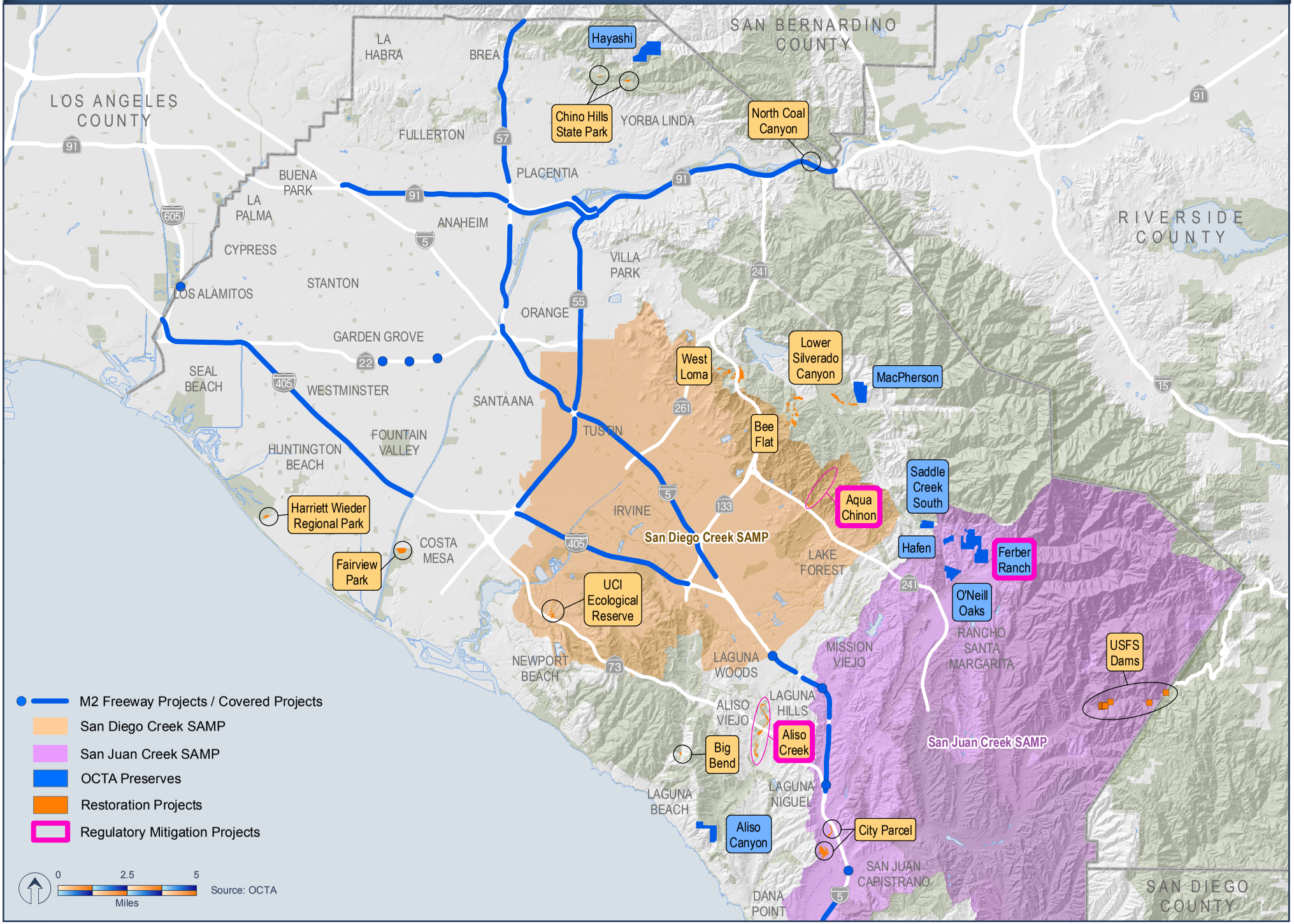
OCTA NCCP/HCP Preserves and Funded Restoration Projects



8/14/2017

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ATTACHMENT A

ATTACHMENT B

Environmental Mitigation Program Ongoing Tasks

Natural Community Conservation Plan/Habitat Conservation Plan (NCCP/HCP)

- Implement the process to utilize the NCCP/HCP mitigation/permits for the Measure M2 (M2) freeway projects during construction;
- Finalize the Aliso Canyon and Hayashi resource management plans (RMPs);
- Execute conservation easements, seek appropriate long-term land managers, and identify entities to assume the title for the Preserves;
- Continue to coordinate with the endowment fund manager and provide updates to the Finance and Administration Committee and the Environmental Oversight Committee;
- Develop annual reports to document environmental permitting for the M2 freeway projects and endowment funds;
- Prepare and develop annual biological monitoring reports for preserve activities and funded restoration projects;
- Identify and fund new restoration projects to satisfy remaining mitigation requirements of NCCP/HCP (one species may need additional mitigation);
- Revisit endowment to determine if the earnings and deposit schedule need updates;
- Revisit the seven RMPs on an as-needed basis to determine any changed circumstances warranting updates to the RMPs; and
- Work with the environmental community and interested parties on public access opportunities.

Clean Water Act Permitting

- Obtain Section 401 and 404 authorizations from the Regulatory Agencies*;
- Execute an agreement between the Orange County Transportation Authority (OCTA), the United States Army Corps of Engineers (Corps), and a fund manager to manage and disperse a onetime payment of funds on behalf of OCTA for the long-term maintenance of the restoration sites;
- Continue to coordinate with the land owners, Corps, State Water Resources Control Board, and the Wildlife Agencies** to finalize or amend the land protection documents for the restoration sites;
- Ensure the restoration projects meet success criteria and performance standards;
- Record the legal transfer of responsibilities of the site to the land manager;
- Request a letter from the Corps to release OCTA of further obligations on the restoration projects.

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*Regulatory Agencies - State Water Resources Control Board and the Corps

**Wildlife Agencies - California Department of Fish and Wildlife, and the United States Fish and Wildlife Service

COMMITTEE TRANSMITTAL

December 11, 2017

To: Members of the Board of Directors

From: Laurena Weinert, Clerk of the Board

Subject: Interstate 405 Improvement Project Update

Regional Planning and Highways Committee Meeting of December 4, 2017

Present: Directors Do, Delgleize, Donchak, M. Murphy, and Nelson
Absent: Directors Spitzer and Steel

Committee Vote

Following the discussion, no action was taken on this receive and file as an information item.

Staff Recommendation

Receive and file as an information item.

December 4, 2017

To: Regional Planning and Highways Committee

From: Darrell Johnson, Chief Executive Officer

Subject: Interstate 405 Improvement Project Update

Overview

The Orange County Transportation Authority is currently underway with the implementation of the Interstate 405 Improvement Project. This report provides a project update.

Recommendation

Receive and file as an information item.

Background

The Orange County Transportation Authority (OCTA), in cooperation with the California Department of Transportation (Caltrans), and the cities of Costa Mesa, Fountain Valley, Huntington Beach, Seal Beach, and Westminster, is implementing the Interstate 405 (I-405) Improvement Project between State Route 73 (SR-73) and Interstate 605 (I-605) (Project). The Project will add one general purpose lane from Euclid Street to I-605, consistent with Measure M2 Project K, and will add an additional lane in each direction that will combine with the existing high-occupancy vehicle lane to provide dual express lanes in each direction of I-405 from SR-73 to I-605, otherwise known as the 405 Express Lanes.

On November 14, 2016, the OCTA Board of Directors (Board) awarded the design-build (DB) contract to OC 405 Partners (OC 405). OCTA executed the DB contract with OC 405 and issued Notice to Proceed (NTP) No. 1 on January 31, 2017. NTP No. 1 was a limited NTP for mobilization, design, and administrative activities. On July 26, 2017, the Transportation Infrastructure Finance and Innovation Act loan agreement was executed between OCTA and the United States Department of Transportation. On July 27, 2017, OCTA issued NTP No. 2 to OC 405. NTP No. 2 was a full NTP for all activities, including construction.

Discussion

A number of activities are ongoing as the initiation of construction approaches. Final design is progressing and is approximately 50 percent complete overall. The final baseline schedule, a detailed schedule of design and construction activities, was recently submitted by the design-builder to OCTA and is under review. The final baseline schedule is anticipated to be approved late this year or early next year.

Right-of-Way (ROW) Acquisition

Construction of the Project will impact 305 properties, including 181 residential properties, 79 commercial/industrial properties, 44 public properties, and one railroad property. All 305 properties are identified as partial acquisitions. The real property requirements are comprised of a combination of partial fee acquisitions, permanent easements, temporary construction easements (TCE), and access control rights needed to construct the proposed highway and express lane improvements for the Project. The partial fee acquisitions, permanent easements, and TCEs are required for roadway and bridge construction, soundwalls and retaining walls, drainage systems, and for the installation of above-ground and underground facilities, including electrical, telecommunication, water, sewer, gas, and storm drain systems.

The ROW acquisition program is currently on schedule. Of the 305 total parcels needed, the following summarizes the status of the ROW acquisition:

- 274 notices of decision to appraise sent
- 191 offers presented
- 157 agreements reached (82 percent of offers presented, 51 percent of parcels needed)

The first resolutions of necessity were approved by the Board on October 23, 2017.

Utility Relocations

There are 113 utility conflicts identified for the Project. OCTA is coordinating with the 22 impacted utility companies to identify issues and work to resolve them. There are several utility relocation challenges that staff continues to focus on as utilities are a shared risk between OCTA and OC 405.

Ellis Avenue/Euclid Street Interchange Area

The Project originally proposed to provide a new on-ramp for eastbound traffic on Ellis Avenue to southbound I-405 in the City of Fountain Valley. The new on-ramp would necessitate the acquisition of permanent and temporary property rights from the Orange County Sanitation District (OCSD).

OCTA staff has been working closely with OCSD staff for over two years. On August 30, 2016, OCTA and OCSD executed a cooperative agreement which outlined the commitments, responsibilities, and obligations of the respective parties as it related to the Project. On August 12, 2017, OCTA presented OCSD with an offer to acquire property rights needed for the Project. On September 18, 2017, OCSD provided OCTA with a written response to OCTA's offer which outlined impacts OCSD believed the new on-ramp may have on its facilities.

Based on OCSD's written response, OCTA has developed an alternative ramp design that will provide traffic operational benefits on Ellis Avenue without impacts to OCSD's property rights. The alternative ramp design eliminates the new on-ramp and instead improves the existing ramp configuration.

The new on-ramp as originally proposed was included as part of a memorandum of understanding (MOU) between OCTA and the cities of Costa Mesa, Fountain Valley, and Huntington Beach for agency responsibilities for implementing the consensus recommendation for the Garfield-Gisler Crossing over the Santa Ana River. The new on-ramp was identified as a City of Fountain Valley action, but under the lead of Caltrans or OCTA. This MOU essentially eliminated the Garfield-Gisler Crossing over the Santa Ana River from the Master Plan of Arterial Highways with an understanding that certain improvements would be made by the three cities in the general area. However, the MOU also notes that the list of improvements was not meant to be prescriptive and that if an alternative improvement can be identified that provides acceptable operations, that alternative can be implemented as a substitute to the original improvement identified in the MOU. The alternative ramp design provides acceptable operations pursuant to the thresholds noted in the MOU.

To accommodate the alternative ramp design, a directive letter was issued to the design-builder to implement this change. The directive letter will be followed by meetings with OC 405 to discuss the change in the scope of work and OC 405's cost proposal. Some costs such as redesign and permitting efforts will be additional costs; however, other costs such as construction costs will be reduced. Staff believes the alternative ramp design will result in an overall cost savings to the Project. Specific cost savings cannot be assessed until negotiations with OC 405 are conducted. After negotiations with

OC 405 are complete, a contract change order (CCO) will be executed to formally incorporate the alternative ramp design into the contract. This alternative ramp design is in the best interest of the Project at this time in order to minimize costs, reduce Project risks in this area, and allow design changes to be incorporated to meet the overall Project delivery schedule.

Toll Lanes System Integrator Procurement

On August 28, 2017, the Board authorized the release of the toll lanes system integrator request for proposals. Contract award is anticipated in February 2018. The toll lanes system integrator will work closely with the design-builder to deliver fully functional express lanes upon opening in 2023.

Litigation

OCTA, Caltrans, and the City of Long Beach have executed a settlement agreement and it is anticipated that the City of Long Beach will dismiss its case in mid-December. Efforts at settlement with the City of Seal Beach have thus far been unsuccessful. A hearing on the merits of the City of Seal Beach's allegations is anticipated for early 2018.

Public Outreach

OCTA is committed to minimizing construction impacts and keeping the local communities, commuters, and regional stakeholders informed during the Project. When community members are notified of construction needs and benefits, constituents typically are more tolerant of construction. Advance notification of impacts and communicating with the public will play an instrumental role in identifying and resolving sensitive issues before becoming critical.

A critical tool to address construction impacts is the multi-faceted Project public awareness program. OCTA has established a solid communications foundation for the construction phase of the Project in the past year by providing 47 project briefings to city councils, civic and community organizations, large employers, chambers of commerce, homeowner associations, and other key stakeholders. Staff has participated in 22 community events such as the Rossmoor Winter Festival, the Westminster Art Walk, various back-to-school nights, Garden Grove and Costa Mesa Summer Concert Series, as well as the Leisure World Community Expo. Multilingual staff assisted at such events as needed and helped conduct more than 1,200 one-on-one business visits around the Project area to spread Project awareness and provide a contact should the business owners or employees have questions once construction commences. Multilingual materials are available at all events and briefings. Grassroots outreach during

construction will continue with neighborhood meetings, flier distribution, and mobile public relations pop-up events using the Project-branded van.

OCTA staff meets regularly with local city staff and other partner agencies to continue to plan and implement the Project. OCTA will continue to host two task force meetings as needed – one with I-405 city staff, local, state, and federal delegation staff representatives, as well as a second group comprised of large employers, destinations, school districts, and other stakeholders. These meetings will continue throughout construction to keep these groups engaged.

OCTA continually strives to keep pace with technology and to be innovative in its public outreach tactics. Staff developed an interactive map for the Project website which includes closure and detour information to help guide the traveling public during construction, as well as provide general facts on bridges and intersections along the 16-mile stretch. In the near future, the interactive map will be connected to Waze, the popular, free navigation app, which is updated by the user with real-time traffic information. Staff is working with Waze to incorporate the Project's closures and detours into the system proactively. This is the first OCTA freeway construction project to utilize this tool.

A Project mobile app is also in development. The free app will provide up-to-date Project information such as schedule, closures and detours, milestones, overall benefits, and allow the user to view the interactive map, interesting photos and videos from the field, contact the outreach team, as well as experience the configurations and aesthetics of the bridges in every angle via a virtual reality component. This app is another innovative first for an OCTA freeway construction project. Lastly, OCTA recently joined Nextdoor as a partner agency for the Project. Nextdoor is a targeted neighborhood information sharing platform. With this tool, the I-405 team will have yet another mode in which to engage in two-way communication with residents, address questions and concerns, and provide Project information to the community.

Next Steps

Staff will continue to work closely with the design-builder to prepare for the start of construction early next year. This involves completing portions of the final design, utility relocation coordination, and obtaining permits and other requirements necessary to begin construction. Additionally, the ROW acquisition program will continue as planned.

A groundbreaking ceremony is anticipated for January 26, 2018.

Summary

The Project is rapidly proceeding towards construction. Currently, final design, ROW acquisition, public outreach, and other activities are in process to ensure readiness for the upcoming construction phase of the Project.

Attachment

None.

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Approved by:

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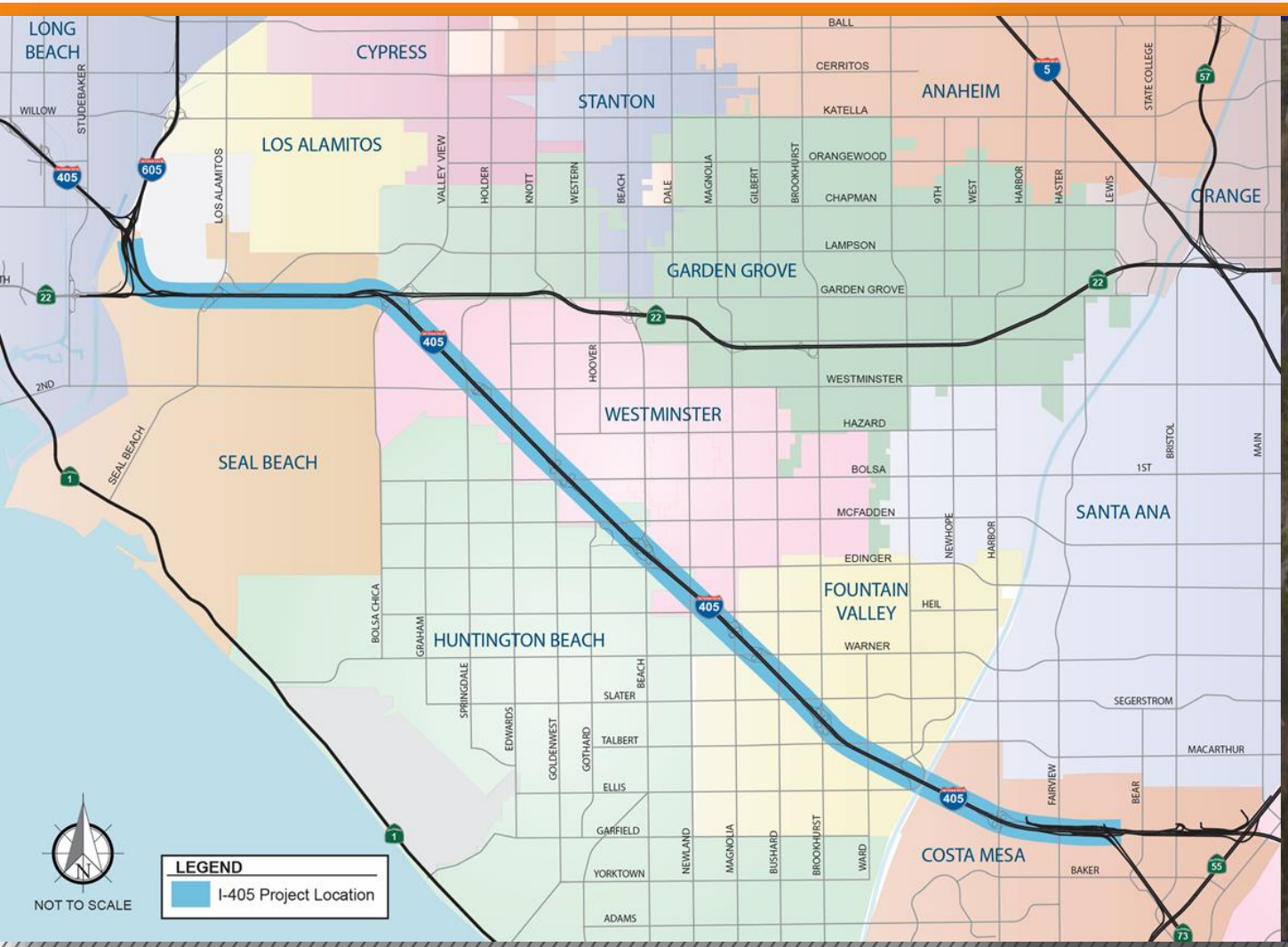
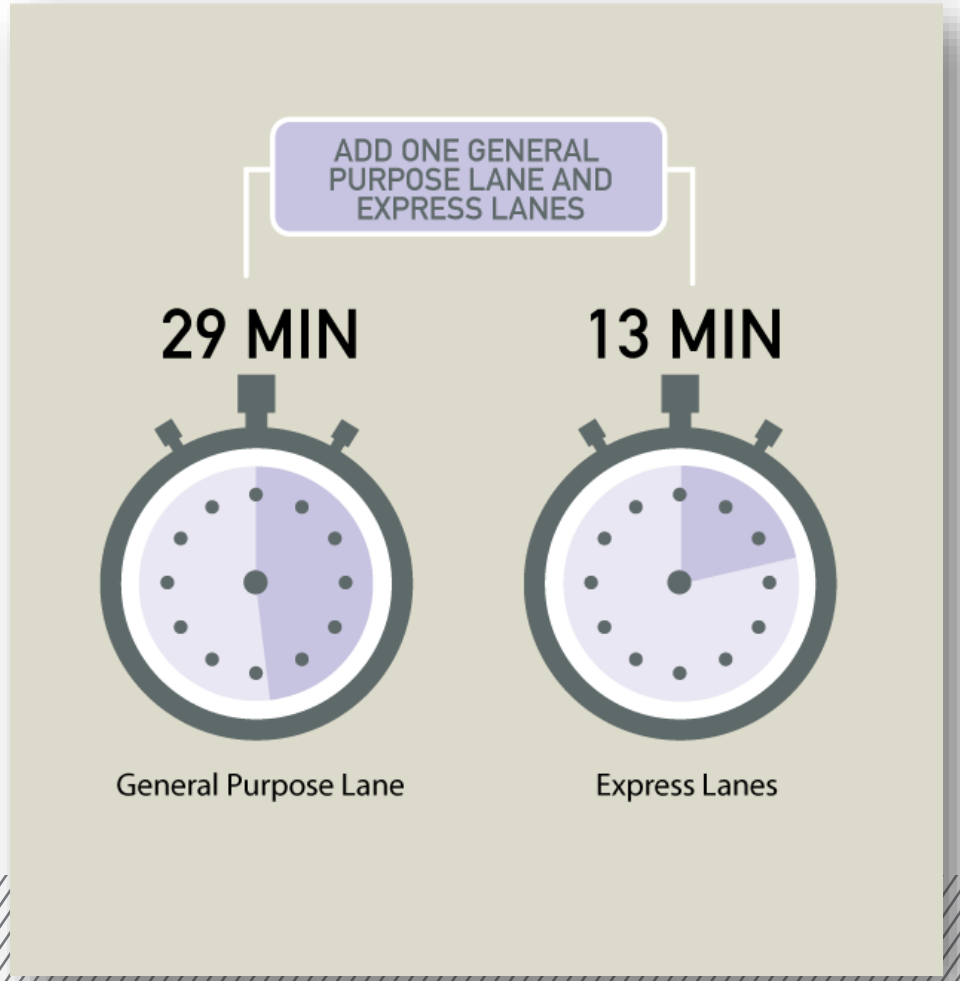
Interstate 405 Improvement Project Update

Project Location and Key Features



Project Travel Time Benefits

2040 travel time from State Route 73 to Interstate 605



Background

- On November 14, 2016, the Orange County Transportation Authority (OCTA) Board of Directors (Board) awarded the design-build (DB) contract to OC 405 Partners (OC 405)
- On January 31, 2017, OCTA executed the contract with OC 405 and issued Notice to Proceed (NTP) No. 1
- On June 26, 2017, the Board approved the Transportation Infrastructure Finance and Innovation Act loan
- On July 27, 2017, OCTA issued NTP No. 2 to OC 405

Project Update

- Design-builder currently finalizing the detailed construction schedule with construction anticipated to begin in early 2018
- Design-builder currently progressing on the project design and other items needed to begin construction
- On August 28, 2017, toll lanes system integrator request for proposals was released, with contract award targeted for early 2018
- On October 24, 2017, OCTA, the California Department of Transportation, and the City of Long Beach executed a settlement agreement related to ongoing litigation
- Right-of-way, utility relocations, and other risk items proceeding

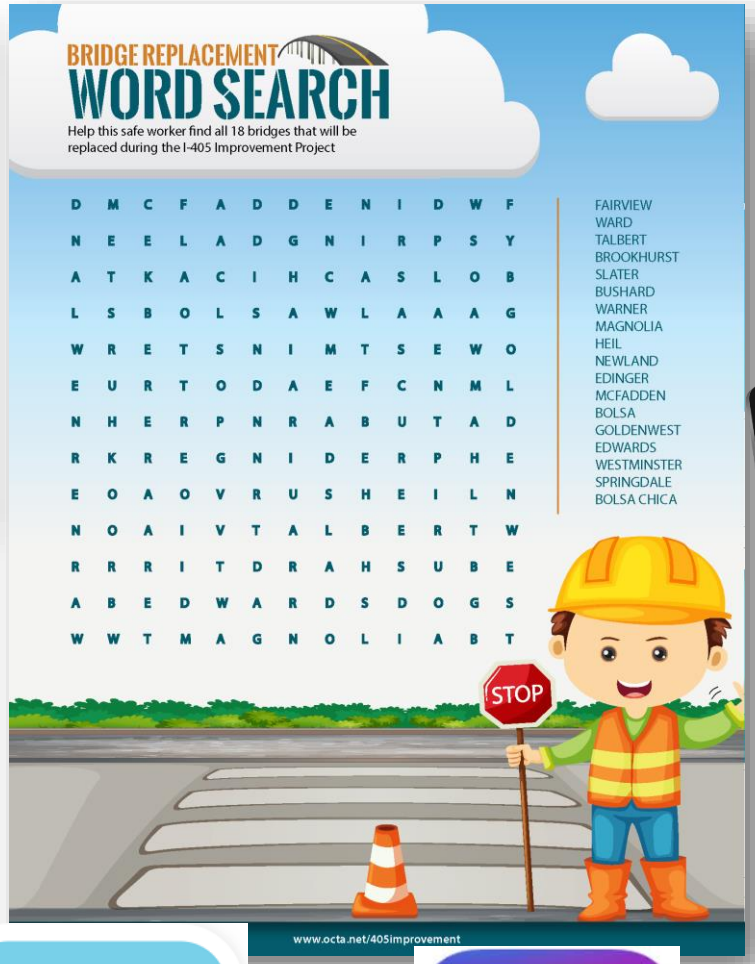
Ellis Avenue/Euclid Street Interchange

- Original design included a new on-ramp from eastbound Ellis Avenue to southbound Interstate 405
- Due to impacts Orange County Sanitation District (OCSD) identified to its facilities, an alternative ramp design was developed that will provide traffic operational benefits on Ellis Avenue without impacts to OCSD property
- Alternative ramp design eliminates the new on-ramp and instead improves the existing ramp configuration
- Alternative ramp design is consistent with the requirements of the Garfield-Gisler Memorandum of Understanding between OCTA and the cities of Costa Mesa, Fountain Valley, and Huntington Beach
- Directive letter to implement the change has been issued to OC 405, with a negotiated contract change order to follow
- Alternative ramp design reduces costs and Project risks in this area

Preliminary Bridge Construction Timeline

Public Outreach Update

Nextdoor



waze

Next Steps

Activity/Milestone	Completion Date
DB Implementation	
Groundbreaking ceremony	January 26, 2018
Beginning of construction	Early 2018
Design and construction	2017-2023
Project, including 405 Express Lanes, opens	2023
Toll Lanes System Integrator Procurement	
Request for proposals released	August 28, 2017
Award contract	Early 2018

December 11, 2017

To: Members of the Board of Directors

From: Darrell Johnson, Chief Executive Officer

Subject: Approval to Release Invitation for Bids for Construction of the OC Streetcar Project

Overview

On August 10, 2017, the Orange County Transportation Authority Board of Directors approved the release of a request for pre-qualification of contractors for construction of the OC Streetcar project. With the pre-qualification process underway and plans, specifications, and estimates completed for the OC Streetcar project, staff is seeking Board of Directors' approval to issue an invitation for bids for construction of the OC Streetcar project.

Recommendation

Approve the release of Invitation for Bids 7-1904 for construction of the OC Streetcar project.

Discussion

The Orange County Transportation Authority (OCTA), in coordination with the City of Santa Ana and the City of Garden Grove, is implementing a new east-west double track modern streetcar in Orange County between the Santa Ana Regional Transportation Center in the City of Santa Ana, and the Harbor Boulevard/Westminster Boulevard intersection in the City of Garden Grove (Project). The purpose of the Project is to improve transit connectivity and accessibility, increase transit options, relieve congestion, and provide benefits to the traveling public.

Construction of the 4.15-route-mile (8.3-track-mile) modern streetcar line will involve complex and specialized work for several elements, including the installation of embedded track in streets, overhead electrical power supply, stop shelter canopies, bridges, and a maintenance and storage facility (MSF).

The Project includes ten streetcar stops in each direction (four shared center platforms and six side platforms in each direction for a total of 16 platforms).

Each stop includes a custom canopy shelter, benches, leaning rails, trash cans, lighting, ticket vending machines, which will be supplied separately, changeable message signs, video cameras, and a public address system. Platforms will be 14 inches high to enable level boarding. Also included are the overhead catenary system and installation of new traffic signals and transit signal priority.

The Project will include a new MSF that will be constructed to accommodate eight modern streetcars, administration, operations, vehicle maintenance, parts storage, and maintenance-of-way. Secured exterior vehicle storage, including a wye-track for turning vehicles end-for-end, a free-standing drive-through streetcar wash, employee parking, and fire and delivery access will also be included on-site.

The Project design is complete and ready to advertise for construction.

Procurement Approach

OCTA's procurement policies and procedures require that the OCTA Board of Directors (Board) approve all invitations for bids (IFB) over $1,000,000.

On August 10, 2017, the Board approved the use of a contractor pre-qualification process for the IFB. The purpose of the pre-qualification was to develop a pool of potential bidders that are determined to be responsible and qualified to provide the specialized work necessary for the Project to help ensure that the prime contractor awarded the construction contract has the necessary capacity and experience to undertake the construction.

The pre-qualification of contractors is being accomplished with the prime contractors completing and submitting the pre-qualification questionnaire and supporting documentation. The process of pre-qualifications has begun, and submissions will be accepted through December 19, 2017. Only those contractors that are deemed qualified will be invited to submit a bid on the Project.

Staff is requesting approval from the Board to release IFB 7-1904 for construction of the Project (Attachment A). The IFB will be released upon Board approval. The award will be made to the lowest responsive, responsible bidder in accordance with the state law.

Fiscal Impact

The engineer's estimate of bid items for the Project is $141,640,840. The Project was approved in OCTA's Fiscal Year 2017-18 Budget, Capital Programs Division, Account 0051-9017-TS010-Z10-Z50, and is funded with a combination of federal, state, and local funds.

Summary

Board of Directors' approval is requested to release Invitation for Bids 7-1904 for construction of the OC Streetcar project.

Attachment

A. Draft Invitation for Bids 7-1904, Construction of the OC Streetcar Project

Prepared by:

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DECEMBER 11, 2017 BOARD AGENDA

ITEM 14 - APPROVAL TO RELEASE INVITATION FOR BIDS FOR CONSTRUCTION OF THE OC STREETCAR PROJECT

ATTACHMENT A – INVITATION FOR BIDS 7-1904

IS AVAILABLE FOR VIEWING UNDER “MEETING DETAILS” AT:

https://octa.legistar.com/Calendar.aspx

COMMITTEE TRANSMITTAL

December 11, 2017

To: Members of the Board of Directors

From: Laurena Weinert, Clerk of the Board

Subject: Proposed State Route 241/91 Express Lanes Tolled Connector Update

Executive Committee Meeting of December 4, 2017

Present: Chairman Hennessey, Vice Chair Bartlett, and Directors Do, Donchak, Murray, Nelson, and Shaw
Absent: None

Committee Vote

This item was passed by the Members present.

Committee Recommendations

A. Direct staff to request Transportation Corridor Agencies to defer all work on the State Route 241/91 Express Lanes connector given the regional mobility impacts.

B. Direct staff to work with the Riverside County Transportation Commission to evaluate opportunities to advance State Route 91 corridor congestion relief projects.

December 4, 2017

To: Executive Committee

From: Darrell Johnson, Chief Executive Officer

Subject: Proposed State Route 241/91 Express Lanes Tolled Connector Update

Overview

The Transportation Corridor Agencies, in coordination with the Orange County Transportation Authority and the California *Department* of Transportation, is finalizing the environmental phase of a proposed project to construct a tolled connector between the State Route 241 toll road and the 91 Express Lanes. Technical studies indicate the proposed project could increase traffic congestion for drivers on State Route 91 in the general-purpose lanes and 91 Express Lanes during the evening commute period, and increase travel time for State Route 241 commuters. Given these regional mobility issues, recommendations are presented that would focus project development efforts on improving the State Route 91 general-purpose capacity and defer any further work on the proposed connector.

Recommendations

A. Direct staff to request Transportation Corridor Agencies to defer all work on the State Route 241/91 Express Lanes connector given the regional mobility impacts.

B. Direct staff to work with the Riverside County Transportation Commission to evaluate opportunities to advance State Route 91 corridor congestion relief projects.

Background

The proposed project would connect State Route 241 (SR-241) directly with the 91 Express Lanes approximately two miles west of the Orange County/ Riverside County line. This location overlays the transition zone between State Route 91 (SR-91) and the 91 Express Lanes, where commuters can switch lanes (mixing bowl).

This project was originally included in the 1991 SR-241 environmental document as a non-tolled, high-occupancy vehicle (HOV) connector between the SR-241 and SR-91 corridors. Prior planning in Orange and Riverside counties focused on adding carpool lanes to SR-91, and the proposed connector, as envisioned at that time, would provide an SR-241 direct carpool connection to the regional HOV system.

Changes in state law in 1989 allowed the California Private Transportation Company to secure franchise rights from the California Department of Transportation to operate a toll facility, the 91 Express Lanes, within the median of SR-91, and offer toll discounts to carpools. The planned SR-91 carpool lanes in Orange County were replaced by the 91 Express Lanes under the private franchise. The franchise included severe restrictions on adding new SR-91 capacity ("non-compete clause"). To eliminate this restriction, the Orange County Transportation Authority (OCTA) acquired the 91 Express Lanes facility and franchise rights in 2002 using special legislation, which terminated the non-compete provision preventing the implementation of improvements in the SR-91 corridor.

Following that acquisition, OCTA committed to making congestion-relief improvements in the SR-91 corridor in partnership with the Riverside County Transportation Commission (RCTC). This decision ensured, and continues to ensure, that those who choose not to pay a toll still receive a benefit from the 91 Express Lanes. To date, more than $28 million in net toll revenue has been invested in the SR-91 corridor, including funding the addition of one eastbound general-purpose lane. Further corridor improvements were also made between SR-241 and State Route 55 (SR-55) as part of the Measure M Freeway Program, as well as in Riverside County. In addition, OCTA has committed $748.7 million in net 91 Express Lanes toll revenue through the Measure M Next 10 Plan to fund future projects.

The Transportation Corridor Agencies (TCA) currently proposed project differs significantly from the original HOV connector concept in several respects:

- the project will be a tolled connector where tolls can change as often as every five minutes depending on traffic volumes;
- the proposed operating concept does not include consideration for carpools to utilize the connector without paying a toll;
- vehicles driving on the north-to-east connector will merge onto the OCTA 91 Express Lanes to access the recently opened RCTC 91 Express Lanes for trips to Interstate 15 south and points east.

The rationale for advancing the proposed connector project is predicated on relieving evening congestion on the northbound SR-241 link to the SR-91. There are currently bi-directional (northbound SR-241 to eastbound SR-91, and westbound SR-91 to southbound SR-241) toll road to general-purpose lane connectors between the two facilities. Motorists on SR-241 traveling toward Riverside during the evening rush hour experience significant delays at the SR-241/SR-91 interchange. The backup is due to high volumes on the SR-241 that exceed the capacity of SR-91 general-purpose lanes, and the concept for the project is to shift a portion of SR-241 traffic directly onto the 91 Express Lanes.

OCTA and TCA jointly embarked on studying this project with the agreement that the agencies would work together to ensure that each agency's needs and concerns were understood and addressed, and to also ensure the project would provide regional mobility benefits. OCTA has participated in the project throughout the development process, provided input, and sought information regarding the proposed project.

In 2014, OCTA prepared a high-level analysis of the project and concluded that while providing additional connectivity and accessibility, there were minimal regional benefits. Additionally, governance of the proposed connector's operations, to minimize impacts to the SR-91 corridor, would be critical to the success of the project.

This analysis was followed by several detailed studies prepared by TCA, including a supplemental environmental document and accompanying project report, as well as an investment grade traffic and revenue (T&R) study. OCTA has provided comments on the environmental document (Attachment A) and is assessing the T&R Study through a peer review process.

Discussion

As OCTA and TCA have prepared additional studies on the proposed project, significant traffic issues have been identified. OCTA is concerned about the merits of the proposed connector given the increased congestion it would cause for commuters on the SR-91 corridor. The Traffic Analysis Report (Report) (Attachment B) was published as part of the draft supplemental environmental report review process. The Report suggests the project has mixed impacts on the corridor when considering traffic conditions in both directions. The Report indicates that westbound SR-91 conditions, east of the mixing bowl area, can improve with the proposed project.

However, in the eastbound direction, the proposed connector would result in additional congestion on SR-91 due to increase in demand. Notably, the evening peak eastbound SR-91 general-purpose lane conditions degrade as measured by traffic speed and level of service.

Further, the Report identifies additional congestion impacts on the existing northbound SR-241 to eastbound SR-91 connector, which is directly counter to TCA's goal for advancing the project.

2017	AM Westbound Peak Period		PM Eastbound Peak Period	
Metrics	No Project	With Project	No Project	With Project
Average speed (mph)	34.5	40.3	38.6	37.6
Average delay (minutes/vehicle)	6.8	4.9	5.3	5.7

2040	AM Westbound Peak Period		PM Eastbound Peak Period	
Metrics	No Project	With Project	No Project	With Project
Average speed (mph)	34.0	37.8	45.1	46.9
Average delay (minutes/vehicle)	7.0	5.6	3.4	3.1

mph – miles per hour

The Report shows positive benefits with the project in the future. The 2040 horizon year analysis assumes other key improvements including buildout of the RCTC 91 improvement and additional capacity on SR-91 between SR-241 and SR-71.

Because the proposed project is located before the mixing bowl (for eastbound travel), traffic entering the 91 Express Lanes from the proposed connector could occupy most of the capacity in the 91 Express Lanes. This means fewer vehicles from the general-purpose lanes could enter the 91 Express Lanes, eliminating an option for SR-91 commuters and an opportunity to relieve SR-91 general-purpose lanes congestion

Aside from the increased traffic congestion implications in the near-term, the need for an operational governance was highlighted in the 2014 staff report to the Board of Directors (Board) and communicated to TCA to balance the interaction of 91 Express Lanes, RCTC 91 Express Lanes, and SR-241. To date there has been no meaningful progress on how this arrangement could be structured, if at all. OCTA entered into a similar agreement with RCTC prior to the extension of the 91 Express Lanes to address all issues related to operations, tolling, and impacts to regional mobility. It is premature at this time for TCA to advance the development of this project any further until an agreement can be reached on the operational issues.

Potential Solutions

One potential solution to the issues identified above would be to allow for more SR-91 general-purpose lanes traffic to enter the 91 Express Lanes by raising the tolls on the proposed direct connector and shifting SR-241 demand back to the existing connector. However, this solution could reduce the effectiveness of the proposed project and undermine the project's key purpose.

Another option would be to increase the tolls on the 91 Express Lanes to create more capacity in the mixing bowl area for traffic entering from SR-241. This option has similar implications on the SR-91 general-purpose lanes (i.e., underutilized 91 Express Lanes between SR-55 and SR-241 and more congestion on SR-91, which is counter to OCTA's mission in acquiring the 91 Express Lanes). Another complicating factor is that any of these operational considerations must account for receiving capacity on the Riverside County side of the project, which further underscores the complex operational challenges of the proposed project.

Still another concept is for TCA to consider using congestion management pricing on SR-241. This could distribute the peak demand on the SR-241, and, in doing so, reduce the severe congestion in the peak period. However, this could also spread demand to other corridors during the same peak period.

Another solution to SR-241 congestion would be to implement the planned widening of SR-91 between SR-241 and State Route 71 (SR-71). This project would add a sixth general-purpose lane and benefit both SR-91 and SR-241 commuters, including those who do not wish to use the 91 Express Lanes. The project spans both Orange and Riverside counties and requires coordination with RCTC. The widening project is included in the SR-91 Implementation Plan as a future year improvement because of financial constraints.

On September 13, 2017, the leadership of the OCTA and TCA Boards of Directors and Board sub-committees met regarding the project. At this meeting, the above issues were discussed and OCTA sent a letter to TCA on follow-up actions (Attachment C). A letter in response from TCA on the follow-up activities was received on November 13, 2017 (Attachment D), and a teleconference to discuss the issues was scheduled for November 29, 2017.

TCA has indicated that the project is beneficial and operational issues can be addressed through further analyses. TCA is continuing the project development activities while OCTA's questions remain unanswered, and there has not been any progress on how an operational arrangement to ensure no harm to the SR-91 corridor could be structured. Lastly, on November 28, 2017, OCTA was copied on a letter from RCTC to TCA expressing concern with impacts of the project on the 91 corridor and asking the TCA to defer the project (Attachment E).

Accordingly, OCTA is concerned if the present course of action is advisable and believes a change in direction is necessary.

Summary

Technical studies prepared for the proposed SR-241/91 Express Lanes direct connector indicate the project could harm regional mobility by increasing congestion for evening commuters heading eastbound on the SR-91 general-purpose lanes. The studies indicate there could be long-term marginal benefits. The project is in an area with complex operational considerations where RCTC and OCTA are jointly attempting to optimize general-purpose lanes and 91 Express Lanes traffic. Additionally, there are other options available to address the TCA's SR-241 congestion issue. Therefore, staff recommends deferring any work on the proposed project for an indefinite period, and instead focus on improving the SR-91 mainline with an additional general-purpose lane capacity between SR-241 and SR-71. This will require a partnership with RCTC for this improved intercounty connection. With OCTA Board direction, staff will initiate discussions with TCA on project deferral and RCTC on next steps.

Attachments

A. Letter to Ms. Smita Deshpande, Generalist Branch Chief, Caltrans - District 12, from Dan Phu, Environmental Programs Manager, Orange County Transportation Authority, dated January 9, 2017, Draft Supplemental Environmental Impact Report/Environmental Impact Statement (SCH. 19890104410) for the State Route 241/State Route 91 Tolled Express Lanes Connector Project (Project No. 1200020097)
B. Draft Project Report, To Authorize Public Release of the Draft Supplemental Environmental Document
C. Letter to Mr. Mike Kraman, Chief Executive Officer, Transportation Corridor Agencies from Darrell Johnson, Chief Executive Officer, Orange County Transportation Authority, dated September 27, 2017
D. Letter to Mr. Darrell Johnson, Chief Executive Officer, Orange County Transportation Authority from Michael A. Kraman, Chief Executive Officer, Transportation Corridor Agencies, dated November 13, 2017, 241/91 Express Connector Follow-Up
E. Letter to Mr. Michael A. Kraman, Chief Executive Officer, Transportation Corridor Agencies, from Anne Mayer, Executive Director, Riverside County Transportation Commission, dated November 28, 2017, SR-241/SR91- Express Lanes Connector Project

Prepared by:

Kia Mortazavi
Executive Director, Planning
(714) 560-5741

ATTACHMENT A

OCTA

AFFILIATED AGENCIES

Orange County Transit District

Local Transportation Authority

Service Authority for Freeway Emergencies

Consolidated Transporation Service Agency

Congestion Management Agency

Service Authority for Abandoned Vehicles

January 9, 2017

Ms. Smita Deshpande
Generalist Branch Chief
Caltrans-District 12, "Attn: 241-91 DSEIR/EIS Comment Period"
1750 East Fourth Street, Suite 100
Santa Ana, CA 92705

Subject: Draft Supplemental Environmental Impact Report/Environmental Impact Statement (SCH. 1989010410) for the State Route 241/State Route 91 Tolled Express Lanes Connector Project (Project No. 1200020097)

Dear Ms. Deshpande: Smita

Thank you for providing the Orange County Transportation Authority (OCTA) with the Draft Supplemental Environmental Impact Report/Environmental Impact Statement (DSEIR/S) for the State Route 241/State Route 91 Tolled Express Lanes Connector Project (Project). The following comments are provided for your consideration:

- On page 2-23, Section 2.2.1.2 'Permanent Project Features,' subsection 'TSM/TDM' the proposed Project is stated "to have dynamic traffic technology (toll pricing based on express lanes demand)." The analysis in the DSEIR/S did not address tolling and potential economic implications. OCTA recommends further analysis on tolling under applicable environmental factors analysis.

- On Page 5-3, Table 5.1 'Comments Received During Scoping,' states "Toll operations are being coordinated between F/ETCA, OCTA, and RCTC and are evaluated in a separate Concept of Operations report." OCTA recommends including this throughout the DSEIR/S, as applicable.

- The opening year analysis should be redone to reflect the actual opening year of 2020 rather than 2017. While Section 3.5.3.2 provides an explanation that the differences in traffic operations are nominal between 2017 and 2020, given the SR-91 Corridor Improvement Project (CIP) is scheduled to open in 2017, a thorough 2020 analysis would be appropriate.

- Given the complex nature of having multiple tolled facilities operated by different agencies, OCTA suggests that the analysis in the environmental document be updated to include traffic volume data anticipated to be available in Spring 2017 with the opening of the CIP. This would help refine the existing, opening year, and 2040 conditions analysis (throughput, speeds, and travel time).

- It appears that the environmental document had not analyzed weaving impacts along the SR-91 at the confluence of the SR-241 Express Connector merge/diverge, the OCTA 91 Express Lanes, and the RCTC 91 Express Lanes. Therefore, a more detailed weaving analysis would be appropriate.

- It appears that the complex nature of the multiple tolling options (including dynamic pricing) for the SR-241, the SR-241 Express Connector, the OCTA 91 Express Lanes, and the RCTC 91 Express Lanes are not adequately discussed with respect to the traffic impacts. These should be explored in detail.

- OCTA understands that there are complementary concept of operations studies (con-ops) underway. Some of the appropriate results from the con-ops studies should be integrated into this environmental document.

- It appears there needs to be a more thorough analysis of the construction impacts on the OCTA 91 Express Lanes, including traffic impacts, toll and revenue implications.

Thank you for providing OCTA the opportunity to review this item. Throughout the development of this proposed project, we encourage continued communication with OCTA on the matters discussed herein. If you have any questions or comments, please contact me by phone at (714) 560-5907 or by email at dphu@octa.net.

Sincerely,

Dan Phu
Environmental Programs Manager

c: Valarie McFall, TCA

ATTACHMENT B

12-Ora-241-PM 36.1/39.1
12-Ora-91-PM 14.7/18.9
08-Riv-91-PM 0.0/1.5
EA 0K9700 – PN 1200020097
CAXT7 – 2015 FTIP
October 2016

Draft Project Report

To Authorize Public Release of the Draft Supplemental Environmental Document

IN RIVERSIDE AND ORANGE COUNTIES

On Route 91

From 0.3 MILE EAST OF WEIR CANYON ROAD UNDERCROSSING

To 1.5 MILES EAST OF ORANGE COUNTY LINE AND

On Route 241

From 0.6 MILE SOUTH OF WINDY RIDGE WILDLIFE UNDERCROSSING

To 0.1 MILE NORTH OF WEST 91-SOUTH 241/ NORTH 241-WEST 91 SEPARATION

I have reviewed the right-of-way information contained in this report and the Right-Of-Way Data Sheet attached hereto, completed by Foothill/Eastern Transportation Corridor Agency and find the data to be complete:

for Ricky Rodriguez, *OFFICE CHIEF, OFFICE OF RIGHT OF WAY AND LAND SURVEYS*

APPROVAL RECOMMENDED:

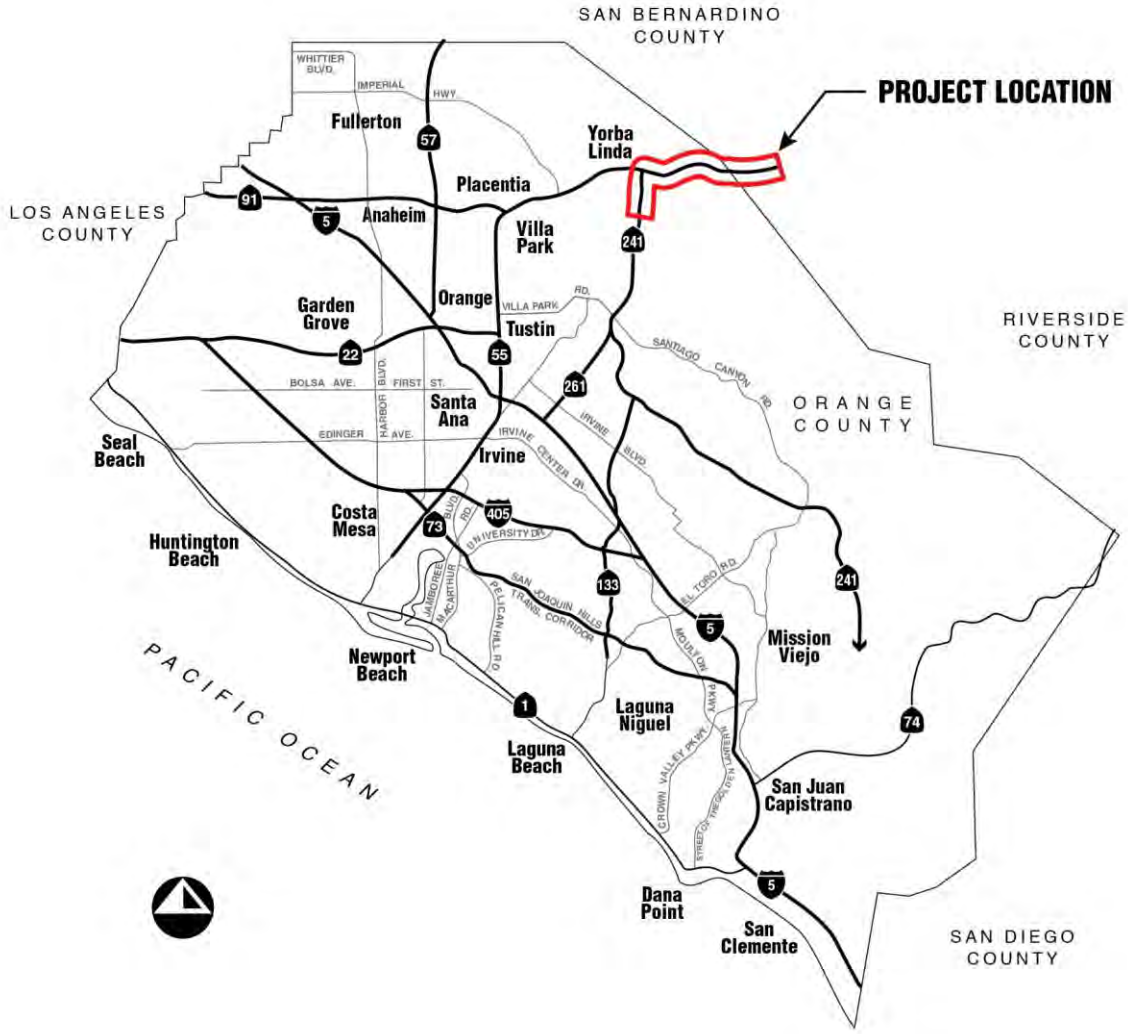
Leo Chen, *PROJECT MANAGER*

APPROVED:

Adnan Maiah 11/3/2016

Adnan Maiah, *DATE*
DEPUTY DISTRICT DIRECTOR
SINGLE FOCAL POINT CAPITAL OUTLAY PROGRAM

Vicinity Map

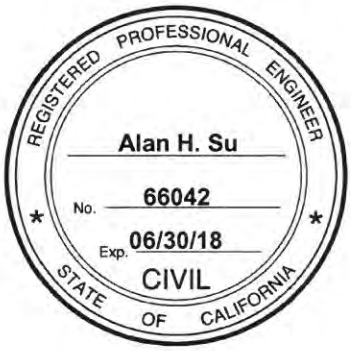


This Draft Project Report has been prepared under the direction of the following registered civil engineer. The registered civil engineer attests to the technical information contained herein and the engineering data upon which recommendations, conclusions, and decisions are based.

10/26/16

Alan Su *DATE*

REGISTERED CIVIL ENGINEER



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List of Acronyms:

A	
AADT	Annual Average Daily Traffic
ACMs	Asbestos-Containing Materials
ACOE	United States Army Corps of Engineers
ADL	Aerially Deposited Lead
APN	Assessor's Parcel Number
APS	Advanced Planning Studies
B	
BMPs	Best Management Practices
Br. No.	Bridge Number
BSA	Biological Study Area
C	
CAGN	California gnatcatcher
Caltrans	California Department of Transportation
CCP	Construction Contingency Plan
C-D	Collector-Distributor
CDFW	California Department of Fish and Wildlife
CEC	Certificate of Environmental Compliance
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CHP	California Highway Patrol
CIP	Corridor Improvement Project
CNE's	common noise environment
CSMP	Corridor System Management Plan
CSS	Coastal Sage Scrub
CWA	Clean Water Act

D

DPGR	District Preliminary Geotechnical Report
DPR	Draft Project Report

E

EB	Eastbound
ECR	Environmental Commitments Records
EIR/EIS	Environmental Impact Report/Environmental Impact Statement
ELC	Express Lanes Connector
ETC	Eastern Transportation Corridor

F

F/ETCA	Foothill/Eastern Transportation Corridor Agency
FHWA	Federal Highway Administration
ft	Feet
FTA	Federal Transit Administration
FTC	Foothill Transportation Corridor
FTIP	Federal Transportation Improvement Program

G

GP	General Purpose

H

HCP	Habitat Conservation Plan
HDM	Highway Design Manual
HMA	Hot Mix Asphalt with Asphalt
HOT	High Occupancy Toll
HOV	High Occupancy Vehicle

I

ISA	Initial Site Assessment
ITS	Intelligent Transportation Systems

L

LBPs	Lead Based Paints
LCCA	Life Cycle Cost Analysis
LOS	Level of Service

M

mi	Miles
MPAH	Master Plan of Arterial Highways
mph	Miles Per Hour
MSE	Mechanically Stabilized Earth

N

NADR	Noise Abatement Decision Report
NB	Northbound
NCCP	Natural Communities Conservation Plan
NES	Natural Environment Study
NNL	National Natural Landmark
NOI	Notice of Intent

NOT	Notice of Termination
NPDES	National Pollutant Discharge Elimination System
NSR	Noise Study Report

O

OC	Over Crossing
OCTA	Orange County Transportation Authority
OCTAM	Orange County Transportation Authority Model
O-D	Origin and Destination
Ora	Orange

P

PA/ED	Project Approval/Environmental Document
PDPM	Project Development Procedures Manual
PDT	Project Development Team
PeMS	Caltrans Freeway Performance Measurement System
PM	Post Mile
$PM_{2.5}$	Particulate matter less than 2.5 microns in size
PM_{10}	Particulate Matter 10.0 microns or less in diameter
POAQC	Project of Air Quality Concern
PPDG	Project Planning and Design Guide
PS&E	Plans, Specifications and Estimate
PSR-PDS	Project Study Report-Project Development Support

R

RCR	Route Concept Report
RCTC	Riverside County Transportation Commission
RHMA	Rubberized Hot Mix Asphalt
Riv	Riverside
RTA	Riverside Transit Agency
RTP	Regional Transportation Plan
RWQCB	Santa Ana Regional Water Quality Control Board

S

SARI	Santa Ana Regional Interceptor
SB	Southbound
SCAG	Southern California Association of Governments
SCE	Southern California Edison
SCG	Southern California Gas Company
SHELL	State Highway Extra Legal Load
SHS	State Highway System
SMC	Systems Management Concept
SPGR	Structures Preliminary Geotechnical Reports
SR	State Route
SSD	Stopping Sight Distance
STAA	Surface Transportation Assistance Act
SWDR	Storm Water Data Report
SWPPP	Storm Water Pollution Prevention Plan
SWRCB	State Water Resources Control Board

T

TASAS	Traffic Accident Surveillance and Analysis System
TCEs	Temporary Construction Easements
TCWG	Transportation Conformity Working Group
TI	Traffic Indices
TMP	Transportation Management Plan
TMT	Caltrans Transportation Management Team

U

UC	Undercrossing
USDOT	United States Department of Transportation
USFWS	United States Fish and Wildlife Service

V

VA	Value Analysis
VMT	Vehicle Miles Traveled

W

WB	Westbound

Y

YOE	Year of Expenditure

1. INTRODUCTION

The California Department of Transportation (Caltrans) District 12, in cooperation with the Foothill/Eastern Transportation Corridor Agency (F/ETCA) proposes the State Route 241 (SR-241) / State Route 91 (SR-91) Express Lanes Connector (ELC) Project (Proposed Project) to construct a median-to-median connector between SR-241 and the tolled lanes in the median of SR-91 (*91 Express Lanes*). SR-241 is a toll facility starting at the Oso Parkway interchange in South Orange County to its terminus at SR-91 in the City of Anaheim. The *91 Express Lanes* is a four-lane tolled facility (two lanes in each direction) located within the median of SR-91. The *91 Express Lanes* extends from State Route 55 (SR-55) to the Orange/Riverside County line (east of the SR-241 interchange). The existing SR-241/SR-91 interchange connects all lanes of the northbound (NB) and southbound (SB) SR-241 to non-tolled general purpose (GP) lanes of eastbound (EB) and westbound (WB) SR-91. SR-241 and SR-91 are publicly owned Facilities. There is currently no direct connection between the SR-241 Toll Road and the *91 Express Lanes*.

The Proposed Project, located at the junction of SR-241 and SR-91 within the cities of Anaheim, Yorba Linda, and Corona and counties of Orange (Ora) and Riverside (Riv), would provide improved access between SR-241 and SR-91 and is proposed to be a tolled facility. The Proposed Project encompasses 12-Ora-241 (Post Mile [PM] 36.1/39.1), 12-Ora-91 (PM 14.7/18.9), and 08-Riv-91 (PM 0.0/1.5) for a length of approximately 8.7 miles (mi). SR-91 PM from California Log of Bridges on State Highways are (PM R14.7/18.9) and (PM R0.0/1.5). The Project Location Map is shown in Attachment A.

The improvements for the Proposed Project include 5.9 mi in the cities of Anaheim and Yorba Linda and unincorporated Orange County from south of the Windy Ridge Wildlife Undercrossing (UC) on SR-241 to the Coal Canyon UC on SR-91. The remaining 2.8 mi of the Proposed Project include FasTrak signage improvements (advance signage) in the cities of Anaheim (1.2 mi), Yorba Linda (0.1 mi) and Corona (1.5 mi) and unincorporated Orange and Riverside Counties, with exact placement pending further detail during the Final Design phase.

Project Limits	*12-Ora-241-PM 36.1/39.1* *12-Ora-91-PM 14.7/18.9* *08-Riv-91-PM 0.0/1.5*	
Number of Alternatives	*2 Alternatives (one Build and one No Build)*	
	Current Cost Estimate	**Escalated Cost Estimate**
Capital Outlay Support	$42.9 million	$42.9 million
Capital Outlay Construction	$129.5 million	$138.0 million
Capital Outlay Right-of-Way	$0.6 million	$0.6 million
Funding Source	*Private*	
Funding Year	FY 2017/2018	
Type of Facility	SR-241: 8-lane toll road / SR-91: 10-lane freeway and four express lanes	
Number of Structures	Four (two new, two widen)	
Environmental Determination or Document	Draft Supplemental Environmental Impact Report/Environmental Impact Statement and Section 4(f) Evaluation	
Legal Description	In Riverside and Orange Counties On Route 91 from 0.3 mile east of Weir Canyon Road Undercrossing to 1.5 miles east of Orange County line. On Route 241 from 0.6 mile south of Windy Ridge Wildlife Undercrossing to 0.1 mile north of West 91-South 241/North 241-West 91 separation.	
Project Development Category	*4B*	

2. RECOMMENDATION

It is recommended that approval be given to publically circulate the Draft Supplemental Environmental Impact Report/Environmental Impact Statement (EIR/EIS) and Section 4(f) Evaluation with a notice of availability and opportunity for public hearing.

3. BACKGROUND

Project History

The Proposed Project is a later phase of the Eastern Transportation Corridor (ETC) project. The Proposed Project was originally evaluated as a SR-241/SR-91 high occupancy vehicle (HOV) direct connector in the 1991 ETC Draft EIR/ EIS, 1992 ETC Final EIR, and the 1994 ETC Final EIS (all of which studied a broader project area with improvements on State Route 133 [SR-133], SR-241, and State Route 261 [SR-261]).

The Preferred Alternative selected for the ETC Final EIR and Final EIS includes a single alignment called the North Leg through Gypsum and Blind Canyons, transitioning to the East Leg south of Santiago Canyon Road. The East Leg crosses Loma Ridge near Rattlesnake Canyon, extends southeasterly toward Siphon Reservoir where the ETC interchanges with the Foothill Transportation Corridor (FTC) and then extends southerly

along the Orange County Great Park to the I-5/SR-133 interchange. Construction of SR-241 began in 1996 and was completed in 1998.

In 1996, F/ETCA developed geometric plans for the ultimate SR-241 and SR-91 connector facility. These plans were the basis for the existing corridor right-of-way and slope easement within the project study area. *91 Express Lanes* Extension and State Route 241 Connector Feasibility Study report was prepared in March 2009 followed by the approval of the Project Study Report-Project Development Support (PSR-PDS) in January 2012. The purpose of this Draft Project Report (DPR) is to provide concurrence that the proposed improvements are compatible with the existing and Ultimate Corridor improvements and to publically circulate the Draft Supplemental EIR/EIS and Section 4(f) Evaluation.

The Systems Management Concept (SMC) for the ETC projected that each Build Alternative would be staged and would incorporate GP traffic and eventually HOV lanes to meet the forecasted demand. Under the SMC, ETC construction would be completed in one stage with three or more phases.

To implement this later phase of the ETC, a Draft Supplemental EIR/EIS and Section 4(f) Evaluation is being prepared to:

- Focus on the northern end of the original project;
- Address changes to environmental conditions and regulatory requirements; and
- Address the extended Project Limits on SR-91 to the east;
- Comply with 23 CFR 771.129(b): *"A written evaluation of the final EIS will be required before further approvals may be granted if major steps to advance the action (e.g., authority to undertake final design, authority to acquire a significant portion of the right-of-way, or approval of the plans, specifications, and estimates) have not occurred within three years after the approval of the final EIS."* Because the SR-241/SR-91 Express Lanes Connector design was postponed longer than 3 years after the ETC Final EIS approval, the median-to-median connector is required to be re-evaluated in compliance with NEPA.

The Draft Supplemental EIR/EIS and Section 4(f) Evaluation includes a No Build and only one Build Alternative for the Proposed Project for the following reasons:

- The median-to-median connector is a component of a previously approved project and alternative selected during a 1992 EIR Certification and 1994 ROD.
- Various alternatives were studied for the previously approved project that included consideration of a reasonable range of potentially feasible alternatives; and
- There are limited locations for a median-to-median connector between SR-241 and SR-91.

The Proposed Project is being coordinated with the Orange County Transportation Authority (OCTA) and the Riverside County Transportation Commission (RCTC). The *91 Express Lanes* are tolled and are operated by OCTA, from SR-55 to the Orange County/Riverside County line. Easterly from the county line, the lanes are HOV non-tolled lanes; however, as part of the RCTC SR-91 Corridor Improvement Project (SR-91 CIP), RCTC will construct and operate median tolled lanes starting from the county line and

ending at Interstate 15 (I-15). As part of the SR-91 CIP, a median-to-median connector will be constructed to accommodate *91 Express Lanes* to southbound I-15 as well as reverse movement from northbound I-15 to *91 Express Lanes*. Implementation of the SR-91 CIP along with the Proposed Project would provide a direct connection between SR-241 and southbound I-15 as well as reverse movement between northbound I-15 and SR-241.

Final Design would commence in mid-2016 and end in late-2017 (approximately 14 months). Construction is anticipated to begin in mid-2018 and complete in 2020.

Community Interaction

The Build Alternative was evaluated in the original ETC EIR/EIS which included a process for public involvement. A Notice of Preparation of a Supplemental EIR and Notice of Intent to prepare a Supplemental EIS were circulated for public review in March 2015. No public comments were received. A public hearing will be held following circulation of the Draft Supplemental EIR/EIS and Section 4(f) Evaluation. Stakeholders have been involved throughout the project development process. A Project Development Team (PDT) was identified to ensure collaborative communication among the stakeholders (F/ETCA, Caltrans, and OCTA). The PDT includes representatives from Caltrans, F/ETCA, OCTA, RCTC, and City of Anaheim. PDT meetings have generally been conducted on a monthly basis since the Project Approval/Environmental Document (PA/ED) phase was formally initiated in February 2013. The purpose of these meetings was to discuss project-specific issues and work together to ensure the Proposed Project meets the Purpose and Need and that these issues do not conflict with any plans, policies, or regulations.

Existing Facility

SR-91 is a major east-west freeway facility used for commuting, goods movement and interregional travel, and provides vital connections to Los Angeles County to the west and Riverside County to the east. SR-91 within the Proposed Project limits was designed utilizing a 75 miles per hour (mph) design speed with a posted speed limit of 65 mph. SR-241 is a toll-only facility connecting northern and southern Orange County.

Existing SR-91 Lane Configuration

Beginning on the western portion of the Project limit heading in the eastbound direction, the SR-91 facility has four GP travel lanes and two *91 Express Lanes tolled lanes* with an auxiliary lane added at the NB SR-241/EB SR-91 GP connector merge point. Beginning on the eastern portion of the Project limit heading in the westbound direction, the SR-91 facility has four GP travel lanes, two *91 Express Lanes tolled lanes,* one auxiliary lane, a second auxiliary lane opening 3000 feet (ft) west of Coal Canyon UC. Both auxiliary lanes in the WB SR-91 direction end at the WB SR-91/SB SR-241 connector. There is a local service interchange at Gypsum Canyon Road. The SR-91/Gypsum Canyon Road interchange is a partial cloverleaf with single and multilane on- and off-ramps. The off-ramps at Gypsum Canyon Road interchange terminate at a signalized intersection for the westbound direction and a stop controlled intersection for the eastbound direction. The SR-241 connectors are separate structures beginning from the EB and WB SR-91. Both the NB SR-241/EB SR-91 connector and the WB SR-91/SB SR-241 connector are two lanes, and the WB SR-91/SB SR-241 connector opens up to three lanes near SR-241 and is elevated from the existing SR-91 mainline and eastbound Gypsum Canyon Road Off-Ramp. Right-of-way widths within the Project limits on SR-91 varies between 314 ft to 1,195 ft.

Existing SR-241 Lane Configuration

Within the Project limits, SR-241 is a median divided facility and has separate profiles for the northbound and southbound directions. At the interchange with SR-91, the SB SR-241 is five lanes, with three approach lanes from the WB SR-91/SB SR-241 connector and two approach lanes from the EB SR-91/SB SR-241 connector. The fifth lane is dropped as the fourth lane becomes a truck lane ending at the south end of the Southern California Edison (SCE) Wildlife UC approximately half a mile south of the Windy Ridge Toll Plaza. At the interchange with SR-91, the NB SR-241 is four lanes, two lanes diverge to the NB SR-241/EB SR-91 connector, and the remaining two lanes diverging to the NB SR-241/WB SR-91 connector, which is a flyover above the SR-91 mainline. The NB SR-241/EB SR-91 and NB SR-241/WB SR-91 connectors are two lanes each, until the join point on SR-91 where one lane is dropped from each of the connectors. Right-of-way widths within the Project limits on SR-241 varies between 423 ft to 2,035 ft.

Structures

The following existing structures are within the Project limits:

- Two bridges are located at the Windy Ridge Wildlife UC, bridge number (Br. No.) 55-0724R for the NB SR-241 and Br. No. 55-0724L for the SB SR-241 traffic.
- The NB SR-241/EB SR-91 connector, Br. No. 55-0791G, is an overcrossing (OC) supported by columns at Santa Ana Canyon Road, Gypsum Canyon Road, and Gypsum Canyon Road ramps.
- The NB SR-241/WB SR-91 connector, Br. No. 55-0790G, is a flyover supported by columns and an outrigger at Santa Ana Canyon Road and SR-91.
- The WB SR-91/SB SR-241 connector, Br. No. 55-0794F, is a flyover supported by columns at SR-91, Gypsum Canyon Road ramps, Gypsum Canyon Road, Santa Ana Canyon Road, and OC at the NB SR-241/WB SR-91 connector, Br. No. 55-0941F.
- The EB SR-91/SB SR-241 connector, Br. No. 55-0793G, is an OC supported by columns at Santa Ana Canyon Road.
- Gypsum Canyon Road Br. No. 55-0506 is an UC at SR-91.
- Two bridges are located at the Coal Canyon UC, Br. No. 55-0507L for the EB SR-91 and Br. No. 55-0507R for the WB SR-91 traffic.

Soundwalls

Three existing soundwalls are located within the Project limits. Two existing soundwalls are located adjacent to WB SR-91 within the local service interchange, one at Gypsum Canyon Road and one along the WB SR-91/SB SR-241 connector.

Retaining Walls

Three existing retaining walls are located within the Proposed Project limits. Along the WB SR-91/SB SR-241 connector, the north facing wall is approximately 1850 ft and a south facing wall is approximately 400 ft in length. Along the SR-91 median, a retaining wall barrier system exists and is approximately 4,920 ft in length.

Drainage Facilities

Existing drainage facilities located within the Project limits include:

- Storm drain systems and inlets along the median and outside shoulders of the existing SR-241 and SR-91 mainlines;
- Drainage systems and inlets along on and off-ramps;
- Edge drains along both SR-241 and SR-91 mainlines;
- Storm water runoff from the Proposed Project is discharged directly into the Santa Ana River.

4. PURPOSE AND NEED

Purpose:

The purpose of the Proposed Project is to implement the build-out of the ETC, as approved in 1994, and attain compatibility with the proposed SR-91 CIP, while minimizing environmental and financial impacts.

In addition to the originally intended objectives of the ETC, changed circumstances at the SR-241/SR-91 interchange have led to the following objectives for the Proposed Project:

- Implement the build out of the ETC, as approved in 1994;
- Attain compatibility with the SR-91 mainline and *91 Express Lanes*;
- Improve traffic flow and operations by reducing weaving across multiple GP lanes between the SR-91 Express Lanes and the SR-241 GP lane connectors
- Enhance the efficiency of the tolled system, thereby reducing congestion on the non-tolled system on SR-91.

Need:

There is a need for improved access between SR-241 and SR-91. Roadway deficiencies are described below:

- Demand exceeds capacity on the NB SR-241 connector to EB SR-91 and on the WB SR-91 connector to SB SR-241
- Northbound vehicles on SR-241 cannot access the eastbound *91 Express Lanes*
- WB *SR-91 Express Lane*s motorists cannot access SB SR-241
- The weaving between the GP connectors and the median lanes is an issue because it degrades the level of service due to increased vehicle density. In addition, the weaving operations contribute to sideswipe accidents.

A. Problems, Deficiencies, Justifications

The Proposed Project is needed to improve access between the SR-241 and *91 Express Lanes*. The lack of connectivity between SR-241 and the *91 Express Lanes* negatively affects traffic flow, worsens an already congested SR-91 during peak hours, and results in a long queue of vehicles on NB SR-241 accessing EB SR-91. As a result, motorists

utilize the NB SR-241/WB SR-91 lanes to queue jump during congested traffic periods, contributing to delays.

B. Regional and System Planning

Identify Systems

SR-241 and SR-91 are on the National Highway System. SR-91 within the Project limits is on the National Network for Surface Transportation Assistance Act (STAA) and Lifeline Route. SR-241 is part of the Eastern Transportation Corridor within the Project limits. These segments are not identified as routes on the Interregional Road System and State Highway Extra Legal Load (SHELL) network.

State Planning

The Route Concept Report (RCR) dated 1999, indicates that the Proposed Project is the planned ultimate configuration. This report does not outline the specifics of interchange geometry, entrance or exit ramps, or auxiliary lanes.

Regional Planning

The Proposed Project is included in the Regional Transportation Plan (RTP) adopted by Southern California Association of Governments (SCAG) in April 2016 as project 2T01135 which was found to be conforming by the Federal Highway Administration (FHWA)/Federal Transit Administration (FTA) on June 1, 2016. It is identified in Amendment 15-12 to the 2015 Federal Transportation Improvement Program (FTIP) Consistency Amendment (Project ID No. ORA111207; Description: HOV/HOT CONNECTOR: NB SR-241 TO EB SR-91, WB SR-91 TO SB SR-241 (1 LANE EACH DIR) AS REQ, BY 2020 PER SCAG/TCA MOU 4/05/01) which was found to be conforming by the FHWA/FTA on November 2, 2015. According to the 2015 FTIP Consistency Amendment, the Proposed Project is a privately funded project. It is also included in OCTA's 2035 Long Range Transportation Plan. Since the Proposed Project is contained in the RTP, the improvements contemplated in the Proposed Project are consistent with regional planning efforts including the SR-91 CIP.

On October 23, 2012, the ROD for the Initial Phase of the SR-91 CIP EIR/EIS was signed by Caltrans. The SR-91 CIP is being implemented with the cooperation of FHWA, Caltrans and RCTC. The Initial Phase includes extending the existing express lanes in the County of Orange east from the Orange/Riverside County line to I-15 in the City of Corona. The existing HOV lanes would be converted to tolled express lanes. Direct tolled express lane connectors would be constructed on southbound and northbound I-15 near the Ontario Avenue interchange through the SR-91/I-15 interchange to connect to the eastbound and WB SR-91 tolled express lanes. Auxiliary lanes would be added at various locations. The Initial Phase of the SR-91 CIP is expected to be completed in 2017.

Once the Initial Phase of the SR-91 CIP is constructed, median express lanes will exist on SR-91 between SR-55 and I-15 and will replace the existing HOV lanes between the Orange/Riverside County line and I-15. The Ultimate Phase of the SR-91 CIP includes one additional GP lane on SR-91 in each direction, between the SR-241/SR-91 interchange and Pierce Street in the City of Riverside and is planned for completion in 2035. This phase would also add an additional toll lane on SR-91 in each direction between I-15 and SR-241.

Local Planning

The Proposed Project is located within cities of Anaheim, Yorba Linda, and Corona and the counties of Orange and Riverside.

The Orange County Parks Master Planned Regional Trails and Bikeways map includes a non-motorized and pedestrian facility within the Gypsum Canyon Road interchange. The proposed plan includes a riding and hiking trail through the Gypsum Canyon Road interchange. The Proposed Project is consistent with the planned trail project through the Gypsum Canyon Road interchange which is expected to be constructed following the construction of the Proposed Project.

Transit Operator Planning

On the SR-91, OCTA and Riverside Transit Agency (RTA) operate route 794 and route 216 respectively in the *91 Express Lanes* which serves inter-county commuters. No bus routes operate on SR-241.

C. Traffic

A Traffic Analysis Report (CH2MHILL, July 24, 2015) was prepared for the existing, opening year (2017), and forecasted future (2040) traffic volume and demand. The Traffic Analysis Report was submitted to Caltrans and technical approval was received in July 2015. Detailed data analysis and methodologies used can be referenced in the Traffic Analysis Report.

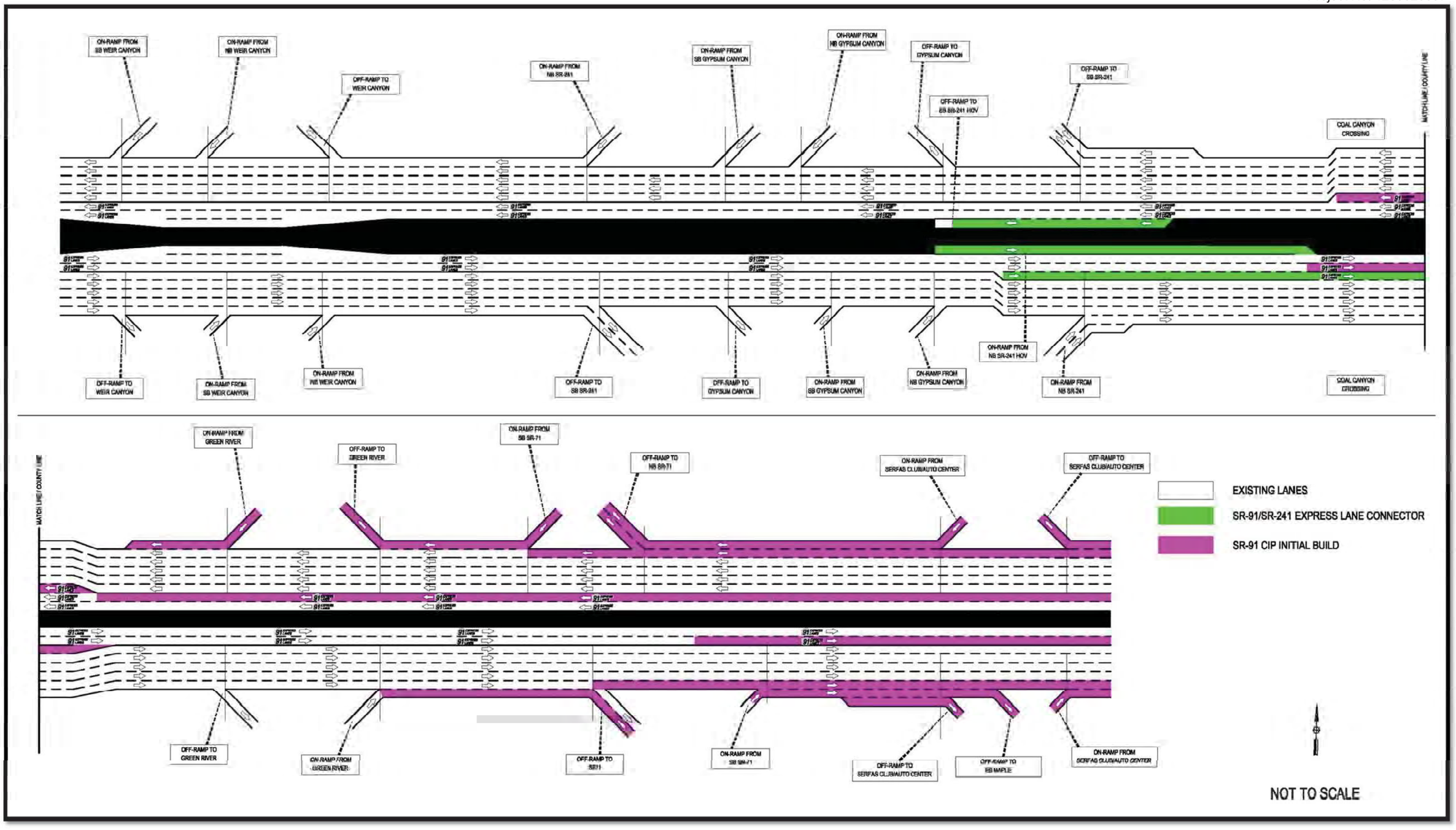
Current and Forecasted Traffic

Existing traffic data was extracted from the Caltrans Freeway Performance Measurement (PeMS) System. Where PeMS data was not available, Caltrans published data and data from the SR-91 Corridor System Management Plan (CSMP) Studies, the SR-91 CIP Final Traffic Study Report (Parsons Brinckerhoff, 2010), and Bluetooth data collected in November/December 2013 were used to supplement the database.

Future traffic demands for the Traffic Analysis Report were derived from the SR-91 CIP Final Traffic Study Report (Parsons Brinckerhoff, 2010), and the SR-91/SR-241 Express Lane Direct Connector Traffic and Revenue Study (Stantec, 2011). The design year demands for the 2040 model assumed SR-91 Corridor A (SR-91 Corridor A project is a long-range project that proposes to build an elevated four-lane facility along the SR-91 corridor from SR-241 to I-15) improvements are not in place, which is consistent with the 2012 SCAG RTP model.

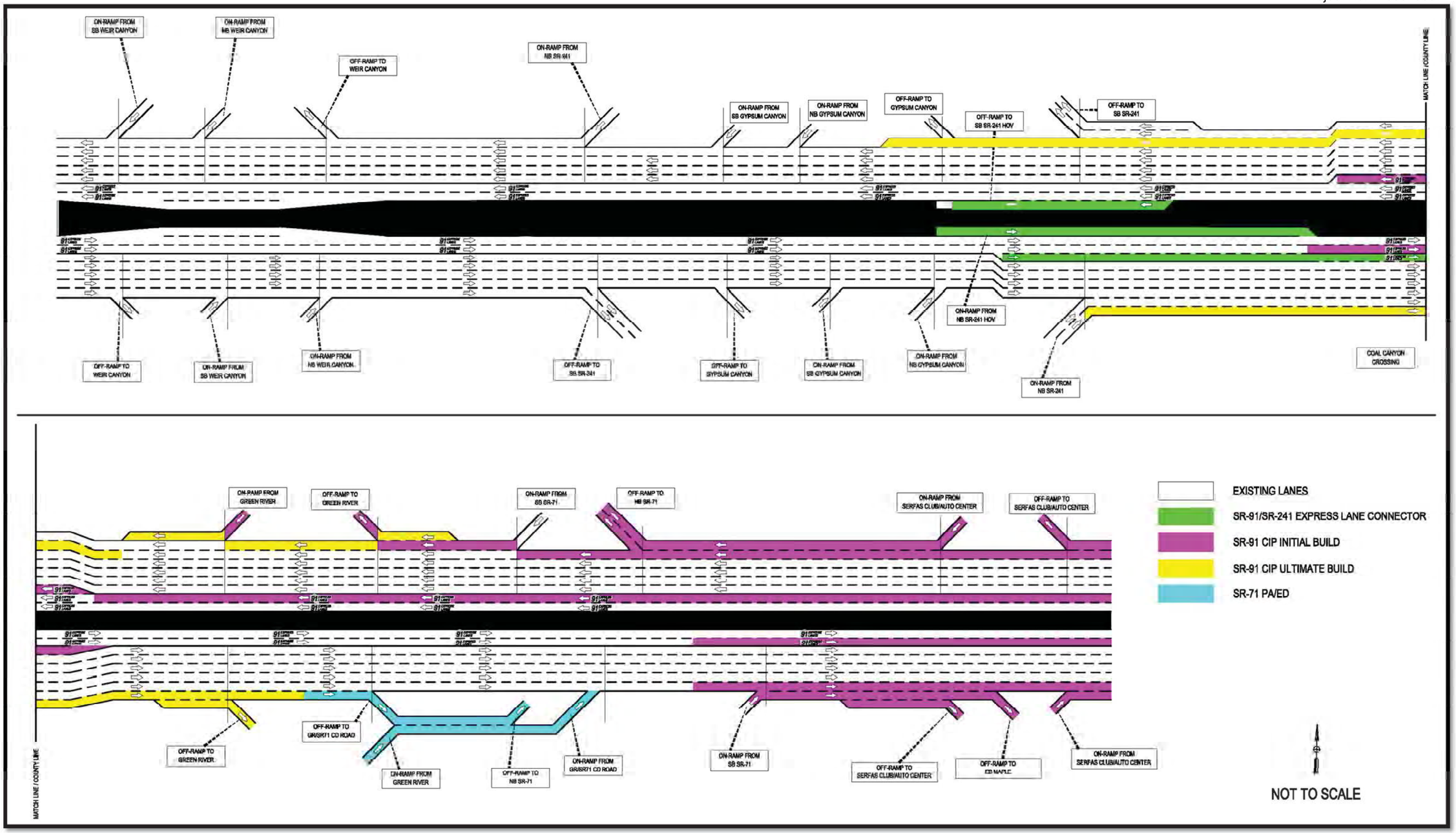
The study limits and assumed improvements identified in the Traffic Analysis Report are shown in Figure 1 and Figure 2.

Existing and Future No Build Annual Average Daily Traffic (AADT) for SR-241 and SR-91 within the Project area are provided in total vehicle flow per day in Table 1. AADT data are used based on archived data from the Caltrans Freeway Performance Measurement (PeMS) System.



Source: SR-241/SR-91 Express Lanes Connector Project Traffic Analysis Report (July 24, 2015)

Figure 1: Study Area and Lane Geometry for Opening Year Analysis (2017)



Source: SR-241/SR-91 Express Lanes Connector Project Traffic Analysis Report (July 24, 2015)

Figure 2: Study Area and Lane Geometry for Design Year Analysis (2040)

Table 1: Existing Year 2013 and Future No Build Year 2040 ADT Volumes

Location	Existing (2013) AADT	Future No Build (2040) AADT
EB SR-91 freeway mainline from Gypsum Canyon Road UC to Coal Canyon Road UC	153,000	209,000
WB SR-91 freeway mainline from Coal Canyon UC to Gypsum Canyon Road UC	146,800	207,000
NB SR-241 freeway mainline from Windy Ridge Wildlife UC to SR-91 Interchange	27,800	37,900
SB SR-241 freeway mainline from SR-91 Interchange to Windy Ridge Wildlife UC	20,200	27,400

Existing peak hour volumes for the mainline and ramps within the Project area are provided in number of vehicles per hour during peak hours in Table 2. The mainline and ramp volumes were obtained from data compiled for the Traffic Analysis Report for the SR-241/SR-91 ELC Project (July 2015) and are based on archived data from the Caltrans Freeway Performance Measurement (PeMS) System and the *91 Express Lanes* Extension and State Route 241 Connector Feasibility Study (CH2MHILL, 2009).

Table 2: Existing Year 2013 Mainline and Ramp Volumes

Location	General Purpose Lanes		HOV/Express Lanes	
	AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour
Southbound SR-241				
EB SR-91/SB SR-241 GP Connector	590	230		
WB SR-91/SB SR-241 GP Connector	2,100	800		
Northbound SR-241				
NB SR-241/EB SR-91 GP Connector	1,120	2,200		
NB SR-241/WB SR-91 GP Connector	300	130		
Eastbound SR-91				
EB SR-91 freeway mainline from Gypsum Canyon Road UC to Coal Canyon UC	8,060	9,080	360	2,860
Gypsum Canyon Road Off-Ramp	120	50		
Gypsum Canyon Road Loop On-Ramp	200	300		
Gypsum Canyon Road Direct On-Ramp	200	310		
Westbound SR-91				
WB SR-91 freeway mainline from Coal Canyon UC to Gypsum Canyon Road UC	9,730	6,180	1,820	810
WB SR-91/SB SR-241 GP Connector	2,100	800		
Gypsum Canyon Road Off-Ramp	440	290		

*Source: SR-241/SR-91 Express Lanes Connector Project Traffic Analysis Report, July 24, 2015

Table 3: Future No Build Year 2040 Mainline and Ramp Volumes

Location	General Purpose Lanes		HOV/Express Lanes	
	AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour
Southbound SR-241				
EB SR-91/SB SR-241 GP Connector	800	320		
WB SR-91/SB SR-241 GP Connector	3,020	2,220		
Northbound SR-241				
NB SR-241/EB SR-91 GP Connector	2,130	2,650		
NB SR-241/WB SR-91 GP Connector	370	1,400		
Eastbound SR-91				
EB SR-91 freeway mainline from Gypsum Canyon Road UC to Coal Canyon UC	10,900	11,410	1,400	3,200
Gypsum Canyon Road Off-Ramp	270	140		
Gypsum Canyon Road Loop On-Ramp	270	460		
Gypsum Canyon Road Direct On-Ramp	400	860		
Westbound SR-91				
WB SR-91 freeway mainline from Coal Canyon UC to Gypsum Canyon Road UC	11,100	7,980	2,800	1,050
WB SR-91/SB SR-241 GP Connector	3,020	2,220		
Gypsum Canyon Road Off-Ramp	920	570		

* Traffic Analysis Report for the SR-241/SR-91 ELC Project, July 2015

Forecasted peak hour volumes for the mainline and ramps within the Project area are provide in Table 3. The mainline and ramp 2040 volume forecasts were developed from the 2035 forecasts by applying a growth rate calculated from the SR-91 CIP Final Traffic Study demands (2015) and the SR-91/SR-241 Express Lane Direct Connector Traffic and Revenue Study future demands (2035). The average annual growth rates varied between 0.8% annually to 1.0% annually.

Refer to *Section 5 – Traffic Analysis* for more information on measures of performance for the existing (2013), opening (2017), and horizon design years (2040).

Collision Analysis

Traffic Accident Surveillance and Analysis System (TASAS) Table B and Selective Accident Rate Calculation data were provided by Caltrans District 12 for the purpose of analyzing accidents within the Project limits. Segments of SR-241 mainline, SR-91 mainline, and associated ramps at Gypsum Canyon Road are summarized under Table 4 through Table 8. The accident data encompasses a three (3) year period from October 1, 2009 through September 30, 2012. TASAS Table C – Potential Investigation Locations summary for the same 3-year period indicates potential investigation locations along EB SR-91 (PM R16.48-16.68) and along the NB SR-241/EB SR-91 Connector. Rates shown in bold in Table 4 through Table 6 indicates that they are higher than average data rates.

Table 4: TASAS Table B Summary – Westbound SR-91 (10/01/2009 through 09/30/2012)

Location	Post Mile	Statistical Data			Actual Accident Rates			Average Accident Rates		
		No. of Accidents	Fatal	Injury	Total	Fatal	Fatal + Injury	Total	Fatal	Fatal + Injury
WB SR-91	R15.45-15.70	7	0	3	0.22	0.000	0.09	0.86	0.003	0.25
WB SR-91	R15.70-15.95	24	0	8	0.74	0.000	0.25	0.87	0.003	0.25
WB SR-91	R15.95-16.20	26	0	7	0.71	0.000	0.19	0.95	0.003	0.28
WB SR-91	R16.20-16.45	30	0	6	0.82	0.000	0.16	0.95	0.003	0.28
WB SR-91	R16.45-16.70	16	0	4	0.44	0.000	0.11	0.95	0.003	0.28
WB SR-91	R16.70-16.95	22	0	7	0.60	0.000	0.19	0.95	0.003	0.28
WB SR-91	R16.95-17.25	8	0	3	0.18	0.000	0.07	0.95	0.003	0.28
WB SR-91	R17.25-17.45	5	0	3	0.10	0.000	0.06	0.84	0.003	0.28
WB SR-91	R17.45-17.70	12	0	5	0.19	0.000	0.08	0.85	0.003	0.24
WB SR-91	R17.70-17.90	17	1	7	0.33	**0.019**	0.15	0.87	0.003	0.25

Source: Caltrans TASAS Table B. Accident rates are expressed as accidents per million vehicle miles traveled.

Table 5: TASAS Table B Summary – Eastbound SR-91 (10/01/2009 through 09/30/2012)

Location	Post Mile	Statistical Data			Actual Accident Rates			Average Accident Rates		
		No. of Accidents	Fatal	Injury	Total	Fatal	Fatal + Injury	Total	Fatal	Fatal + Injury
EB SR-91	R15.16-15.45	10	0	3	0.27	0.000	0.08	0.86	0.003	0.25
EB SR-91	R15.45-15.70	10	0	7	0.31	0.000	0.22	0.86	0.003	0.25
EB SR-91	R15.70-15.95	24	0	5	0.74	0.000	0.15	0.87	0.003	0.25
EB SR-91	R15.95-16.20	30	0	11	0.82	0.000	**0.30**	0.95	0.003	0.28
EB SR-91	R16.20-16.45	52	0	15	**1.42**	0.000	**0.41**	0.95	0.003	0.28
EB SR-91	R16.45-16.70	82	0	17	**2.24**	0.000	**0.46**	0.95	0.003	0.28
EB SR-91	R16.70-16.95	40	0	12	**1.09**	0.000	**0.33**	0.95	0.003	0.28
EB SR-91	R16.95-17.25	8	0	4	0.18	0.000	0.09	0.95	0.003	0.28
EB SR-91	R17.25-17.45	3	0	0	0.06	0.000	0.00	0.92	0.003	0.27
EB SR-91	R17.45-17.70	17	0	7	0.24	0.000	0.10	0.92	0.003	0.27
EB SR-91	R17.70-17.90	20	0	4	0.36	0.000	0.07	0.92	0.003	0.27

Source: Caltrans TASAS Table B. Accident rates are expressed as accidents per million vehicle miles traveled.

Table 6: TASAS Table B Summary – Northbound SR-241 (10/01/2009 through 09/30/2012)

Location	Post Mile	Statistical Data			Actual Accident Rates			Average Accident Rates		
		No. of Accidents	Fatal	Injury	Total	Fatal	Fatal + Injury	Total	Fatal	Fatal + Injury
NB SR-241	37.85-38.10	4	0	2	**0.63**	0.000	**0.32**	0.42	0.002	0.13
NB SR-241	38.10-38-35	2	0	1	0.32	0.000	**0.16**	0.42	0.002	0.13
NB SR-241	38.35-38.60	1	0	1	0.16	0.000	**0.16**	0.42	0.002	0.13
NB SR-241	38.60-38.85	2	0	1	0.16	0.000	0.16	0.68	0.004	0.22
NB SR-241	38.85-39.10	1	0	0	0.00	0.000	0.00	0.67	0.004	0.22

Source: Caltrans TASAS Table B. Accident rates are expressed as accidents per million vehicle miles traveled.

Table 7: TASAS Table B Summary – Southbound SR-241 (10/01/2009 through 9/30/2012)

Location	Post Mile	Statistical Data			Actual Accident Rates			Average Accident Rates		
		No. of Accidents	Fatal	Injury	Total	Fatal	Fatal + Injury	Total	Fatal	Fatal + Injury
SB SR-241	37.85-38.10	1	0	0	0.16	0.000	0.00	0.42	0.002	0.13
SB SR-241	38.10-38-35	0	0	0	0.00	0.000	0.00	0.42	0.002	0.13
SB SR-241	38.35-38.60	0	0	0	0.00	0.000	0.00	0.42	0.002	0.13
SB SR-241	38.60-38.85	1	0	0	0.16	0.000	0.00	0.42	0.004	0.22
SB SR-241	38.85-39.10	0	0	0	0.00	0.000	0.00	0.42	0.004	0.22

Source: Caltrans TASAS Table B. Accident rates are expressed as accidents per million vehicle miles traveled.

Table 8: TASAS Table B Summary – Gypsum Canyon Rd Ramps (10/01/2009 through 9/30/2012)

Location	Post Mile	Statistical Data			Actual Accident Rates			Average Accident Rates		
		No. of Accidents	Fatal	Injury	Total	Fatal	Fatal + Injury	Total	Fatal	Fatal + Injury
Eastbound Off-Ramp	R16.16	0	0	0	0.00	0.000	0.00	1.01	0.003	0.35
Eastbound Direct On-Ramp	R16.63	1	0	0	0.20	0.000	0.00	0.57	0.003	0.18
Eastbound Loop On-Ramp	R16.43	1	0	1	0.21	0.000	0.21	0.73	0.002	0.21
Westbound Direct On-Ramp	R16.24	0	0	0	0.00	0.000	0.00	0.57	0.003	0.18
Westbound Loop On-Ramp	R16.45	0	0	0	0.00	0.000	0.00	0.73	0.002	0.21
Westbound Off-Ramp	R16.67	1	0	0	0.00	0.000	0.00	1.01	0.003	0.35

Source: Caltrans TASAS Table B. Accident rates are expressed as accidents per million vehicle miles traveled.

Freeway (SR-91) Mainline (Westbound and Eastbound)

Westbound: The actual accident rates are lower than the statewide average accident rates for WB SR-91. However, the fatal accident rate is above the statewide average accident rate between PM R17.70-17.90 due to a single fatal accident. The highest concentration of accidents occurred at the following three (3) TASAS Table B segments, each ranging between 24 and 30 accidents over the course of the 3-year span:

- WB SR-91 PM R15.70 and R15.95
- WB SR-91 PM R15.95 and R16.20
- WB SR-91 PM R16.20 and R16.45

Eastbound: The actual accident rates are also lower than the statewide average accident rates for EB SR-91. However, the total accident rate is above the statewide average rate between PM R16.20-R16.95 due to a higher number of collisions and collisions involving injuries. The highest concentration of accidents occurred at the following three (3) TASAS Table B segments, each ranging between 40 and 82 accidents over the course of the 3-year span:

- EB SR-91 PM R16.20 and R16.45
- EB SR-91 PM R16.45 and R16.70
- EB SR-91 PM R16.70 and R16.95

The highest percentage of reported accidents for the WB and EB SR-91 TASAS Table B segments listed above are rear-end type collisions, followed by sideswipe collisions. Rear-end collisions are typically associated with congested traffic conditions when a roadway has exceeded traffic capacity. Sideswipe collisions are attributed to lane weaving in congested areas. The collision history does not correlate to any existing nonstandard features, which are not being made worse by the Proposed Project. The proposed improvements to accommodate the SR-241/SR-91 median-to-median connector and *91 Express Lanes* will provide increased capacity and reduced traffic congestion. Although Mandatory design exceptions are proposed along EB SR-91 mainline, they are either existing conditions which are being maintained or maintained and improved. Advisory design exceptions are not being introduced to the mainline SR-91. The Proposed Project is not anticipated to contribute to any increase in the number or severity of collisions.

Toll Road (SR-241) Mainline (Northbound and Southbound)

Northbound: The actual accident rates are generally lower than the statewide average accident rates for northbound SR-241. However, that total accident rate is above the statewide average rate between PM 37.85-38.10 due to a higher number of collisions and collisions involving injuries. The fatality and injury rate is also above the statewide average rate between PM 37.85-38.10 and only slightly above the statewide average between PM 38.10-38.35 and PM 38.35-38.60. In total, both segments had three collisions, which makes it difficult to draw a correlation between the collisions and an existing deficiency.

The highest percentage of reported accidents for the segments listed above are rear-end type collisions, followed by sideswipe collisions. Rear end and sideswipe collisions can be attributed to the steep downhill topography of the northbound SR-241 which requires significant breaking and weaving onto the SR-91, which does create a scenario for potential future collisions. The Proposed Project does not introduce any design exceptions to the existing SR-241. The Proposed Project will also significantly reduce the merge and weaving conditions by introducing a median-to-median connector as well as a separation

between the NB SR-241/WB SR-91 GP connector and NB SR-241/EB SR-91 GP connector.

Southbound: The actual accident rates are also lower than the statewide average accident rates for SB SR-241. Of the five (5) TASAS Table B segments, only two (2) segments had accidents, with only a single incident occurring at each segment over the course of the 3-year span. The Proposed Project does not introduce any design exceptions to the existing SR-241.

SR-91 Existing Westbound and Eastbound Ramps (at Gypsum Canyon Road)

The actual accident rates are lower than the statewide average accident rates for the westbound and eastbound Gypsum Canyon Road ramps. Of the six (6) ramps, only three (3) ramps had accidents, with only a single incident occurring at each ramp over the course of the 3-year span.

The majority of the ramp work is occurring in the eastbound direction. The proposed geometry at these ramps includes a number of proposed design features. Although the proposed design features do not typically correlate to increased number or severity of collisions, analysis was conducted to ensure the design conformed to comfortable speed design and included safety features such as guardrail to mitigate potential collisions along the proposed ramp geometry.

5. ALTERNATIVES

5A. VIABLE ALTERNATIVES

5.A.1 No Build Alternative

The No Build Alternative would maintain the current configurations of SR-241 and SR-91 in the Project Area. Under this alternative, a two-lane express lane median-to-median connector would not be constructed between the SR-241 and *91 Express Lanes*. Under the No Build Alternative, motorists traveling northbound on SR-241 would use the GP lane connector to EB SR-91 then weave across several lanes to access the eastbound RCTC SR-91 Express Lanes at the merge area near Green River Road. Similarly, motorists traveling westbound in the RCTC SR-91 Express Lanes would have to exit at Green River Road (3.5 mi east of the SR-241/SR-91 interchange), weave across lanes to use the GP lane connector to the SB SR-241. In addition, under the No Build Alternative, motorists would not be prevented from queue jumping from the existing NB SR-241 to the WB SR-91 connector lanes into the NB SR-241 to the EB SR-91 connector lanes during congested traffic periods, thereby disrupting traffic flow on the NB SR-241 connector to the EB SR-91 GP lanes during PM peak hours.

5.A.2 Build Alternative (Two-Lane Express Lanes Connector) (Alternative 1)

The Build Alternative would construct a two-lane express lane median-to-median connector between SR-241 and SR-91, which would connect a lane from the median of northbound SR-241 to the existing eastbound median *91 Express Lanes*. The reverse movement would also be accommodated, from the westbound median *91 Express Lanes* to the median of SB SR-241.

Northbound SR-241 Improvements

In the NB SR-241 direction, starting approximately 3,700 ft north of Windy Ridge Wildlife UC, an additional lane and shoulder would be provided by widening into the existing highway median. An additional eight-foot of widening beyond the shoulder would be provided to accommodate the ETC's ultimate condition's shoulder width. At the northern end of the northbound lane addition, the two express (northbound and southbound) connector lanes would converge in the existing SR-241 median on fill for approximately 800 ft. The connector would span over the existing NB SR-241 to the WB SR-91 GP lane connector and the SR-91/Gypsum Canyon Road interchange on two new bridge structures approximately 570 ft and 1,590 ft in length, respectively. The median-to-median connector would then merge with *91 Express Lanes*. Two Mechanically Stabilized Earth (MSE) walls would be constructed in the median as the proposed connector joins the SR-91 median area. Beginning approximately 6,400 ft north of Windy Ridge Wildlife UC, a 20-foot separation between the NB SR-241/WB SR-91 GP and the NB SR-241/EB SR-91 GP would be provided ending at the NB SR-241/WB SR-91 and NB SR-241/EB SR-91 GP connectors split. Additional widening into the existing highway median would occur to accommodate the additional 20 ft for the separation between the NB and SB SR-241.

Eastbound SR-91 Improvements

To accommodate the addition of the median-to-median connector, the existing EB SR-91 would be re-aligned to the south; the NB SR-241/EB SR-91 Express Lane would continue on EB SR-91, ending approximately 1,000 ft west of the Coal Canyon UC. An eastbound auxiliary express lane would be constructed within the *91 Express Lanes*. The proposed auxiliary express lane would begin approximately 2,000 ft east of the Gypsum Canyon Road UC to the Coal Canyon UC joining the initial SR-91 CIP at the Coal Canyon UC. These improvements would provide a four-lane express lane facility, tapering down to three lanes, between the connector and the Coal Canyon UC. The Gypsum Canyon eastbound on- and off-ramps and the NB SR-241/EB SR-91 GP connector would be realigned to accommodate the EB SR-91 realignment (See "Ramp Alignments Design Variation" on the next paragraph). The number of existing EB SR-91 GP lanes would be maintained within the Project limits. The eastbound *91 Express Lanes* would have a four-foot buffer on the right separating the GP lanes, and a four-foot buffer on the left to separate the express connector lane. The buffers would transition to 0 ft to join the SR-91 CIP at the eastern terminus of the Project limits. The proposed re-alignment is not a re-alignment of the center line of SR-91, thus the proposed design speed is set to match the original design speed of 75 mph.

Ramp Alignments Design Variation

Variation 1: Gypsum Canyon Rd eastbound on and off ramps alignments are as shown on layout sheets in Attachment G.

Variation 2: Modify Gypsum Canyon Rd eastbound on and off ramps alignments using Design Modification 5.0 recommended from the VA Study as discussed Section 6B. (See Attachment G, Sheet L-10A for sketch of Design Variation 2)

Variation 2 recommendation is to eliminate eastbound SR-91 loop on-ramp at Gypsum Canyon Road to eliminate choke point and replace with a traditional signalized intersection or a roundabout.

The two variations will be studied further during Project Report/Design phase to select the most feasible alignments for the ramps.

Westbound SR-91 Improvements

At the eastern terminus of the Proposed Project, westbound *91 Express Lanes* would be restriped and the median widened to accommodate the addition of the express connector lane within *91 Express Lanes* to the SB SR-241 median-to-median connector. The connector lane would begin approximately 1,000-foot west of the Coal Canyon UC and extend west for approximately 4,500 ft in the SR-91 median ending at the median-to-median connector. The auxiliary express lane at the SR-91 CIP join would be extended in the westbound direction ending 2,000 ft west of the Coal Canyon UC. These improvements would provide a four-lane overlap section along WB SR-91 for approximately 1,000 ft. This 1,000 ft overlap would accommodate weaving between traffic accessing the SB SR-241 median to median connector and westbound *91 Express Lanes*. *91 Express Lanes* would have a two-foot buffer to separate *91 Express Lanes* from the GP lanes.

Southbound SR-241 Improvements

In the SB SR-241 direction, the WB SR-91/SB SR-241 median-to-median connector joins the SB SR-241 approximately 7,000 ft north of the Windy Ridge Wildlife UC. Median improvements would occur for approximately 2,100 ft north of the join point to accommodate the median-to-median connector's southbound lane. The median improvements include an additional lane and shoulder. The improvements would be provided by widening Windy Ridge Wildlife Undercrossing into the existing median and improving the highway median for approximately 10,000 feet (ft) to the north.

Structures

Gypsum Canyon Road UC (Widen) (55-0506)

For the Build Alternative, the existing Gypsum Canyon Road UC Bridge will be widened, on the southerly side, to satisfy the proposed improvements of EB SR-91. Considering cost, location, span length, available clearance and other constraints, it has been determined that a cast-in-place, pre-stressed, concrete box girder is the ideal superstructure. The proposed superstructure will match existing and will exceed minimum vertical clearance requirements over Gypsum Canyon Road.

Windy Ridge Wildlife UC (Widen) (55-0724-L)

For the Build Alternative, the existing SR-241 southbound Windy Ridge Wildlife UC Bridge will be widened on the easterly side to accommodate ETC ultimate improvements. Considering cost, location, span length, available clearance and other constraints, it has been determined that a cast-in-place, pre-stressed, concrete box girder is the ideal superstructure. The proposed superstructure will match existing and will exceed minimum vertical clearance requirements.

SR-241/SR-91 Connector OC (North) and SR-241/SR-91 Connector OC (South)

In order to provide a direct connection from SR-241 to *91 Express Lanes*, two new flyover structures will be necessary. The proposed flyover structures will connect bi-directional traffic from northbound SR-241 to EB SR-91, as well as, WB SR-91 to SB SR-241. Considering constraints such as cost, location, span length, and available clearance, it has been determined that a cast-in-place, pre-stressed, concrete box girders are the ideal superstructures.

Other Improvements

Slope Grading

Slope grading beyond existing right-of-way would be required on EB SR-91 approximately 4,500 ft west of the Coal Canyon UC. The grading would span approximately 1,300 ft along EB SR-91 and is designed to accommodate the ultimate SR-91 CIP. The slope grading along with a proposed maintenance access road extends 5.09 acres outside of Caltrans right-of-way and will be acquired from the County of Orange. Slope grading, to the extent it is technically achievable, will ensure that slope tops and bottoms are rounded and facilitate a smooth and seamless transition where natural and built slopes intersect.

Retaining walls

Four new retaining walls are required for the Build Alternative. One wall would be constructed in the median of SR-241 to support median widening and in order to accommodate the future addition of a southbound lane per the ETC ultimate improvements. This wall would be approximately 2,900 ft long and up to 15 ft high. Two MSE walls would be constructed in the median of SR-91 to support the connector as it transitions to an elevated structure. The MSE walls would be approximately 1,350 ft long and up to 15 ft high. One retaining wall would be constructed adjacent to EB SR-91, approximately 2,200 ft west of the Coal Canyon UC and would be approximately 1,025 ft long and up to 28 ft high. The proposed wall is designed to accommodate the ultimate SR-91 CIP. In the median of SR-91, a retaining wall barrier system would be constructed to replace the existing retaining wall barrier system to accommodate the realignment of EB SR-91. The replacement median retaining wall barrier system would be of the same type and height.

Advance Signage

On SR-241 at the southern end of the Project limits, signage would be modified approximately 0.2 mi south of the Windy Ridge Wildlife Undercrossing. In addition, signage improvements would also be made on SR-91 between Coal Canyon Undercrossing and Green River Road and west of SR-241 within the existing median and highway footprint.

Drainage Improvements

Proposed drainage facilities include replacement of existing facilities with new drainage systems along the widened areas and medians of SR-241 and SR-91. Existing drainage patterns will be perpetuated. Existing conflicting facilities will either be abandoned or removed. Existing cross culverts will be extended and the new drainage systems will connect to the existing cross culverts as needed. On-site flows will be conveyed to the new drainage systems then to the existing cross culverts. Some on-site flows between the Gypsum Canyon Road UC and the Coal Canyon UC will be conveyed to new permanent best management practices (BMPs) along EB SR-91 to be treated before entering existing drainage systems. A drainage report will be prepared during Plans, Specifications and Estimate (PS&E) phase and will evaluate runoff for the proposed and improved sections, design the replaced and new drainage systems, check capacities of the existing cross culverts against the increased runoff, and also check for and mitigate any potential hydroplaning within the proposed and widened sections.

The Build Alternative would join the western limits of the RCTC initial SR-91 CIP, and is compatible with SR-91 CIP proposed lane configuration, including the number and widths of the *91 Express Lanes*, express auxiliary lanes, and GP lanes.

5.A.2.1 Traffic Analysis

Traffic forecasts were taken from the Traffic Analysis Report for the SR-241/SR-91 ELC Project (July 2015) and are based on two other recent traffic studies:

- SR-91 Corridor Improvement Project Final Traffic Study Report (Parsons Brinckerhoff, 2010)
- SR-241/SR-91 Express Lane Direct Connector Traffic and Revenue Study (Stantec, 2011)

The SR-91 CIP Final Traffic Study developed 2015 traffic forecasts for the SR-91 corridor. The 2015 forecasts represented the opening year of the initial SR-91 CIP Project. These forecasts were used to develop the 2017 forecasts in the Traffic Analysis Report prepared for the SR-241/SR-91 ELC project. The 2017 forecasts were developed from the 2015 forecasts by applying a growth rate calculated from the Orange County Transportation Authority Model (OCTAM) demands (2000) and the SR-91 CIP Final Traffic Study future demands (2015). The average annual growth rates varied between 1.6% annually to 1.8% annually.

The design year demands for the 2040 model assumed SR-91 Corridor A improvements are not in place, which is consistent with the 2012 SCAG RTP model. The SR-91/SR-241 Express Lane Direct Connector Traffic and Revenue Study developed 2035 traffic forecasts for the SR-91 corridor. The 2035 traffic forecasts represent the opening year of the ultimate SR-91 CIP Project. These forecasts were used to develop the 2040 forecasts in this study. The 2040 forecasts were developed from the 2035 forecasts by applying a growth rate calculated from the SR-91 CIP Final Traffic Study demands (2015) and the SR-91/SR-241 Express Lane Direct Connector Traffic and Revenue Study future demands (2035). The average annual growth rates varied by area.

The goal of the traffic analysis was to identify critical issues with the traffic operations of the Proposed Project. Both existing and future operations on SR-91 will be heavily congested in the peak periods, and the Proposed Project will not eliminate congestion on SR-91. As a result, the traffic analysis did not focus on achieving a specific LOS. The approved Traffic Analysis Report identifies the following measures for performance.

- Volume Served
- Speed
- Density and Level of Service
- Travel Time
- Network Performance
- *91 Express Lanes* Performance

Simulation modeling was the primary tool for analysis, using VISSIM, a microscopic, behavior-based multi-purpose traffic simulation program. VISSIM was used to simulate operations on the SR-241 and SR-91 corridors, including mainline segments, ramps, interchanges, and freeway connections. The VISSIM analysis accounted for all basic freeway, merge/diverge, and weaving segments in the study area and determined the current, and future level of service (LOS). The traffic analysis focused on the eastbound movements during the AM peak period (6:00 AM to 9:00 AM), and the westbound movements during the PM peak period (3:00 PM to 7:00 PM). The following outputs and

measures of effectiveness were reported from the VISSIM analysis for both the GP and *91 Express Lanes* in the study area.

Existing speeds for SR-91 were recorded greater than 50 miles per hour (mph) for the AM peak period in the eastbound direction and for the westbound PM peak period. The Existing speeds for EB SR-91 in the PM peak period ranged from approximately 17 mph to approximately 55 mph. Existing speeds for WB SR-91 in the AM peak period averages speeds greater than 50 mph with the exception of speeds as low as 22 mph near Green River Road and Serfas Club/Auto Center Drive interchanges.

Level of Service (2013)

Mainline and ramp peak hour LOS is summarized below for the existing condition. Acceptable operations is considered LOS D.

Table 9: Existing Year 2013 Mainline and Ramp Level of Service Analysis Summary

Location	Existing Condition (2013)	
	AM Peak Hour	PM Peak Hour
Southbound SR-241		
EB SR-91/SB SR-241 GP Connector	A	A
WB SR-91/SB SR-241 GP Connector	A	A
Northbound SR-241		
NB SR-241/EB SR-91 GP Connector	B	F
NB SR-241/WB SR-91 GP Connector	B	F
Eastbound SR-91		
EB SR-91 freeway mainline from Gypsum Canyon Road UC to Coal Canyon UC	C	F
Gypsum Canyon Road Off-Ramp	C	F
Gypsum Canyon Road Loop On-Ramp	C	F
Gypsum Canyon Road Direct On-Ramp	C	F
Westbound SR-91		
WB SR-91 freeway mainline from Coal Canyon UC to Gypsum Canyon Road UC	D	C
WB SR-91/SB SR-241 GP Connector	D	C
Gypsum Canyon Road Off-Ramp	D	C

*Source: SR-241/SR-91 Express Lanes Connector Project Traffic Analysis Report, July, 24 2015

As identified in Table 9, the existing facility operates at LOS F in the PM peak hour for the northbound SR-241 GP connector and the EB SR-91 mainline. Within these segments, demand exceeds capacity. As a result of the existing facility operations, additional measures for performance were used as a basis for evaluating future operations.

Volume Served (2017)

Throughput volumes and percent of demand unserved were compared between the 2017 No Build and Build alternatives. Throughput volume and percent of demand unserved are both measured by combining the GP and Express Lanes along SR-91 between Weir Canyon Road and Serfas Club/Auto Center Drive in the AM (westbound) and PM (eastbound) peak periods.

Figure 3 and Figure 4 identify the 2017 mainline and ramp volumes for the GP lanes and the toll facility.

Figure 3: Westbound Mainline and Toll Facility Vehicle Volume in the AM Peak Hour (2017)

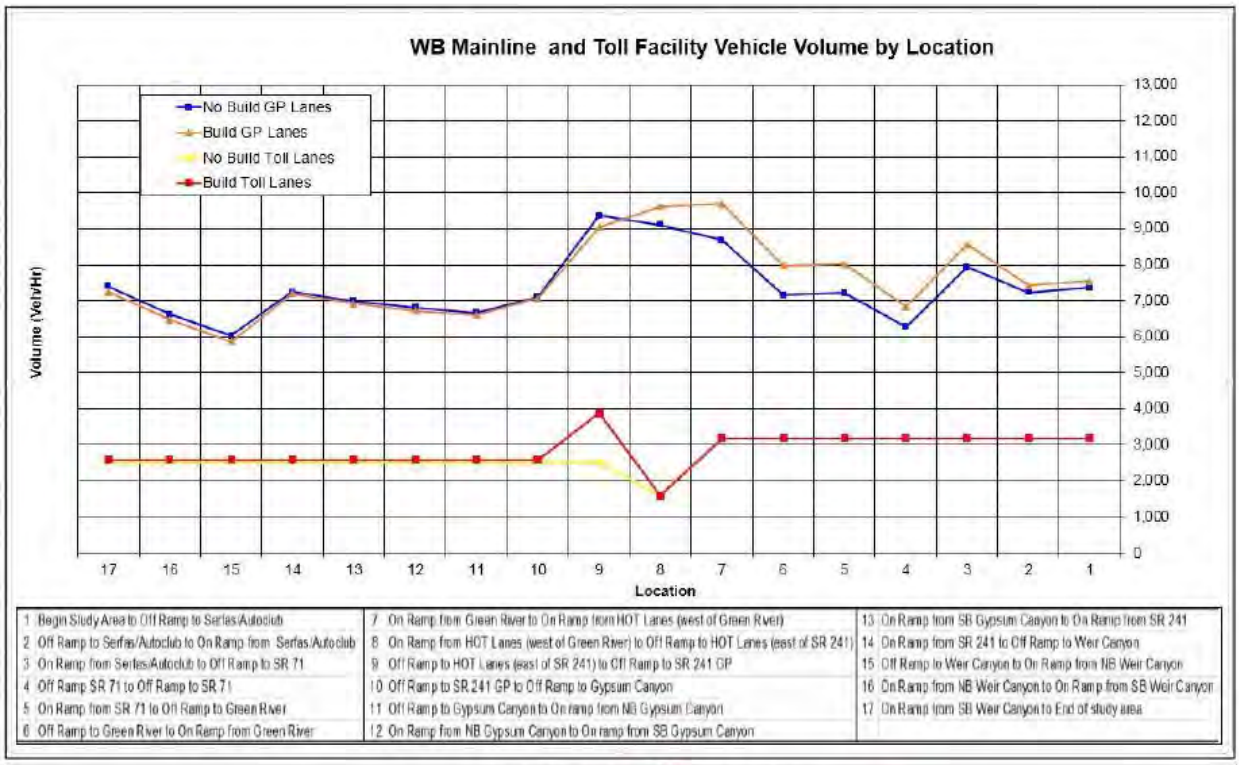
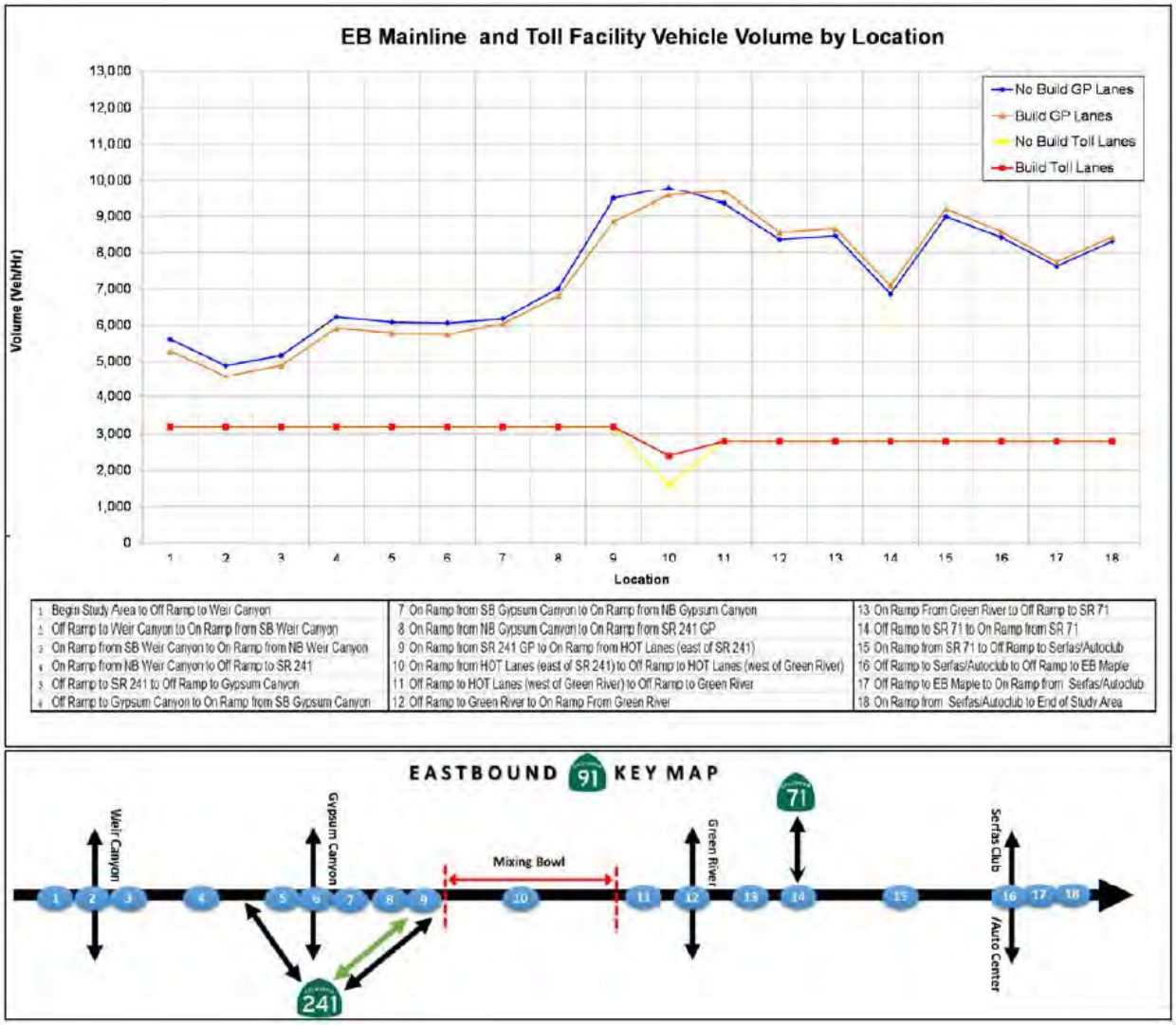


Figure 4: Eastbound Mainline and Toll Facility Vehicle Volume in the PM Peak Hour (2017)



Westbound mainline and ramp volumes for 2017 increase between the “mixing bowl” and the eastern study limits for the GP lanes with the proposed improvements. The westbound mainline and ramp volumes for 2017 between the mixing bowl and the western limits of the study limit remain the same with and without the proposed improvements. The mixing bowl is defined as the EB SR-91 ingress/egress area for Express Lane traffic. The limits of the mixing bowl are approximately from the northbound SR-241 to EB SR-91 GP lane ramp gore area to the eastbound Green River Road off-ramp. The toll facility volumes also remain approximately the same between the No Build and the Build condition in 2017.

Similar observations occur in the eastbound direction during 2017. The Build condition experiences an increase in vehicle volume between the mixing bowl and the eastern portion of the Project limits for the GP lanes. The GP lanes experience a small decrease in vehicle volume between the western study limits and the mixing bowl. The toll lanes experience little to no change in vehicle volume with the exception of a notable increase in the mixing bowl.

The increase in vehicle volume experienced in both eastbound and westbound directions with the proposed improvements in 2017, allows the corridor to serve more vehicles and provides the opportunity for more vehicles to enter the study area. Additionally, the increase in volume experienced also implies that the Proposed Project will pull trips to SR-241 from the regional freeway system.

Speed (2017)

Average speeds along the SR-91 GP lanes were compared between the 2017 No Build and 2017 Build alternatives using temporal speed diagrams for the peak period. The data are based on speed measurements taken from the VISSIM model every 0.5 miles and every 15 minutes of simulation. Averages speeds were also compared along the SR-91 GP and Express Lanes for the peak hour using line charts.

Figure 5 and Figure 6 identify the average speeds for the 2017 study area.

Figure 5: Westbound Mainline and Toll Facility Speed Comparisons in the AM Peak Hour (2017)

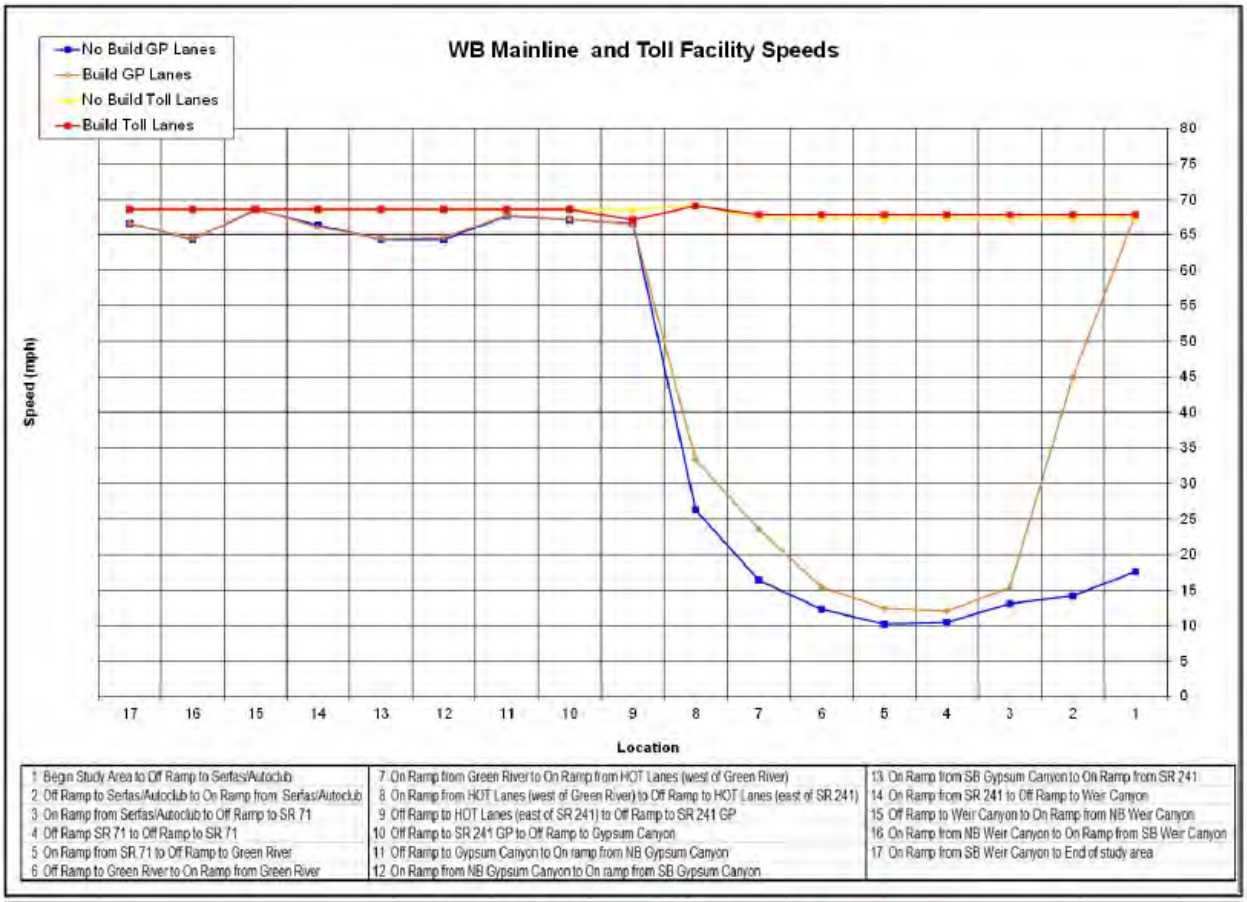


Figure 6: Eastbound Mainline and Toll Facility Speed Comparisons in the PM Peak Hour (2017)

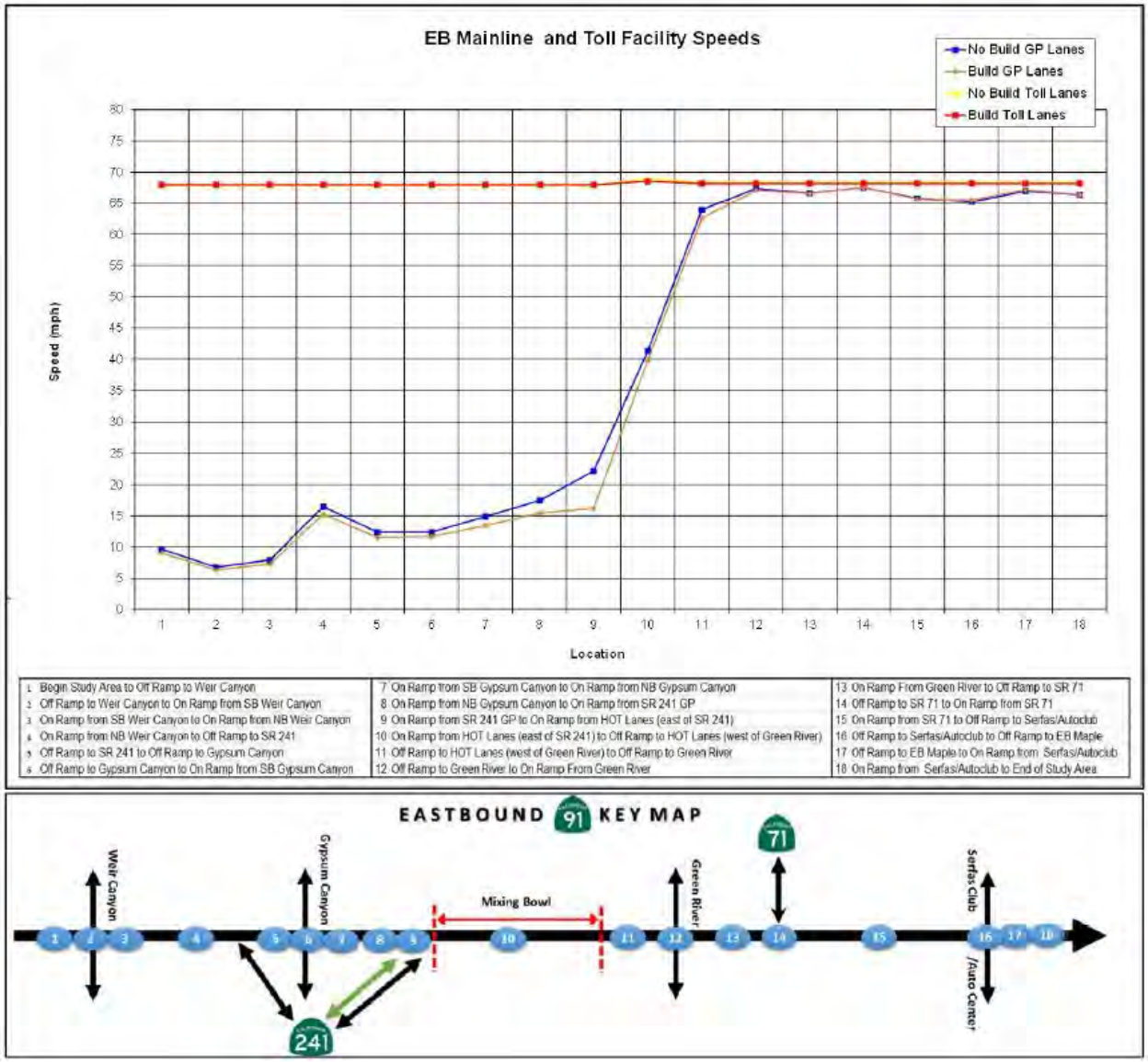


Figure 5 shows an increase in average speeds (by approximately 13 mph) on the GP lanes with the proposed improvements between the mixing bowl and the eastern study limits in the AM peak hour. All other average speeds remain approximately the same with or without the proposed improvements. The increase in speeds shows that the Proposed Project will provide some congestion relief in the 2017 AM peak period.

Figure 6 shows a decrease in average speeds (1 to 6 mph) on the GP lanes with the proposed improvements for the study limits in the eastbound PM peak hour. The decrease is due to the increased demand on the GP lanes downstream of the 91 Express Lane ingress/egress as a result of the proposed improvements. The decrease in speeds with the Proposed Project is considered nominal given the increase in combined throughput experienced in the same area.

Density and Level of Service (2017)

Density and LOS along the SR-91 GP lanes were compared between the 2017 No Build and 2017 Build alternative. Density is measured in vehicles per mile per lane along the SR-91 GP lanes in the westbound AM peak direction and the eastbound PM peak direction. The 91 Express Lane results are not reported because the 91 Express Lanes are tolled in a manner that maintain LOS D or better throughout the study area during all times of the day.

Figure 7 and Figure 8 identify the density and LOS comparisons for the 2017 study area.

Figure 7: Westbound Mainline and Toll Facility Density and LOS Comparisons in the PM Peak Hour (2017)

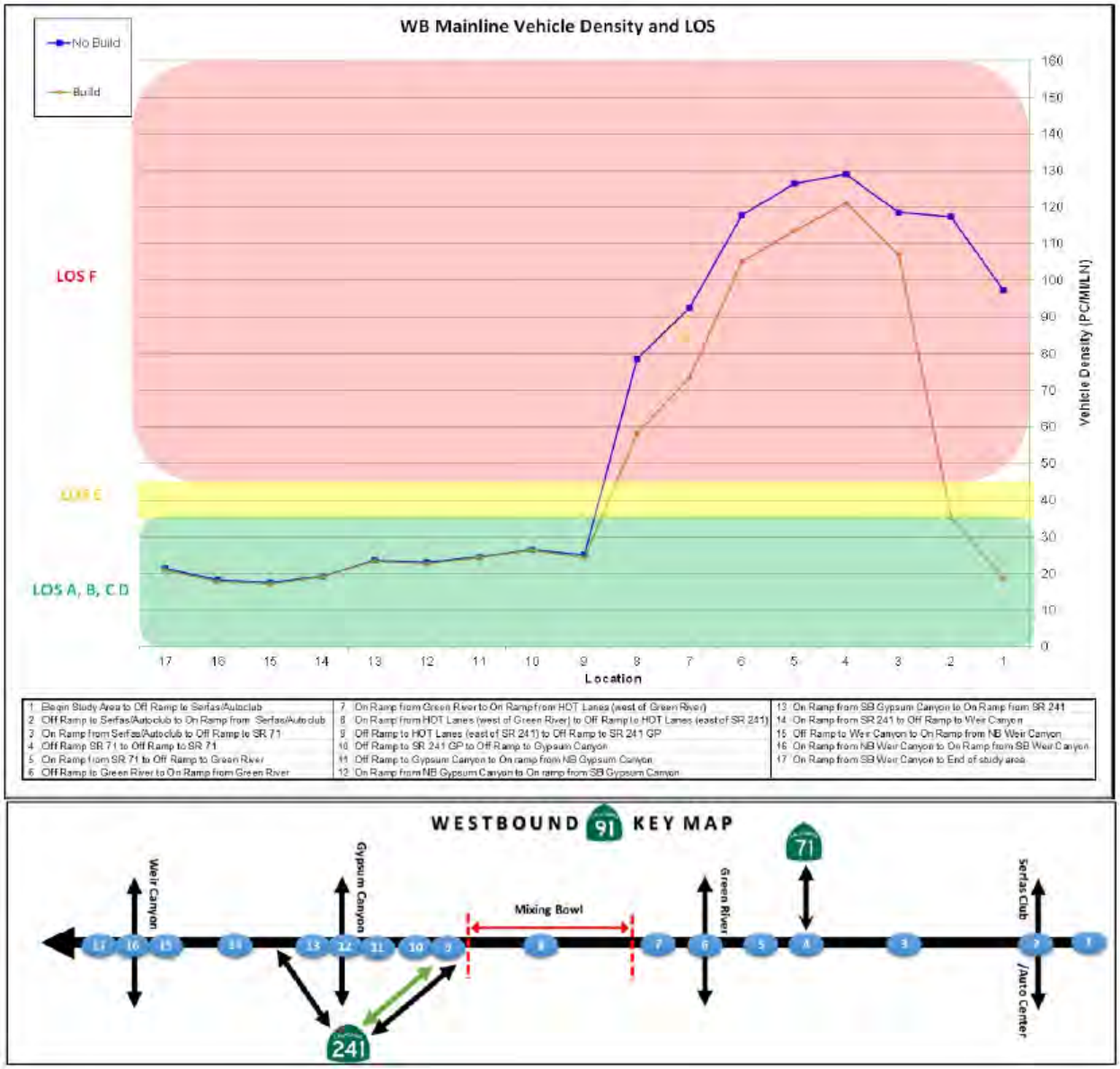
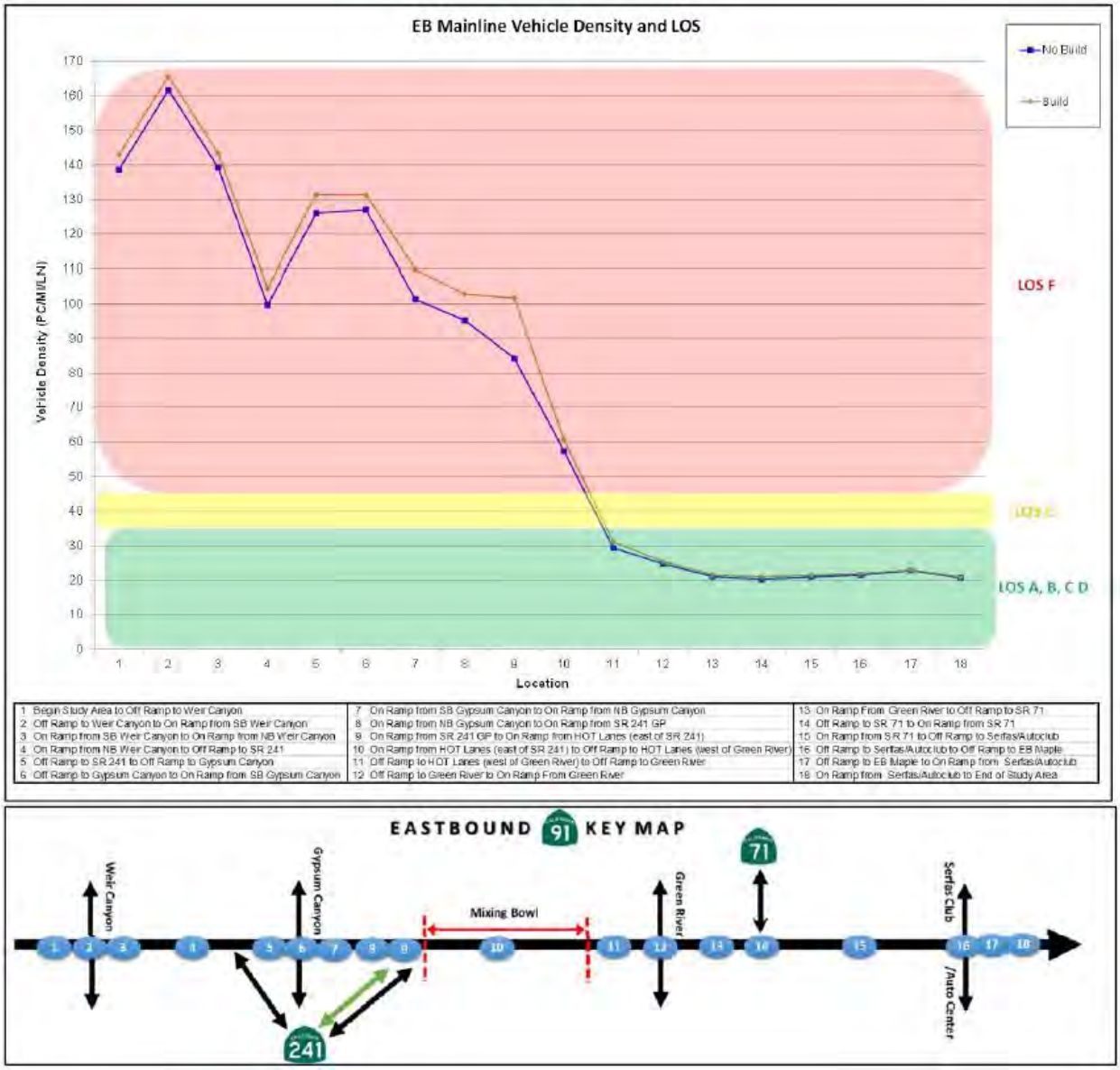


Figure 8: Eastbound Mainline and Toll Facility Density and LOS Comparisons in the PM Peak Hour (2017)



In the AM peak hour, the mainline segments in the westbound direction will operate at the same or better LOS in the 2017 Build alternative compared to the No Build alternative. In the 2017 Build alternative, a slight decrease in density is expected on the westbound mainline segments already operating at LOS F in the No Build alternative (east of SR-241).

The Proposed Project will therefore slightly improve density/LOS in the 2017 AM peak period on the SR-91 GP lanes in the westbound direction between the Express Lane ingress/egress area and the eastern limits of the study area (Serfas Club Drive/Auto Center Drive).

In the PM peak hour, the mainline segments in the eastbound direction west of the Express Lane ingress/egress will operate at the same LOS in both 2017 No Build and Build

alternatives. In the 2017 Build alternative, an increase in density is expected on the GP segments operating in LOS F (west of Green River Road interchange) due to an increase in demand in the GP lanes downstream of the Express Lane ingress/egress area between SR-241 and Green River Road interchange.

The Proposed Project will therefore slightly worsen density/LOS in the 2017 PM peak period on the SR-91 GP lanes in the eastbound direction between the Express Lane ingress/egress area and the western limits of the study area (Weir Canyon Road), but is considered nominal given the increase in combined throughput (GP and Express Lanes) experienced in the same area.

Travel Time (2017)

Travel time between major origin and destination (O-D) points within the study area was compared between the 2017 No Build and Build alternatives. Total travel time is defined in Table 8. In the AM peak period, travel times either decreased or remained the same with the proposed improvements. In the PM peak period, travel time for select locations for the SR-91 GP lanes will slightly increase in the Build alternative due to an increase in demand in the 91 Express Lane ingress/egress area between SR-241 and the Green River Road interchange. The travel time for the SR-241 northbound to SR-91 eastbound movement via the GP ramp will also increase in the Build alternative by approximately 1.5 minutes. However, the travel time for the SR-241 northbound to SR-91 eastbound movement via the new Express Lane ramp will decrease by 2.5 minutes. The travel time from northbound SR-241 to EB SR-91 via the GP connector is slightly longer in the Build condition because the density on the EB SR-91 GP lanes is slightly worse with the Proposed Project. The increase in the eastbound mixing bowl therefore leads to slower travel times in spite of the drop in demand on the northbound SR-241 to EB SR-91 GP connector. The increases in travel times for the SR-91 eastbound GP discussed above is considered nominal given the increase in combined throughput (GP and Express Lanes) experienced in the same area.

Network Performance (2017)

Table 10 compares the network performance results from the 2017 alternatives in the AM and PM peak periods.

Table 10: Summary of Network Performance for Opening Year (2017)

Performance Measure	No Build		Build Alternative (Alternative 1)	
	AM Peak Period	PM Peak Period	AM Peak Period	PM Peak Period
Total Vehicle Demand (Vehicles)	100,741	141,937	101,682	144,727
Corridor Vehicle Miles Traveled (Miles)	796,551	1,014,001	845,966	1,036,967
Total Travel Time (Hours)	23,068	26,278	21,012	27,608
Average Speed (mph)	34.5	38.6	40.3	37.6
Average Delay Time per Vehicle (min/veh)	6.8	5.3	4.9	5.7

Table 10 identifies that the Proposed Project would result in an increase in total vehicle demand and total vehicle miles traveled (VMT), which illustrates that the Proposed Project increases mobility throughout the corridor. The improvements in the Build alternative increases demand by attracting vehicles from surrounding roadways. Total travel time is reduced and average speeds are increased in the AM peak hour, but total travel times are greater and speeds are reduced (by 1 mph) in the PM peak hour. The reduction of speed in the PM peak hour is due to a regional shift that increases demand in the GP lanes. In addition, the decrease in speed, and increase in travel time are balanced by the benefits of the increase in vehicle throughput. The average delay time per vehicle decreases in the AM peak period, and increases (by 0.4 min/mile) in the PM peak hour.

91 Express Lanes Performance (2017)

Express lanes performance was studied as part of the 2017 AM and PM peak period analysis in both the No Build and Build alternatives. In the AM peak period, the westbound *91 Express Lanes* throughout the study area are projected to operate the same with and without the Proposed Project. In the PM peak period, the eastbound *91 Express Lanes* throughout the study are also projected to operate the same with and without the Proposed Project.

Volume Served (2040)

Throughput volumes and percent of demand unserved were compared between the 2040 No Build and Build alternatives. Throughput volume and percent of demand unserved are both measured by combining the GP and Express Lanes along SR-91 between Weir Canyon Road and Serfas Club/Auto Center Drive in the AM (westbound) and PM (eastbound) peak periods.

Figure 9 and Figure 10 identify the 2040 mainline and ramp volumes for the GP lanes and the toll facility.

Figure 9: Westbound Mainline and Toll Facility Vehicle Volume in the AM Peak Hour (2040)

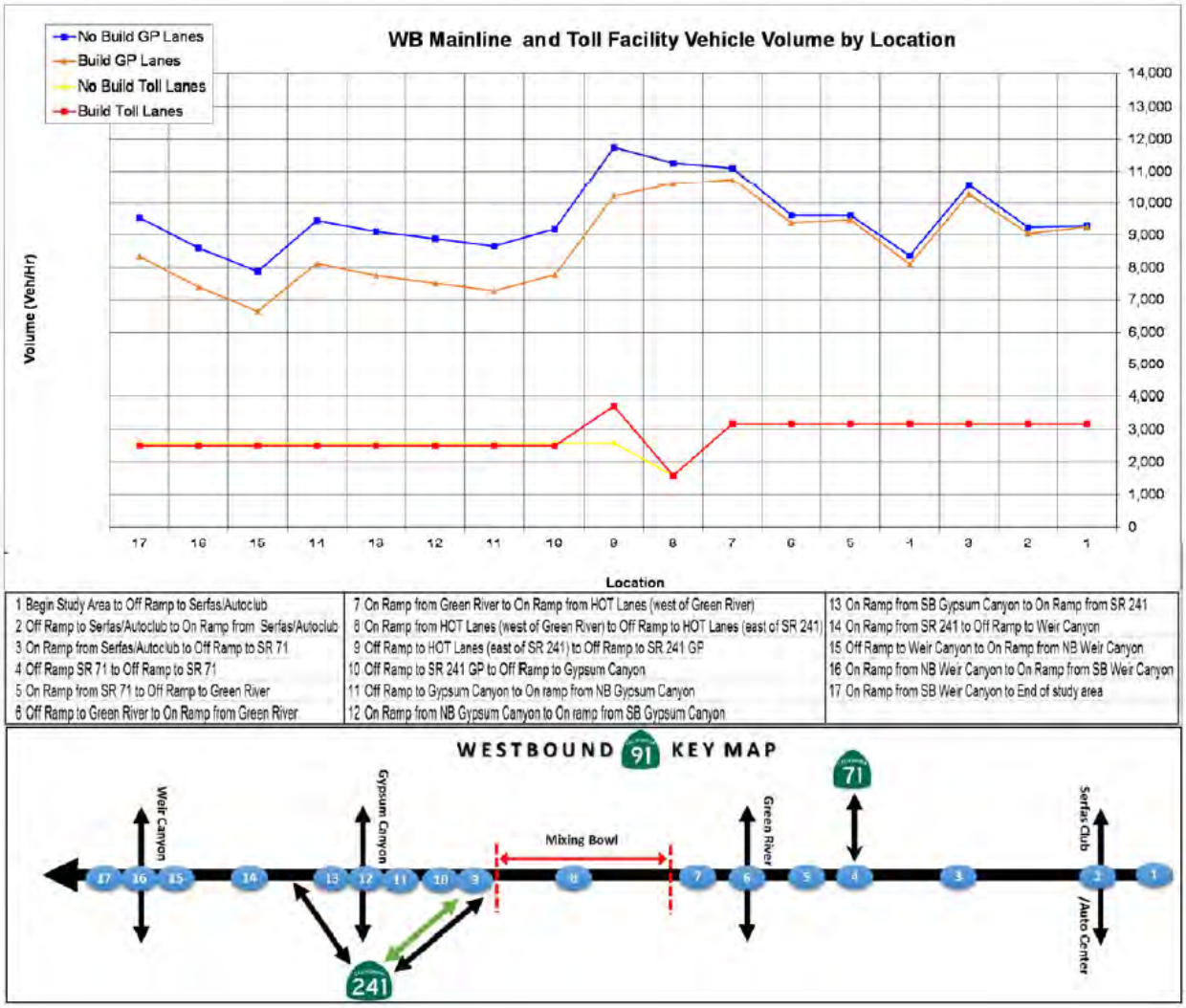
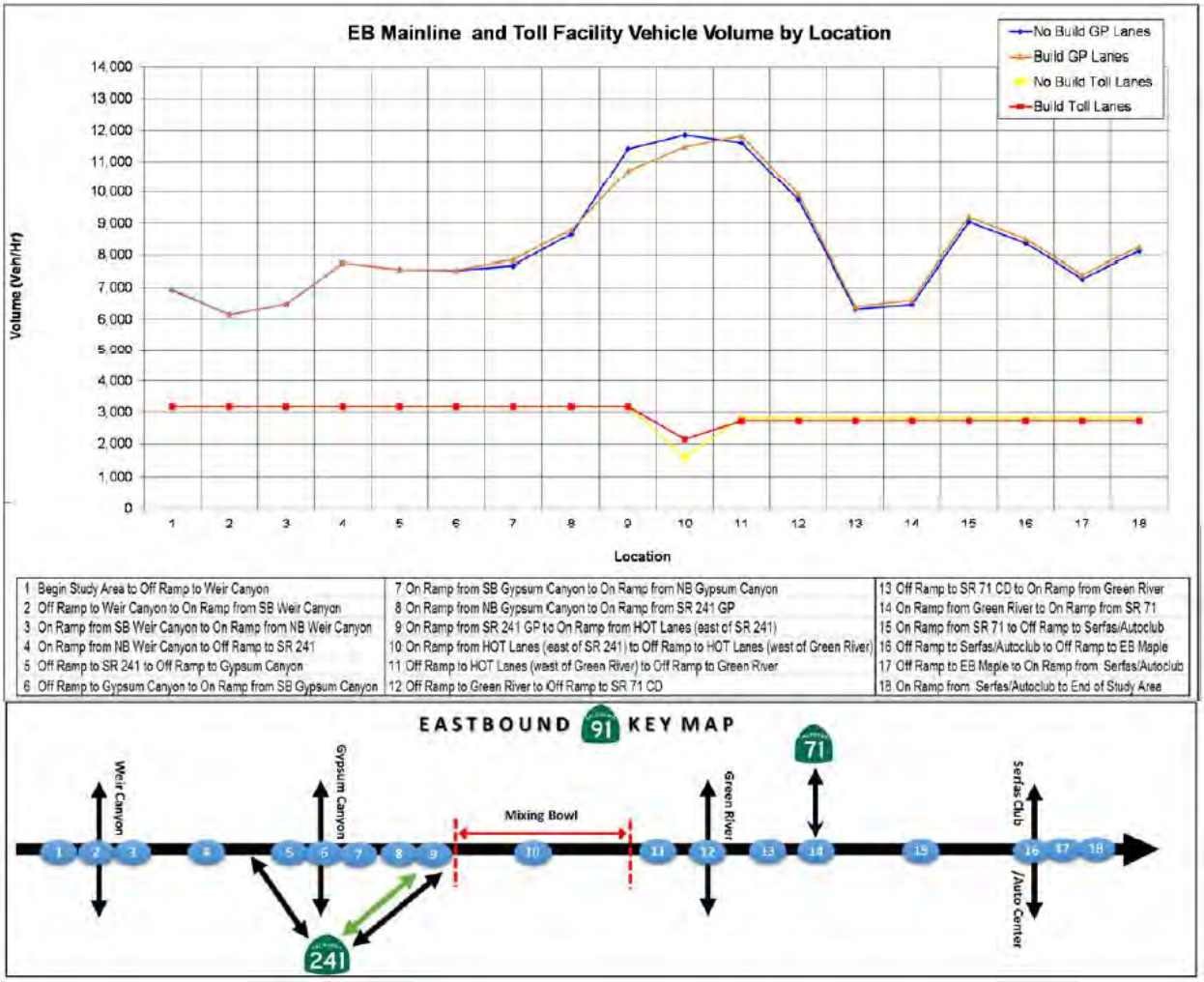


Figure 10: Eastbound Mainline and Toll Facility Vehicle Volume in the PM Peak Hour (2040)



The Build alternative has slightly higher combined demand on SR-91 westbound east of the SR-91/SR-241 interchange when compared to the No Build alternative (approximately 440 vehicles during the AM peak period), but the Build alternative has approximately 9% lower demand west of the SR-91/SR-241 interchange (approximately 3,700 vehicles during the AM peak period). This is due to a shift of travel patterns that increases demand southbound on SR-241.

The Build alternative in the AM peak period serves slightly more vehicles east of the SR-91/SR-241 interchange than the No Build alternative (approximately 430 more vehicles or 1%), but approximately 3,500 fewer vehicles west of the SR-91/SR-241 interchange. However, the SR-91 westbound to SR-241 southbound movement serves approximately 3,300 more vehicles in the Build alternative compared to the No Build alternative due to the addition of the direct connector ramp, offsetting this difference. Furthermore, the average percent unserved traffic along the entire length of SR-91 is the same between the Build and No Build alternatives. The conclusion is that the Build alternative is able to serve the same or slightly more vehicles in the peak direction of SR-91 upstream of the Express Lane ingress/egress area, and more vehicles along SR-241 southbound. Due to

a shift in travel patterns, the Build alternative serves more vehicles along SB SR-241 and less vehicles along WB SR-91 downstream of the Express Lane ingress/egress area. This represents a slight improvement in the overall efficiency of the system.

The Build alternative in the PM peak period has the same combined demand (GP and Express lane trips) in the peak eastbound direction of travel when compared to the No Build alternative. Under the Build alternative, the volume served is slightly greater (about 300 vehicles during the PM peak period) than the No Build alternative in the peak direction of travel (eastbound). This change is due to the shift of approximately 800 peak hour trips from the SR-241 northbound to SR-91 eastbound GP ramp over to the Express Lane ramp, which slightly lowers demand in the GP lanes in that area. The conclusion is that the Build alternative is able to serve slightly more vehicles and more vehicles are able to enter the study area. With the Proposed Project, there will be an improvement in the overall efficiency of the system.

Speed (2040)

Average speeds along the SR-91 GP lanes were compared between the 2040 No Build and 2040 Build alternatives using temporal speed diagrams for the peak period. The data are based on speed measurements taken from the VISSIM model every 0.5 miles and every 15 minutes of simulation. Average speeds were also compared along the SR-91 GP and Express Lanes for the peak hour using line charts.

Figure 11 and Figure 12 identify the average speeds for the 2040 study area.

Figure 11: Westbound Mainline and Toll Facility Speed Comparisons in the AM Peak Hour (2040)

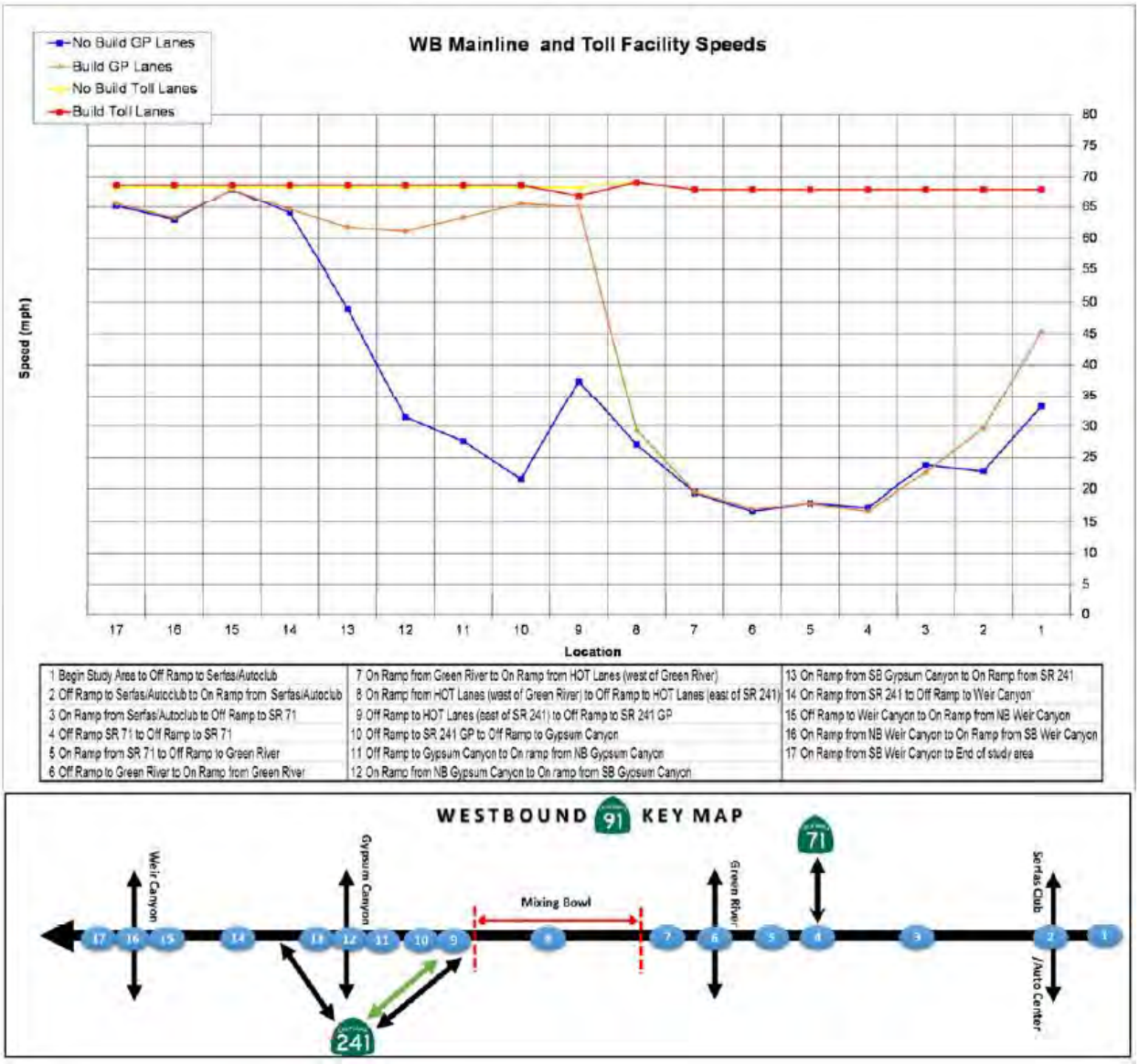
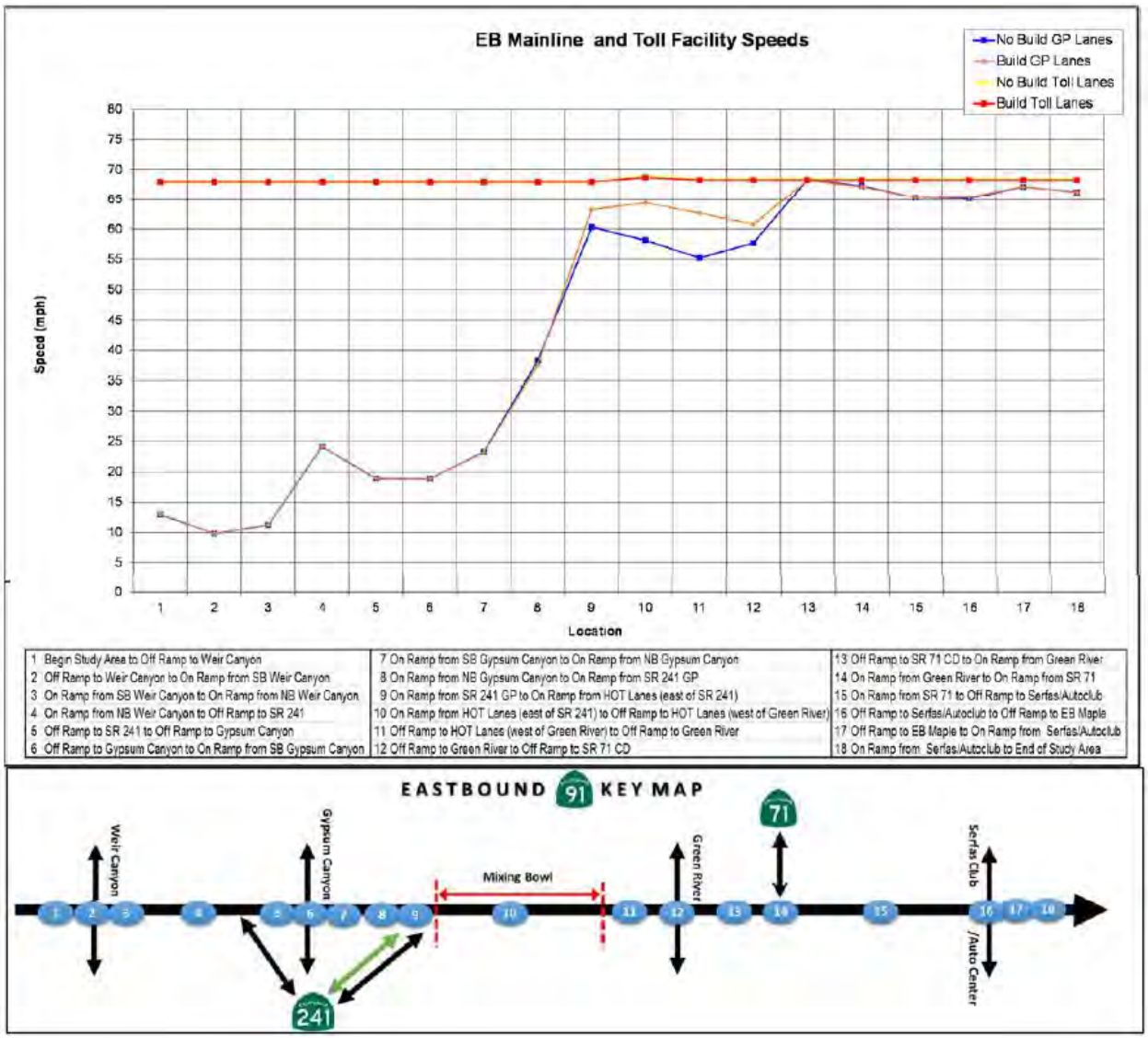


Figure 12: Eastbound Mainline and Toll Facility Speed Comparisons in the PM Peak Hour (2040)



In the AM peak period 2040 Build alternative, an increase in speed of approximately 30 mph (from 33 to 63 mph) is expected compared to the No Build alternative on the mainline segments west of SR-241 interchange. The conclusion is the Proposed Project will provide some congestion relief in the 2040 AM peak period by reducing the limits and duration of the westbound bottleneck.

Speeds along SR-91 eastbound in the PM peak period are generally the same between the Build and No Build alternative in most segments of the corridor, with the exception of the segment between the SR-241 on-ramp and SR-71 Collector-Distributor (C-D) off-ramp. Speeds are approximately 5 mph higher in the Build alternative in this area compared to the No Build alternatives. In the Express Lanes, the speeds are projected to remain near free-flow in the ingress/egress area. The Proposed Project therefore provides benefit in terms of increased speeds in the eastbound GP lanes in the 2040 Build alternative.

Density and Level of Service (2040)

Density and LOS along the SR-91 GP lanes were compared between the 2040 No Build and 2040 Build alternative. Density is measured in vehicles per mile per lane along the SR-91 GP lanes in the westbound AM peak direction and the eastbound PM peak direction. The 91 Express Lane results are not reported because the *91 Express Lanes* are tolled in a manner that maintain LOS D or better throughout the study area during all times of the day.

Figure 13 and Figure 14 identify the density and LOS comparisons for the 2040 study area.

Figure 13: Westbound Mainline and Toll Facility Density and LOS Comparisons in the PM Peak Hour (2040)

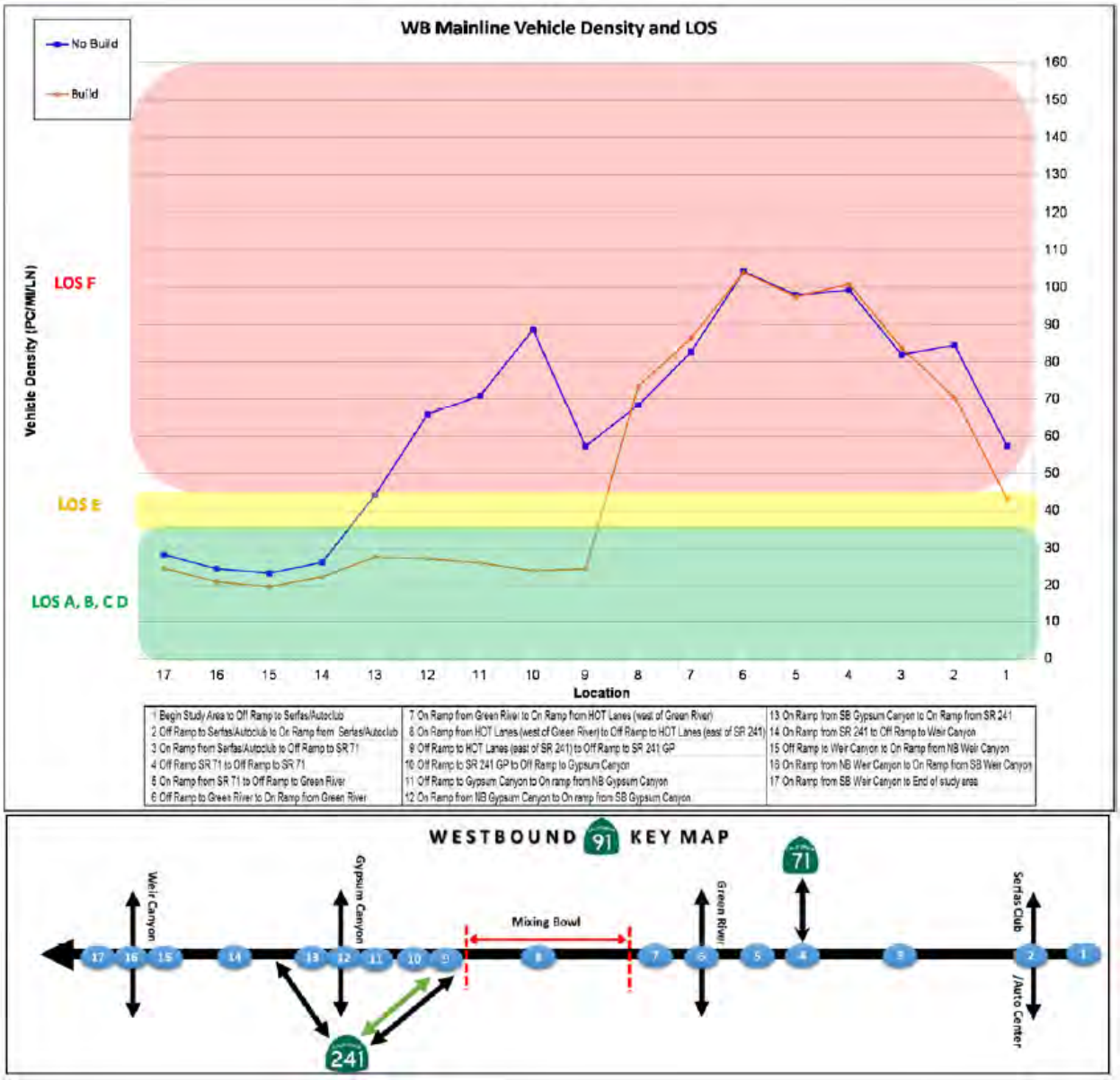
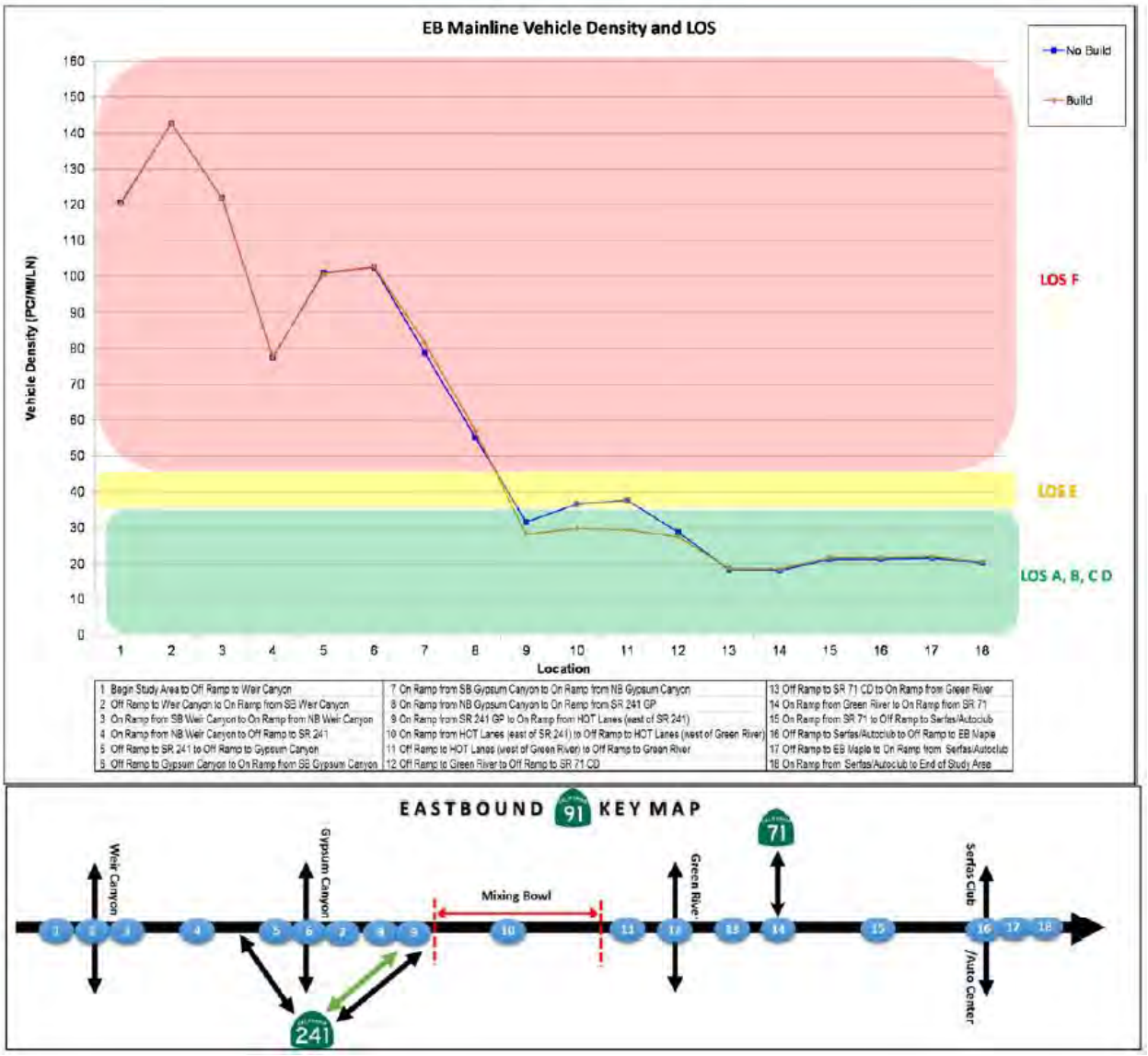


Figure 14: Eastbound Mainline and Toll Facility Density and LOS Comparisons in the PM Peak Hour (2040)



In the AM peak period, the GP lanes in the westbound direction will operate at the same LOS in both 2040 No Build and Build alternatives except in the area between the Green River Road interchange and the SR-241 interchange. The GP lane segment between the Green River Road and SR-241 interchanges is expected to operate at LOS D or better in the Build alternative, compared to LOS F in the No Build alternative. This is caused by higher demand in the GP lanes of this segment in the No Build alternative compared to the Build alternative. The Proposed Project will therefore provide substantial improvements in density/LOS on the SR-91 GP lanes in the 2040 AM peak period in the westbound direction between the Express Lane ingress/egress area and the SR-241 interchange.

In the 2040 Build alternative, a decrease in density is expected in the GP lanes in the vicinity of the Express Lane ingress/egress area when compared to the No Build alternative. These segments between the SR-241 and Green River Road interchanges

are expected to operate at LOS E without the Proposed Project compared to LOS D or better with the Proposed Project. The decrease in density in the GP lanes is due to slightly lower demand in the Build alternative caused by the shift of approximately 800 trips from the SR-241 northbound-to-SR-91 eastbound GP ramp over to the Express Lane ramp. The Proposed Project will therefore slightly worsen the density/LOS in the 2040 PM peak period on the SR-91 GP lanes in the eastbound direction between the Express Lane ingress/egress area and the western limits of the study area (Weir Canyon Road), but is considered nominal given the increase in combined throughput (GP and Express Lanes) experienced in the same area.

Travel Time (2040)

Travel time between major origin and destination (O-D) points within the study area was compared between the 2040 No Build and Build alternatives. Total travel time is defined in Table 11.

In the AM peak period, travel times for most of the O-D pairs will either stay the same or decrease in the westbound direction on SR-91 in the 2040 Build alternative due to Proposed Project improvements. Travel times in the SR-91 eastbound (off peak) direction are also expected to improve in the Build alternative compared to the No Build alternative. This change is caused by a shift in regional travel patterns that causes lower GP lane demand on SR-91 eastbound west of the SR-241 interchange in the Build alternative.

In the PM peak period, all of the travel times for the select O-D pairs will either stay the same or decrease in the Build alternative compared to the No Build alternative. The decrease in travel time is due to the shift of trips from the SR-241 northbound to SR-91 eastbound GP ramp over to the Express Lane ramp, which lowers the GP lane demand in the Express Lane ingress/egress area.

Network Performance (2040)

Table 11 compares the network performance results from the 2040 alternatives in the AM and PM peak periods.

Table 11: Summary of Network Performance for Design Year (2040)

Performance Measure	No Build		Build Alternative (Alternative 1)	
	AM Peak Period	PM Peak Period	AM Peak Period	PM Peak Period
Total Vehicle Demand (Vehicles)	119,605	168,494	120,167	168,944
Corridor Vehicle Miles Traveled (Miles)	939,671	1,173,727	953,732	1,193,635
Total Travel Time (Hours)	27,641	26,063	25,219	25,477
Average Speed (mph)	34.0	45.1	37.8	46.9
Average Delay Time per Vehicle (min/veh)	7.0	3.4	5.6	3.1

Table 11 illustrates that the Proposed Project provides a benefit on all performance measures in year 2040.

In the AM peak period, the proposed improvements would increase vehicle throughput and decrease percent unserved. VMT increases with the proposed improvements because vehicle throughput increases. The average speed per vehicle increases by approximately 4 mph with the proposed improvements, and average delay per vehicle decreases by approximately 20% for the AM peak period.

In the PM peak period, the proposed improvements would increase vehicle throughput and decrease percent unserved. VMT increases with the proposed improvements because vehicle throughput increases. The average speed per vehicle increases by approximately 2 mph with the proposed improvements, and average delay per vehicle decreases by approximately 30 seconds for the AM peak period.

***91 Express Lanes* Performance (2040)**

Express Lanes performance were studied as part of the 2040 AM and PM peak period analysis in both the No Build and Build alternatives. In the AM peak period, the westbound *91 Express Lanes* throughout the study area are projected to operate the same with and without the Proposed Project. In the PM peak period, the eastbound *91 Express Lanes* throughout the study are also projected to operate the same with and without the Proposed Project.

5.A.2.2 Nonstandard Mandatory and Advisory Design Features

The Build alternative requires exceptions to mandatory and advisory design standards. Fact Sheets will be prepared and approved subsequent to circulation of the Draft Supplemental EIR/EIS and prior to completion of PA/ED. A Design Standards Risk Assessment has been prepared and is included in Attachment K. The proposed exceptions to mandatory and advisory design standards are summarized in the sections below.

Mandatory Design Features

Mandatory Design Exception Feature #1 – Stopping Sight Distance: Highway Design Manual (HDM) Index 201.1 - Sight Distance, states "**Table 201.1 shows the minimum standards for stopping sight distance related to design speed for motorists.**" Per Table 201.1 the Stopping Sight Distance for a design speed of 75 miles per hour shall be 840 ft.

Table 12: Nonstandard Horizontal Alignment Stopping Sight Distance (SSD)

Location	Line	Station Limits		Minimum SSD		
		From	To	Existing	Proposed	Standard
1-1	EB SR-91	1430+69	1437+58	580-ft to 840-ft	580-ft to 840-ft	840-ft

Proposed nonstandard stopping sight distance maintains the existing condition as shown in Table 12 above.

Mandatory Design Exception Feature #2 – Lane Width: HDM Index 301.1 - Lane Width, stating "**The minimum lane width on two-lane and multilane highways, ramps, collector-distributor roads, and other appurtenant roadways shall be 12 ft.**"

Table 13: Nonstandard Lane Width

Location	Line	Station Limits		Lane Width		
		From	To	Existing	Proposed	Standard
1	WB SR-91	453+71	524+39	11-ft	11-ft	12-ft
2	EB SR-91	1520+12	1526+00	11-ft	11-ft	12-ft

Proposed lane widths maintains the existing condition as shown in Table 13 above.

Mandatory Design Exception Feature #3 – Shoulder Width: HDM Index 302.1 – Width, stating "**The shoulder widths given in Table 302.1 shall be the minimum continuous usable width of paved shoulder on highways.**"

Table 14: Nonstandard Shoulder Width

Location	Line	Station Limits		Shoulder Width		
		From	To	Existing	Proposed	Standard
1	EB SR-91	1427+82	1432+92	6-ft to 7.5-ft	6 to 10-ft	10-ft

A nonstandard left median shoulder is present on the existing mainline at the proposed location. The proposed nonstandard shoulder width improves the existing condition as shown in Table 14 above.

Mandatory Design Exception Feature #4 – Standards for Superelevation: HDM Index 202.2(1) – Standards for Superelevation, stating "**Based on an e_{max} selected by the designer for one of the conditions, superelevation rates from Table 202.2 shall be used within the given range of curve radii. If less than standard superelevation rates are approved (see Index 82.1), Figure 202.2 shall be used to determine superelevation based on the curve radius and maximum comfortable speed.**"

Table 15: Nonstandard Superelevation

Location	Line	Station Limits		Superelevation		
		From	To	Existing	Proposed	Standard
1	GM1	44+67	44+81	N/A	e=10%	e=12%

Proposed Nonstandard superelevation rate is summarized in Table 15 above.

Mandatory Design Exception Feature #5 – Location & Design of Ramp Intersections on Crossroads: HDM Index 504.3(3) - Location and Design of Ramp Intersection on the Crossroads, stating "**The minimum distance (curb return to curb return) between ramp intersections and local road intersections shall be 400 ft.**" Nonstandard ramp to local road intersection distance is present in the existing condition between the Gypsum Canyon Road eastbound off-ramp and Santa Ana Canyon Road/Gypsum Canyon Road intersection.

Table 16: Nonstandard Location & Design of Ramp Intersection on Crossroads

Location	Limits	Distance		
		Existing	Proposed	Standard
1	Gypsum Canyon Road Eastbound Off-Ramp to Santa Ana Canyon Road/Gypsum Canyon Road	370-ft	370-ft	400-ft

Nonstandard ramp to local road intersection distance is present in the existing condition. Proposed ramp to local road intersection distance maintains the existing condition as shown in is summarized in Table 16 above.

Advisory Design Features

Advisory Design Exception Feature #1 – Single Lane Connections: HDM Index 504.4(5) – Single-Lane Connections, stating "Single lane connectors in excess of 1,000 ft in length should be widened to two lanes to provide for passing maneuvers."

Table 17: Nonstandard Single lane Connections

Location	Line	Station Limits		Connector Length		
		From	To	Existing	Proposed	Standard
1	NB SR-241/EB SR-91	"241 DC2" 97+56	"EB 91" 1516+35	N/A	Single lane Connector for 11,534-ft	Two Lane Connector when >1,000-ft
2	WB SR-91/SB SR-241	"241 DC1" 484+36	"241 DC4" 470+22	N/A	Single lane Connector for 8,220-ft	Two Lane Connector when >1,000-ft

Nonstandard single lane direct connectors in excess of 1,000 ft in length are proposed along the NB SR-241/EB SR-91 and WB SR-91/SB SR-241 direct connectors. Proposed design exceptions are summarized in Table 17 above.

Advisory Design Exception Feature #2 – Superelevation Transition: HDM Index 202.5(1) - Superelevation Transition, stating "A superelevation transition should be designed in accordance with the diagram and tabular data shown in Figure 202.5A to satisfy the requirements of safety, comfort and pleasing appearance."

Table 18: Nonstandard Superelevation Transition

Location	Line	Station Limits		Runoff Length		
		From	To	Existing	Proposed	Standard
1	GM1	"GM1" 43+00	"GM1" 44+67	N/A	167-ft	240-ft
2	GM1	"GM1" 44+81	"GM1"" 46+48	N/A	167-ft	240-ft
3	GM2	"GM2" 42+44	"GM2" 44+44	N/A	200-ft	300-ft

Nonstandard superelevation transitions are summarized in Table 18 above.

Advisory Design Exception Feature #3 – Side Slopes: HDM Index 304.1 - Side Slope Standards, stating "For new construction, widening, or where slopes are otherwise being modified, embankment (fill) slopes should be 4:1 or flatter."

Table 19: Nonstandard Side Slopes

Location	Line	Station Limits		Side Slopes		
		From	To	Existing	Proposed	Standard
1	GM2	"GM2" 46+30	"GM2" 49+52	3:1 or Flatter	2:1	4:1 or Flatter
2	GM3	"GM3" 45+75	GM3" 49+75	2:1 or Flatter	2:1	4:1 or Flatter

Nonstandard side slopes are summarized in Table 19 above.

5.A.2.3 Interim Features

There are no proposed interim improvements within the Project limits.

5.A.2.4 High-Occupancy Vehicle (Bus and Carpool) Lanes

SR-91 features two existing express lanes in the eastbound and two existing express lanes in the westbound direction. Vehicles in *91 Express Lanes* with three or more persons (HOV 3+) can use the facility toll-free (although they still are required to have a transponder), except when traveling eastbound on Monday through Friday between the peak hours of 4:00 PM and 6:00 PM. During that peak time, when traveling through the HOV 3+ lane reader, drivers receive a 50 percent discount on the posted toll. This same discount policy also applies to zero emission vehicles, motorcycles, vehicles with disabled person license plates and disabled veterans license plates. The WB SR-91 are 11-ft lanes with a two-foot buffer. The EB SR-91 are 12-ft lanes with a four-foot buffer. *91 Express Lanes* are in operation at all times. SR-241 is a toll only facility and does not include HOV

lanes. The Build alternative does not propose any new HOV lanes along SR-241 or SR-91.

5.A.2.5 Ramp Metering

For the Build Alternative, the loop detectors and ramp metering facilities at the SR-91/Gypsum Canyon Road interchange will be modified due to EB SR-91 mainline and ramp realignment. The loop detectors and ramp metering will be provided on Gypsum Canyon Road eastbound loop and direct on-ramp, as they currently exist along the SR-91 project limits. A maintenance vehicle pullout will be provided for accessing controller cabinets. Fiber optic communication to each controller cabinet will be included. Controller cabinet setup will incorporate hardware and software for communication.

5.A.2.6 California Highway Patrol (CHP) Enforcement Areas

For the Build Alternative, CHP enforcement areas will be provided on Gypsum Canyon Road eastbound loop and direct on-ramps. Based on the potential moving violation enforcement needs, the following CHP enforcement area is proposed:

- Along the NB SR-241 GP lanes right shoulder just south of SR-91. This area would monitor the northbound-to-eastbound movement onto the proposed ELC and would be placed in the vicinity of the ELC ramp diverge area. This enforcement area is needed to discourage travelers from using the ELC ramp lane to queue jump traffic that is in queue for the SR-91 GP lanes.

Along *91 Express Lanes*, east of the proposed ELC touch down point within the center median of SR-91, approximately 800 ft west of the Coal Canyon UC a CHP enforcement and turnaround area is being constructed as part of the SR-91 CIP. This area can serve to monitor the westbound-to-southbound movement onto the proposed ELC and the queue jumping from the ELC ramp lane to the EB SR-91 GP lanes in route to the City of Corona or SR-71.

5.A.2.7 Park and Ride Facilities

No existing Park and Ride Facilities are located within the Project limits. Additional Park and Ride Facilities are not proposed as part of the Proposed Project due to right-of-way constraints and lack of accessibility to SR-241 from potential locations within the Project limits. Existing Park and Ride Facilities are located along the SR-91 corridor in the City of Corona at Main Street and in the City of Orange at Tustin Avenue. Yatman Kwan, Park and Ride Coordinator, reviewed this DPR on October 21, 2016 and had no comments relative to Park and Ride Facilities.

5.A.2.8 Utility and Other Owner Involvement

There are existing utility facilities within the Proposed Project limits. The following agencies/companies have utilities that are located within or adjacent to the existing State right-of-way within the Proposed Project limits:

- SCE – Electrical
- Southern California Gas Company (SCG) – Gas
- AT&T (PacBell) – Communication
- Santa Ana Regional Interceptor (SARI) – Wastewater Pipeline
- Four Corners Pipeline (Questar) – In-active Crude Oil Pipe Line
- OCTA – Fiber Optic

- F/ETCA – Fiber Optic

Preliminary contacts have been initiated with utility owners and facility as-builts have been obtained. Utility coordination and verification will be continued through the development of the PS&E phase of the Proposed Project. Existing utilities should be potholed during design to accurately identify existing locations definitively. Notice to owners to relocate and agreements will be required for OCTA underground Fiber Optic, F/ETCA Communication Lines and AT&T Underground Telephone Lines. Notice to owners and utility agreements will be sent out to the affected utility companies during the PS&E phase.

The following utilities are in conflict with the Proposed Project improvements. The precise limits for the utility conflicts will be determined and finalized during the PS&E phase.

- SCE – Electrical
- SCG – Gas
- AT&T (PacBell) – Communication
- OCTA – Fiber Optic
- F/ETCA – Fiber Optic

5.A.2.9 Railroad Involvement

The Proposed Project does not have any impact to existing railroad.

5.A.2.10 Highway Planting

There are no existing highway planting located within the Proposed Project limits. Highway planting is not proposed as part of the Proposed Project. Disturbed areas and slopes would be treated with non-irrigated native erosion control seed mix. See Section 5 Erosion Control below.

5.A.2.11 Erosion Control

The existing small slopes are stable and vegetated with native plants. Where such existing vegetated areas can be feasibly preserved, they will be; otherwise, where disturbance is unavoidable, the disturbed vegetation will be replaced with an erosion control mix. Erosion control measures shall be applied at disturbed soil areas after grading operations are completed. Specific erosion control measures will be coordinated with the Caltrans District staff during the PS&E phase of the project.

During construction activities, sediments in stormwater discharges will be controlled by implementing appropriate BMPs. These measures will be detailed in the Storm Water Pollution Prevention Plan (SWPPP) which will be prepared for the construction phase of the project. Standard construction site BMPs (such as gravel bag berms, temporary fiber rolls, etc.) will be utilized during construction to minimize storm water pollution.

5.A.2.12 Noise Barriers

Three existing soundwalls are located within the Project limits. Two existing soundwalls are located adjacent to WB SR-91 within the local service interchange at Gypsum Canyon Road and one along the WB SR-91/SB SR-241 connector. The Proposed Project does not impact the existing soundwalls. Per the approved October 2015 Noise Study Report (NSR), soundwalls have not been recommended for implementation on the Proposed Project. A Noise Abatement Decision Report (NADR) is not required because soundwalls are not proposed for the Build Alternative.

5.A.2.13 Nonmotorized and Pedestrian Features

The Santa Ana River Trail is located north of SR-91 within the Project limit, however it is not impacted the Proposed Project. Per the Orange County Parks Master Planned Regional Trails and Bikeways, a planned trail is proposed along the Gypsum Canyon Road interchange which the Proposed Project does not preclude.

5.A.2.14 Needed Roadway Rehabilitation and Upgrading

Pavement rehabilitation is not part of the purpose and need of the Proposed Project.

5.A.2.15 Needed Structure Rehabilitation and Upgrading

The affected structures within the Proposed Project are single span structures that generally do not need to be retrofitted. Based on the findings of the Caltrans Maintenance Reports or subsequent field reviews, some rehab may be required such as crack repair, barrier/Midwest Guardrail System repair, spall or other repairs as identified. Routine maintenance and rehabilitation needs identified in the Caltrans Maintenance Reports will be addressed as a part of the Proposed Project.

5.A.2.16 Cost Estimates

A detailed cost breakdown for the Build Alternative is included in Attachment B. The total construction capital cost has been escalated to Year of Expenditure (YOE) FY 2018/2019. Table 20 summarizes the construction capital costs which does not include the Total Capital Outlay Support Cost.

Table 20: Project Cost Estimate

Build Alternative (Alternative 1)	
CONSTRUCTION COST	
Roadway	$94,923,119
Structures	$42,457,362
RIGHT-OF-WAY COST	$543,267
TOTAL PROJECT CAPITAL OUTLAY COST	$137,924,000

5.A.2.17 Right-of-Way Data

A Right-of-Way Data Sheet has been prepared for the Build Alternative, and is included in Attachment C, which includes a cost estimate for right-of-way acquisition and utilities relocation. Additional information is provided under section 6D of this DPR. The following list identifies the right-of-way acquisitions:

- Fee Acquisition: 5.09 acres from APN 085-071-56, currently owned by County of Orange, to be purchased by F/ETCA
- Permanent Maintenance Easement: 5.09 acres from APN 085-071-56, upon completion of construction, fee granted to Caltrans and permanent maintenance easement reserved by F/ETCA

5.A.2.18 Effect of Projects-Funded-by-Others on State Highway

The Proposed Project is funded by F/ETCA. The Proposed Project will improve throughput and the operation of the SR-241/SR-91 connector as well as reduce weaving along SR-91. No adverse impacts to the operation of the State facilities are anticipated.

5B. REJECTED ALTERNATIVES

OCTA prepared the 91 Express Lanes Extension and SR-241 Connector Feasibility Study in March 2009. Initially, six Build Alternatives were studied in the feasibility study, and three of these were rejected (Alternative Concepts 2, 5, and 6) during the screening process. The remaining three Alternative Concepts (Alternative Concepts 1, 3, and 4) were carried forward for more detailed evaluation in the PSR-PDS phase. During preparation of the PSR-PDS, the remaining three Build Alternatives were evaluated, Alternative Concepts 3 and 4 were rejected, and Alternative Concept 1 was carried forward for further evaluation in this DPR. Descriptions of the rejected alternatives are provided below.

Alternative Concept 2

Alternative Concept 2 would have provided a four-lane High Occupancy Toll (HOT) median-to-median connector between SR-241 and the existing *91 Express Lanes*. This alternative is similar to Alternative Concept 4 except that no additional capacity would have been added to *91 Express Lanes*. The additional traffic added to the *91 Express Lanes* would result in potential capacity deficiencies. Alternative Concept 4 rather than Alternative Concept 2 would allow the logical termination point for the proposed third express lane between SR-241 and SR-71 to be determined based on needed capacity. In addition, this alternative would have resulted in additional impacts to coastal sage scrub (CSS) habitat compared to Alternative Concept 1. Therefore, this alternative concept was rejected in favor of Alternative Concept 4.

Alternative Concept 3

Alternative Concept 3 included a reversible two-lane connector. Although the concept of a reversible connector was feasible from a design consideration, the additional traffic associated with a reversible connector would have been an issue for the *91 Express Lanes*. The two-lane connector would have provided sufficient capacity, but the concept would not have included any additional capacity on the critical segment of the *91 Express Lanes* east of SR-241. While the connector could be built, it would not have addressed the project objective of reducing traffic congestion. Therefore, Alternative Concept 3 was dropped from further consideration.

Alternative Concept 4

Alternative Concept 4 would have provided a four-lane connector and addressed the operational issues of the additional traffic in the 91 Express Lanes by widening the 91 Express Lanes to three lanes in each direction to approximately the SR-71 interchange. It would have provided a median-to-median connection and addressed issues of congestion relief, but the concept would have substantially higher costs and was not consistent with the ETC EIR/EIS. Construction of the additional 91 Express Lanes would have been constrained by the Santa Ana River to the north and the hillside to the south. In addition, this alternative would have resulted in additional impacts to coastal sage scrub habitat, drainages, and the Coal Canyon UC compared to Alternative Concept 1. Therefore, Alternative Concept 4 was dropped from further consideration.

Alternative Concept 5

Alternative Concept 5 would have provided a four-lane toll connector to the *91 Express Lanes*. Alternative Concept 5 is similar to Alternative Concept 4, except that the third express lane would extend to I-15. The section of SR-91 between SR-71 and I-15 is constrained by the Santa Ana River to the north and the hillside to the south, and adding

a third Express Lane would result in significant right-of-way impacts in the City of Corona. In addition, this alternative would have resulted in additional impacts to coastal sage scrub habitat, drainages, and the Coal Canyon UC compared to Alternative Concept 1. The physical constraints were considered a fatal flaw to the feasibility of Alternative Concept 5. Therefore, Alternative Concept 5 was not recommended for further consideration.

Alternative Concept 6

Alternative Concept 6 would have provided an SR-241/SR-71 direct toll connector for SR-241 and SR-71 traffic. This would have been a relatively high-cost concept and only focused on a specific part of the travel demand between SR-241 and SR-71. In addition, this alternative would have resulted in additional impacts to coastal sage scrub habitat compared to Alternative Concept 1. Given the physical challenges and cost of this concept, the other alternatives were viewed as more feasible. Therefore, Alternative Concept 6 was not recommended for further consideration.

6. CONSIDERATIONS REQUIRING DISCUSSION

A. Hazardous Waste

A Phase I Initial Site Assessment (ISA) was prepared by Michael Baker and approved in October 2015. The primary purpose of the Phase I ISA is to identify any potentially hazardous substances or petroleum products within the subject site and to satisfy one of the requirements to qualify for the Innocent Landowner, contiguous property owner, or bona fide prospective purchaser limitations on the Comprehensive Environmental Response, Compensation, and Liability Act liability that constitutes all appropriate inquiry into the previous uses of the property in order to identify Recognized Environmental Conditions. The assessment is based upon review of reasonable ascertainable referenced material available during the preparation of the Phase I ISA, which included historical aerial photographs, historical topographic maps, regulatory databases, interviews, site reconnaissance, and other documentation. It includes a review of known and suspected releases from the site or adjoining properties into the on-site soil, groundwater, or surface water. The study includes releases of hazardous substances or petroleum products even under conditions in compliance with current laws. The Phase I ISA was conducted in conformance with the scope and limitations of ASTM E 1527-05 Standard Practice for the Proposed Project.

Based on the documentation review and site visit conducted as part of the Phase I ISA, implementation of the recommendations outlined below as well as federal, state, and local laws and regulations, including Caltrans Standard Specifications and Special Provisions during construction, no further Preliminary Site Investigation is necessary at this time.

The following recommendations are based on the findings, opinions, and conclusions noted during the course of the Phase I ISA and will be included in the Environmental Commitments Records (ECR).

- Aerially Deposited Lead
    - Elevated concentrations of aerially deposited lead (ADL), from use of leaded gasoline, are sometimes associated with older roadways. SR-241 was constructed on-site in the 1990's. Thus, aerially deposited lead in association with SR-241 is unlikely. However, SR-91 has been associated with a high number of vehicles since prior to 1935. In accordance with the Minimization Measure HW-3 of the SR-91 CIP

Project, the Project Engineer will ensure that a qualified consultant conducts a new soil ADL evaluation and/or investigation for this project at the PS&E Phase. The previous ADL test results may be used if applicable along with any new ADL test results. The new soil ADL evaluation and/or investigation will be consistent with the approved DTSC Variance at that time. If no Variance is in place at this time, the qualified consultant should develop a plan for handling of ADL on-site such that risk to worker safety and the environment are minimized to the extent feasible.

- Asbestos-Containing Materials (ACMs)
    - Due to the age of the on-site bridge structure 55-0724L (constructed in 1998), the potential for ACMs to be found on-site is considered unlikely. However, the Gypsum Canyon Road UC was constructed in 1971 and could contain ACMs. Although it has been determined that the Gypsum Canyon Road UC Br. No. 55-0506 has not resulted in a REC on the subject site as a result of potential ACMs, confirmation of the presence or absence of asbestos in the Gypsum Canyon Road UC should be confirmed during the PS&E process by a certified specialist. If asbestos is present, the certified asbestos abatement specialist should monitor the disposal of the ACMs as they are uncovered. The contractor will be required to comply with Caltrans Standard Specifications Section 14-9.02 pertaining to air pollution control compliance with rules, regulations, ordinances, and statues during renovation and demolition activities.
- Treated Wood Waste
    - Although it has been determined that potential on-site treated wood waste (associated with onsite guardrails) has not resulted in a REC on the subject site, the removal and disposal of treated wood waste will be required to comply with Caltrans Standard Specifications Section 14-10 pertaining to the disposal of treated wood waste during construction.
- Disturbance of Traffic Striping
    - Lead Based Paints (LBPs) were commonly used in traffic striping materials before the discontinued use of lead chromate pigment in traffic striping/marking materials and hot-melt thermoplastic stripe materials (discontinued in 1996 and 2004, respectively). Traffic striping along SR-241 and SR-91 within the boundaries of the subject site during the October 22, 2013 site visit was observed. Thus, the potential for LBPs to be present on-site as a result of traffic striping is likely. Although it has been determined that the on-site freeways (SR-241 and SR-91) containing traffic striping has not resulted in an REC at the subject site as a result of LBPs, the contractor shall comply with Caltrans Standard Specifications Section 14-11 pertaining to the testing, removal, and disposal of any traffic striping and pavement marking materials during construction.

- Petroleum Pipe Line
    - Based on the current and historical topographic maps reviewed as part of this Phase I ISA, a petroleum pipe line appears to be traversing the northern portion of the subject site in an east/west direction. According to the Mountain Park Specific Plan Amendment Draft EIR No. 331, this pipe line is the Southern Trails (Questar) Pipe Line. This pipe line is currently not in use and the owner/operator has plans to convert the pipe line to a natural gas facility in the future. Although it has been determined that the on-site petroleum pipe line has not resulted in an REC at the subject site, prior to site disturbance, the contractor will be required to comply with Caltrans Standard Specifications pertaining to excavation during construction. The contractor will be required to notify the regional notification center prior to ground disturbance activities, ensuring that all utility owners within the Project disturbance limits identify the locations of underground transmission lines and facilities (including underground petroleum pipe lines).
- General Site Disturbance Activities
    - Prior to the start of construction, the Project Engineer should require the contractor to prepare a Construction Contingency Plan (CCP) in accordance with Caltrans Unknown Hazards Procedures for Construction, of Caltrans Construction Manual. The CCP will include provisions for emergency response in the event that unidentified hazardous materials, petroleum hydrocarbons, or hazardous or solid wastes are discovered during construction activities. The CCP will address field screening, contaminant materials testing methods, mitigation and contaminate management requirements, and health and safety requirements for construction workers.
- The contractor will be required to implement the CCP during all construction activities. During construction, the contractor will be required to cease work immediately if an unexpected release of hazardous substances is found in reportable quantities. If an unexpected release of hazardous substances is found in reportable quantities, the contractor will be required to notify the National Response Center. The contractor will be required to perform cleanup of unexpected releases under the appropriate federal, state, and local agency oversight.

B. Value Analysis

Based on the total project cost estimate of $181.0 million which is above the $50 million threshold requirement, and per Chapter 19 of the Project Development Procedures Manual (PDPM), a Value Analysis (VA) is required for the Proposed Project. A project-specific VA was conducted on May 19, 2015 through May 21, 2015. The VA team included the following members: Caltrans construction unit; F/ETCA engineering roadway design, traffic, and structures; and the Project Designer's roadway design, structures, and construction members. A stakeholder group consisting of OCTA staff and Caltrans management staff participated in the discussions, final presentation, and implementation meeting. A total of eight VA design modifications were considered to address the following four functions: improve traffic operations, minimize maintenance, accommodate future expansion, and improve constructability. A Preliminary VA Report was distributed for the

VA team members and stakeholders for review. A VA Implementation Meeting was held on July 8, 2015, to review individual implementation action recommendations for responses, develop consensus for each VA design modification, document the responses to each design modification, and conclude decisions related to implementation. The final VA Report was completed and approved in October 2015. The following are the proposed VA design modifications:

- Design modification 1.0 - Shorten SR-241 southbound Express Lane and eliminate Windy Ridge Wildlife UC widening.
- Design modification 2.0 - Move NB SR-241 Express Lane Connector to EB SR-91 departure from No. 1 Lane to No. 3 lane; reduce SR-241/SR-91 southern overcrossing structure width.
- Design modification 3.0 - Use lightweight fill for approach and departure walls (as alternative to MSE walls).
- Design modification 4.0 - Use lightweight fill as alternative to Type 1 retaining wall with level backfill.
- Design modification 5.0 - Eliminate EB SR-91 loop on-ramp at Gypsum Canyon Road to eliminate choke point.
- Design modification 6.0 - Revise SR-241/SR-91 connector radius to minimize bridge span.
- Design modification 7.0 - Not used
- Design modification 8.0 - Increase outrigger span length to allow future EB SR-91 widening.
- Design modification 9.0 - Reduce structure length for SR-241/SR-91 connector OC (South).

Design modification 1.0 was recommended for further study. The recommendation would shorten the SR-241 southbound lane and eliminate the widening of Windy Ridge Wildlife UC since there is not currently a receiving lane on the south side of the bridge. Traffic analysis will need to be conducted to further evaluate the merge that will be introduced by reducing the merging lane. Ultimate condition would require widening of the bridge.

Design modification 2.0 was accepted. The recommendation proposes to reconfigure NB SR-241 ELC to EB SR-91 departure from #1 to #3 lane. In reconfiguring the location of the NE ELC, the SR-241/SR-91 connector OC (South) structure width would be reduced and would provide improved traffic operation by reducing weaving. Traffic analysis will need to be conducted to confirm operational benefits to project.

Design modification 3.0 was recommended for further study. The recommendation proposes using lightweight fill materials (i.e., Geofoam) at approach and departure walls as alternative to MSE walls at the touchdown point of the connector in the SR-91 median. Further study will be necessary to determine if an alternative to MSE is needed for this project.

Design modification 4.0 was recommended for further study. The recommendation proposes using lightweight fill materials (i.e., Geofoam), as alternative to Type 1 retaining wall with level backfill. Further study will be necessary to determine if alternative to Type 1 wall with level backfill will be needed for this project.

Design modification 5.0 was recommended for further study. The recommendation proposes eliminating EB SR-91 loop on-ramp at Gypsum Canyon Road to eliminate choke point. Traffic volumes will need to be verified and stakeholders' coordination will be required.

Design modification 6.0 was recommended for further study. The recommendation proposes revising the connector radius to minimize bridge span. Further study will be needed by designer to verify alternate geometry.

Design modification 7.0 was not used.

Design modification 8.0 was recommended for further study. The recommendation proposes increasing outrigger span length to allow addition of a future EB SR-91 lane. Further study will be needed to evaluate outrigger shifting or skewing to allow for future addition of an EB SR-91 lane.

Design modification 9.0 was recommended for further study. The recommendation proposes reducing the structure length of the SR-241/SR-91 Connector OC (South) structure. Further study will be needed to verify sight distance along the NW SR-241/SR-91 connector

The VA design modifications recommended for further study, will be studied further during Final Design to determine whether or not they are feasible. If any of the VA design modifications listed above are selected, the environmental impacts as discussed in the Draft Supplemental EIR/EIS and Section 4(f) Evaluation pertaining to these options would remain the same or would be negligible.

C. Resource Conservation

The Proposed Project would not require the use of water, except for minor amounts during construction. Therefore, the Proposed Project would not have a significant impact to the public water supply.

Recycling and stockpiling of the removed existing asphalt concrete and Portland Cement Concrete pavement will be determined during final design. The signs identified for removal would be removed and salvaged by the contractor to become State property available for recycling.

The Build Alternative involves no planned use of natural resources beyond fuel and energy needed during construction and maintenance activities, including the materials needed for construction that require energy to produce and transport them to the Project site. However, the energy expenditure to construct the Build Alternative would be off-set by the reduction in fuel consumption realized through more efficient freeway operations. The Build Alternative would not result in adverse impacts related to energy consumption in the Study Area or region compared to the No Build Alternative. No avoidance, minimization, or mitigation measures are required.

D. Right-of-Way Issues

Right-of-Way Required

A Right-of-Way Data Sheet has been prepared and included in Attachment C for the improvements proposed in the Build Alternative. The Proposed Project is mostly within existing Caltrans right-of-way, with one partial acquisition adjacent to EB SR-91. Construction access and staging areas would occur within existing Caltrans right-of-way and the partial acquisition adjacent to EB SR-91 as noted above. Therefore, no Temporary

Construction Easements (TCEs) are required for the Proposed Project. Approximately 5 acres of land on the slope approximately 4,500 ft west of the Coal Canyon UC, on Assessor's Parcel Number (APN) 085-071-56 would be acquired. This parcel is currently part of the Irvine Ranch National Natural Landmark (NNL), owned by the County of Orange with a Conservation Easement held by the Nature Conservancy. The Conservation Easement allows for "necessary infrastructure improvement" for projects that are included in the Master Plan of Arterial Highways (MPAH). The SR-241 and the Proposed Project is included in the MPAH as a Transportation Corridor and would qualify as a necessary infrastructure improvement under the Grant Deed of Conservation Easement conditions. The above acquisition is a permanent loss of habitat within the Conservation Easement. Caltrans right-of-way will not be used for mitigation. The approximate 5 acre partial acquisition will be purchased in fee and the associated permanent maintenance easement will be reserved by F/ETCA as part of the fee transfer to Caltrans after construction.

It is anticipated that the above parcel would require early acquisition to meet the project schedule identified in Section 9.

Relocation Impact Studies

There are no proposed relocations within the Project limits.

Airspace Lease Areas

The contractor shall not have access to any existing airspace and wireless lease areas within the Project Area.

E. Environmental Compliance

Caltrans has statutory obligation to maintain and operate the State Highway System (SHS) as the owner of the SHS, and accordingly, is the California Environmental Quality Act (CEQA) Lead Agency for all improvement projects on the SHS.

California participated in the "Surface Transportation Project Delivery Pilot Program" (Pilot Program) pursuant to 23 USC 327, for more than five years, beginning July 1, 2007 and ending September 30, 2012. MAP-21 (P.L. 112-141), signed by President Obama on July 6th, 2012, amended 23 USC 327 to establish a revised and permanent Surface Transportation Project Delivery Program. As a result, Caltrans entered into a memorandum of understanding pursuant to 23 USC 327 (NEPA Assignment MOU) with FHWA. The NEPA Assignment MOU became effective October 1, 2012 and terminates eighteen months from the effective date of FHWA regulations developed to clarify amendments to 23 USC 327 or on January 1, 2017.

The NEPA Assignment MOU incorporates by reference the terms and conditions of the Pilot Program MOU. In summary, Caltrans continues to assume FHWA responsibilities under NEPA and other federal environmental laws in the same manner as was assigned under the Pilot Program, with minor changes. With NEPA Assignment, FHWA assigned and Caltrans assumed all of the United States Department of Transportation (USDOT) Secretary's responsibilities under NEPA. This assignment includes projects on the State Highway System and Local Assistance Projects off of the State Highway System within the State of California, except for certain categorical exclusions that FHWA assigned to Caltrans under the 23 USC 326 CE Assignment MOU, projects excluded by definition, and specific project exclusions.

Caltrans is the lead agency in conjunction with completion of all NEPA compliance requirements and associated documentation for this project.

The environmental review, consultation, and any other action required in accordance with applicable federal laws for this project is being, or has been, carried out by Caltrans under its assumption of responsibility pursuant to 23 U.S.C. 327.

Caltrans determined that a Supplemental EIR is the appropriate type of environmental document for CEQA compliance. The class of action determination for the Proposed Project was made in consultation with the Caltrans headquarters Environmental Coordinator assigned to District 12. A Supplemental EIS was identified as the appropriate type of environmental document for NEPA compliance. Consistent with Caltrans requirements, the Draft Supplemental EIR and Supplemental EIS and section 4(f) Evaluation (Draft Environmental Document) prepared for this project was prepared as a combined Environmental Document (Supplemental EIR/EIS). The Supplemental EIR/EIS has been prepared in accordance with Caltrans' environmental procedures, as well as State and federal environmental regulations.

It is required that the ECR prepared in conjunction with completion of the Project Approval and Draft Supplemental EIR/EIS and Section 4(f) Evaluation (PA&ED) phase (Appendix D in the Caltrans approved Draft Supplemental EIR/EIS and Section 4(f) Evaluation for this project), be referenced and completed timely throughout the PS&E and Construction phases of the Proposed Project, and updated as necessary.

The environmental document is anticipated to have a combined Final EIS/ROD during the approval stage pursuant to MAP-21 Section 1319(b). An Environmental Certification will be required at the end of the PS&E phase, and a Certificate of Environmental Compliance (CEC) will be required following completion of construction of the Proposed Project.

The Draft Supplemental Environmental Impact Report/Statement and Section 4(f) Evaluation has been prepared in accordance with Caltrans' environmental procedures, as well as State and federal environmental regulations. The attached Draft Supplemental Environmental Impact Report/Statement and Section 4(f) Evaluation is the appropriate document for the proposal.

Wetlands and Other Waters

The Proposed Project would result in less than 0.54 ac of temporary impacts to non-wetland USACE waters under Section 404 of the Clean Water Act (CWA). The Proposed Project would result in approximately 0.47 ac of permanent impacts to USACE jurisdictional non-wetland waters. Impacts to USACE jurisdictional areas would require authorization from the USACE prior to construction (Measure WET-1).

The Proposed Project would result in approximately 1.04 ac of temporary impacts to California Department of Fish and Wildlife (CDFW) jurisdictional areas under Section 1602 of the Fish and Game Code. The Proposed Project would result in approximately 0.86 ac of permanent impacts to CDFW jurisdictional areas. Impacts to CDFW jurisdictional areas would require authorization from the CDFW prior to construction (Measure WET-2).

Temporary and permanent impacts to Regional Water Quality Control Board (RWQCB) jurisdictional areas under Section 401 of the CWA would be the same as the USACE impacts. Impacts to RWQCB jurisdictional areas would require authorization from the Santa Ana RWQCB prior to construction (Measure WET-3).

No wetlands would be impacted by the Proposed Project.

The temporary and permanent impacts to jurisdictional waters would be minimal and would be minimized or mitigated through compliance with the measures required by the resource agencies during the permitting process. In addition, the current functions and

values of the impacted drainages features are quite low. Therefore, the Build Alternative would not contribute to cumulative adverse effects related to wetlands and other waters.

Natural Environment

A Natural Environment Study (NES) was prepared to support the Draft Supplemental EIR/EIS for the Proposed Project. A Supplemental Natural Environment Study (NES) was prepared to include additional information and changes to the Proposed Project subsequent to NES approval. These include the following:

- Proposed construction access points
- Comments from the United States Fish and Wildlife Service (USFWS)
- An updated USFWS species list

Federal Section 7 consultation between Caltrans and the United States Fish and Wildlife Service (USFWS) under the Federal Endangered Species Act will be necessary to consider potential impacts to thread-leaved brodiaea, southwestern willow flycatcher, least Bell's vireo, coastal California gnatcatcher (CAGN), and USFWS-designated critical habitats for Braunton's milk-vetch, CAGN, and Santa Ana sucker within or adjacent to the Biological Study Area (BSA).

The Proposed Project is not expected to directly impact any designated critical habitat for the thread-leaved brodiaea, Braunton's milk-vetch, nor Santa Ana sucker due to the absence of the species and critical habitat within the BSA, and proximity to the project disturbance limits. Indirect impacts to these species would be minimized through implementation of Measures TE-1, TE-2, and TE-7 (all measures are provided in Appendix D of the Draft Supplemental EIR/EIS and Section 4(f) Evaluation).

The Proposed Project may directly and indirectly impact southwestern willow flycatcher and least Bell's vireo. Direct impacts to these species are expected due to loss of a small amount (approximately 1 ac of chaparral) of potential foraging habitat within the BSA; however, there is a lack of suitable nesting habitat. Indirect project impacts (noise, lighting, and dust) from construction and operation in the freeway median of an already busy facility, and thus very minor increases in temporary noise levels, are not expected to substantially change any potential habitat uses by these species in the vicinity of the BSA. Impacts to potential foraging southwestern willow flycatchers and least Bell's vireos would be minimized through implementation of Measure TE-8.

Direct and indirect impacts to CAGN and designated CAGN critical habitat would occur as a result of Project implementation. CAGN would experience indirect temporary impacts due to construction activities, including increased exposure to noise, vibration, dust, nighttime lighting, and human presence. In addition, direct impacts to CAGN would occur through habitat disturbance and removal during construction.

CAGN is likely to occur within or near the disturbance limits at the time of construction because there is a known territory in Coal Canyon approximately 65 ft south of SR-91. Vibratory pile driving at Coal Canyon Undercrossing would occur approximately 300 ft from this location and would generate a maximum noise level of approximately 79 dBA, which would be above the background traffic noise level on SR-91. With implementation of a barrier (Measure NC-12) and assuming continuous pile driving for 30 minutes in an hour, noise levels from pile driving would be lower than traffic noise on SR-91.

Temporary indirect impacts to CAGN during construction would be reduced based on the implementation of Measures NC-1 through NC-6. The measures require preconstruction

and construction surveys for California gnatcatcher and prohibit construction activities in and adjacent to CSS, and Measures TE-3 through TE-6, which would further prohibit and limit construction activities in areas of CSS or coastal California gnatcatcher designated critical habitat.

Take of CAGN within the NCCP/HCP Plan Area is expected to occur through the permanent loss of approximately 2.98 ac and temporary loss of approximately 11.85 ac of occupied habitat in the median of the SR 241/SR 91 junction. Take of designated CAGN critical habitat within the NCCP/HCP Plan Area, regardless of occupation, is also expected to occur through permanent loss of approximately 19.72 ac and temporary loss of approximately 12.80 ac, which includes permanent loss of approximately 0.56 ac and temporary loss of approximately 0.09 ac on the County parcel south of SR 91. This designated critical habitat area is along SR 91 at the eastern end of the Project.

As a covered project, the NCCP/HCP Implementation Agreement specifies take authorization within the right-of-way of the SR 241 and SR 91 (at the interchange with SR-241), which includes the known territory location of the CAGN within the Project Area.

Additionally, the NCCP/HCP Implementation Agreement specifically states that take authorization for TCA, as noted in the Biological Opinion (1-6-94-F-17) for the ETC, includes its junction with SR 91. However, the Proposed Project will go through the Section 7 consultation process in order to ensure consistency with these documents. Specifically, the USFWS verification and acceptance of the mitigation components for impacts to designated critical habitat within NCCP/HCP areas shall occur during Section 7 consultation since the Implementation Agreement and the Biological Opinion were completed prior to designation of CAGN critical habitat. In addition, the impacts to designated CAGN habitat are considered outside the impact area of the ETC project and, therefore, not included in the 1994 Biological Opinion.

Impacts to CAGN habitat in non-NCCP/HCP Plan Areas within Caltrans right-of-way would be covered through mitigation measures in a new Biological Opinion. For CSS impacts to coastal California gnatcatcher occupied habitat or designated critical habitat, the proposed minimum mitigation ratio is 1:1 for temporary impacts and 2:1 for permanent impacts (Measure TE-7). This mitigation will be evaluated through coordination among Caltrans, TCA, and the USFWS. Specifically, federal Section 7 consultation between Caltrans and the USFWS will be necessary to consider potential adverse impacts to designated CAGN critical habitat in the Biological Study Area.

Mitigation is proposed in the Strawberry Farms mitigation area, which is in the Quail Hills Preserve, and the USFWS has conceptually agreed to this proposal. No mitigation would occur in Caltrans right-of-way.

The Proposed Project would temporarily and permanently impact Coast Live Oak trees within the Project limits. During Final Design, F/ETCA will develop a revegetation program to help compensate for lost oak trees with spacing criteria to be determined by the Project Biologist. Permanently impacted Coast live oak, California walnut and sycamore trees will be replaced at a minimum 1:1 ratio. *Senate Concurrent Resolution No. 17* requests all State agencies to preserve and protect native oak woodlands to the maximum extent feasible or to provide for replacement plantings. TCA/Caltrans will protect and replace oak trees to comply with Resolution No. 17 but the replacement plantings do not become a mitigation site and do not restrict future activities in the area beyond the guidance in Resolution No. 17. Replacement plantings may take place in TCA or Caltrans right-of-way or suitable areas in proximity to the Project limits (Measure NC-8). During final design, a revegetation plan will be prepared.

Visual/Aesthetics

Native vegetation and trees are visual resources and will be removed or disturbed by grading. Disturbed vegetation would be revegetated with native species. Trees would be replaced at a minimum 2:1 ratio (Measure V-7). Views of the existing trees and coastal sage scrub in the median of the SR-241/SR-91 interchange are somewhat obscured by the existing structures and support pilings. Replacement plantings may take place in TCA or Caltrans right-of-way or suitable areas in proximity to the Project limits

Section 4(f)

The Proposed Project would use approximately 5 acres of land in the Gypsum Canyon Nature Preserve for hillside grading to accommodate widening of SR-91 to the south. This Nature Preserve is currently open to the public for limited public use with day use available through scheduled programs or on designated wilderness access days only. The 5 acres represent only a very small percentage (0.013 percent) of the total acreage of the NNL. The conversion of approximately 5 acres of the land in the NNL, immediately adjacent to existing SR-91, would not affect the activities, features, and attributes of the Gypsum Canyon Nature Preserve and the NNL and, therefore, is not considered a substantial impact to this property. Caltrans has made a preliminary de minimis finding for the use (permanent incorporation) of 5 acres of land from the NNL and that the Build Alternative satisfies the criteria for de minimis under Section 4(f).

F. Air Quality Conformity

The Proposed Project is in the April 2016 RTP, which was found to be conforming by the FHWA/FTA on June 1, 2016. The Proposed Project is also in Amendment 15-12 to the 2015 Federal Transportation Improvement Program (FTIP) Consistency Amendment, which was found to be conforming by the FHWA/FTA on June 1, 2016 (Project ID: ORA111207). Regional PM_{10} SIP budget compliance was accounted for during the current approved RTP and FTIP conformity determination. The Proposed Project will also comply with all SCAQMD requirements.

As the Proposed Project is expected to improve traffic flow and reduce delay and congestion, no significant hot spots for CO, $PM_{2.5}$ (Particulate Matter 2.5 microns or less in diameter) or PM_{10} (Particulate Matter 10.0 microns or less in diameter) would occur as a result of the Proposed Project.

The project-level particulate matter hot-spot analysis was presented to the SCAG Transportation Conformity Working Group (TCWG) for discussion and review. The Proposed Project was approved and concurred on by interagency consultation at the TCWG meeting held on June 24, 2014, as Not a Project of Air Quality Concern (POAQC) as defined by 40 Code of Federal Regulations (CFR) 93.123(b)(1). Changes to the Proposed Project geometrics and footprint were made in December 2014; as a result, the Proposed Project was resubmitted to TCWG for review. The June 2014 particulate matter less than 2.5 microns in size ($PM_{2.5}$) and particulate matter less than 10 microns in size (PM_{10}) hot-spot form was updated in March 2015 and submitted to and reviewed by the TCWG on April 28, 2015. At this meeting, TCWG reaffirmed that the Proposed Project is not a POAQC.

Each project alternative is fully compatible with the design concept and scope described in the current regional transportation plan.

G. Title VI Considerations

Caltrans and FHWA policies demonstrate a commitment to Title VI of the Civil Rights Act, which provides that no person in the United States shall, on the grounds of race, color, national origin, sex, disability, or age be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination under any program or activity receiving federal financial assistance.

H. Noise Abatement Decision Report Section

The Noise Study Report for the Proposed Project was prepared by CH2MHILL on August 2015 and approved by Reza Aurasteh on October 2015.

A traffic noise model was prepared and the results presented in the Noise Study Report. The traffic noise model was used to predict noise levels for the existing (using 2017 VISSIM projections) and future No Build and Build conditions (using 2040 VISSIM projections).

Receivers were input into the noise model to represent noise sensitive land uses. For this analysis the receivers were grouped into three (3) common noise environment (CNE's) locations to represent noise sensitive receivers within similar locations, terrain, adjacent roadways etc.

- Location 1 is predominantly the Summit at Anaheim Hills subdivision located 100 ft above to the west of SR-241. Location 1 is not expected to experience noise levels that approach the Noise Abatement Criteria or to experience a substantial noise increase. Consequently, a traffic noise impact is not expected and the investigation of abatement is unnecessary.
- Location 2 is located in the area to the north of the Gypsum Canyon Road interchange containing the Canyon RV Park, both to the east and west of Gypsum Canyon Road. Location 2 is expected to experience a traffic noise impact which necessitated an investigation of abatement. This applies for the existing and design year conditions, with or without the Proposed Project. Under all conditions the noise levels are above the Noise Abatement Criteria. Overall, the traffic level increases associated with the Proposed Project are very low (roughly plus or minus a decibel). Nevertheless, because conditions approach or exceed the NAC, noise abatement was considered. The investigation concluded that the benefits of altering the existing barriers (or creating new barrier) in location 2 is below the typical threshold of perception, thus this approach is not considered feasible.
- Location 3 is to the east of the SR-241/SR-91 interchange. The Archstone at Yorba Linda community and parkland are located within Location 3. These resources are relatively far from the highway and Location 3 is not expected to experience noise levels that approach the Noise Abatement Criteria or to experience a substantial noise increase.

Table 21 below summarizes the barriers evaluated in the NSR.

Table 21: Summary of Noise Barrier Evaluation

Barrier	Location	Height (feet)	Acoustically Feasible?	Number of Benefited Residences	Design Goal Achieved?	Reasonable Allowance per Residence	Total Reasonable Allowance
Location 1	ROW of SR-241	10	No	0	No	NA	NA
		12	No	0	No	NA	NA
		14	No	0	No	NA	NA
		16	No	0	No	NA	NA
Location 2	On Proposed Express Lanes Connector	10	No	0	No	NA	NA
		12	No	0	No	NA	NA
		14	No	0	No	NA	NA
		16	No	0	No	NA	NA
Location 2	On SR-91 (Above Existing)	2	No	0	No	NA	NA
		4	No	0	No	NA	NA
		6	No	0	No	NA	NA
		8	No	0	No	NA	NA
Location 3	East of SR-241/SR-91 Interchange	10	No	0	No	NA	NA
		12	No	0	No	NA	NA
		14	No	0	No	NA	NA
		16	No	0	No	NA	NA

*Source: SR-241/SR-91 Express Lanes Connector Project Noise Study Report, October, 2015
ROW = right-of-way line

Consequently, a traffic noise impact is not expected and the investigation of abatement is unnecessary. Therefore, the Build Alternative does not have any additional soundwall construction, and a project NADR is not required for the Proposed Project. For discussion on existing Noise barriers refer to section 5.

The preliminary noise abatement decision presented in this report is based on preliminary project alignments and profiles, which may be subject to change. As such, the physical characteristics of noise abatement described herein also may be subject to change. If pertinent parameters change substantially during the final project design, the preliminary noise abatement decision may be changed or eliminated from the final project design. A final decision to construct noise abatement will be made upon completion of the project design.

I. National Pollutant Discharge Elimination System

The limits of the Proposed Project are within the jurisdiction of the Santa Ana Regional Water Quality Control Board (RWQCB). The receiving water body for the Proposed Project is Santa Ana River Reach 2, which is a 303(d) listed water body for Indicator Bacteria. The Proposed Project is located outside of and is non-contiguous to the Coastal Zone and is not anticipated to have any effects on coastal resources. The Proposed Project site is in a heavily used mixed land use area of light retail/commercial and nearby residential.

This Proposed Project must conform to all applicable water quality regulations and/or permit requirements of the State Water Resources Control Board (SWRCB) and any applicable local RWQCB, including, but not limited to the Caltrans Statewide NPDES Permit (Order WQ 2014-0077-DWQ) amending (Order No. 2012-0011-DWQ, NPDES No. CAS000003), the Statewide General NPDES Permit for Construction Activities (Order No. 2009-0009-DWQ, NPDES No. CAS000002), the Caltrans Storm Water Management Plan (July 2012 revision), and any subsequent revision and/or additional requirements at the time of construction. Should dewatering be required, dewatering must comply with Santa Ana Regional Water Quality Control Board's Order R8-2015-0004, NPDES Permit No. CAG998001 for general water discharge requirements for discharges to surface waters that pose an insignificant (De Minimus) threat to water quality, or subsequent permit.

The total disturbed soil area is 43.9 acres. Therefore, the Proposed Project requires the preparation of a SWPPP.

National Pollutant Discharge Elimination System (NPDES) Permit Requirements:

The Proposed Project permanent BMP strategy involves the construction of biofiltration strips and swales and media filters along the EB SR-91 of the Proposed Project. The proposed BMPs would treat the existing portion of the SR-91 eastbound mainline in addition to the new impervious areas. Some of the existing drainage system will be modified to direct flows to the proposed treatment system. Additional project permanent BMP strategy discussions are included in the project Storm Water Data Report.

A Notice of Termination (NOT) would be filed with SWRCB upon completion of construction. Implementation of the Proposed Project would require permits from the following public agencies:

- Compliance with Order No. 2009-0009-DWQ (As amended by 2010-0014-DWQ and 2012-006-DWQ), National Pollutant Discharge Elimination System (NPDES) No. CAS000002, NPDES General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities
- Clean Water Act (CWA) Section 401 Water Quality Certification from the RWQCB
- CWA Section 404 Nationwide Permit from the United States Army Corps of Engineers (ACOE)
- California Department of Fish and Wildlife (CDFW) Section 1602 Lake or Streambed Alteration Agreement
- State Right-of-Way Encroachment Permit

7. OTHER CONSIDERATIONS

Public Hearing Process

A public hearing will be scheduled presenting the developed viable alternative for public comment during the public circulation of the project Draft Supplemental EIR/EIS. Public circulation of the Draft Supplemental EIR/EIS is anticipated for November 2016.

Route Matters

A revised freeway agreement, route adoption, or relinquishment is not required for the Proposed Project.

Permits

A Caltrans encroachment permit will be required for design activities, such as survey and soil borings within Caltrans right-of-way, and for construction of the Proposed Project. The permits required for the Proposed Project are shown in Table 22.

An NPDES permit will be required for the Proposed Project. For permit details refer to section 6.I.

Table 22: Permits and/or Approvals Needed

Agency	Permit/Approval	Status
Federal Highway Administration	Air Quality Conformity Analysis Determination	The Air Quality Conformity report will be submitted to FHWA after receipt of public comments on the Draft Supplemental EIR/EIS. FHWA will make a conformity determination prior to approval of the Final Supplemental EIR/EIS.
United States Fish and Wildlife Service	Section 7 Consultation for Threatened and Endangered Species	A new Biological Opinion will be obtained prior to approval of the Final Supplemental EIR/EIS.
United States Army Corps of Engineers	Section 404 Permit for filling or dredging of waters of the United States	A Nationwide Permit will be obtained during Final Design
California Department of Fish and Wildlife	1602 Lake or Streambed Alteration Agreement for impacts to jurisdictional areas	An agreement will be obtained during Final Design
State Water Resources Control Board	Caltrans NPDES Permit	Permit issued to Caltrans on September 19, 2012, for discharges from State right-of-way. The State Water Resources Control Board and Santa Ana Regional Water Quality Control Board will be notified of the project during Final Design pursuant to the permit requirements
	Section 402 NPDES Permit (Construction Activity) for waste discharge requirements during construction	Permit Registration Documents, including a Notice of Intent (NOI), will be submitted at least 7 days prior to the start of construction.
Santa Ana Regional Water Quality Control Board	Section 401 Water Quality Certification for impacts to jurisdictional areas	Certification will be obtained during Final Design
	Section 402 NPDES Permit (Groundwater Dewatering)	If groundwater dewatering is required, an NOI will be submitted at least 60 days prior to the start of construction.
Various Utilities	Encroachment Permits for protection-in-place and possible relocations	Consultation will occur during Final Design
City of Anaheim	Potential Encroachment Permit	Consultation will occur during Final Design
Orange County Parks	Concurrence on Section 4(f) De Minimis Determination	Caltrans has submitted a letter to OC Parks with the preliminary determination. Concurrence will be obtained during PA/ED during preparation of the Final Supplemental EIR/EIS
	Approval of land transfer (partial acquisition)	Consultation will occur during right-of-way acquisition process.

Cooperative Agreements

Caltrans will own and maintain the ELC bridge structures, roadway pavement, and other related infrastructure except for the tolling system on SR-241 and up to the point where the ELC joins the *91 Express Lanes*. This is consistent with the existing Cooperative Agreement for Eastern Transportation Corridor No. 12-081 that was entered into between F/ETCA and Caltrans on April 7, 1995. Separate cooperative agreements will be required for the right-of-way, PS&E, and construction phases of the Proposed Project.

Report on Feasibility of Providing Access to Navigable Rivers

There are no traditional navigable waterways as defined by the Army Corps of Engineers found within the Proposed Project limits.

Public Boat Ramps

There are no public boat ramps within the Proposed Project limits.

Transportation Management Plan for Use During Construction

A Transportation Management Plan (TMP) is required for the Proposed Project. Major TMPs classification is estimated for the Proposed Project. The objective of a TMP is to minimize disruption of existing traffic during construction, reduce potential construction related traffic conflicts and delays and maximize safety for the users of the transportation network (including motorists, bicyclists, pedestrians, and those with disabilities) during construction without compromising the quality of work being performed. Overnight short term closures will be required to facilitate placement of roadway overhead signs, placement of K-rail, connector falsework erection and removal, restriping of freeway and ramps for stage construction. Short term closures of the Gypsum Canyon Road EB ramps to construct pavements will be required with no closure period extending more than 7 days. Detour plans will be developed to minimize traffic impacts associated with the short term and nighttime closures. Appropriate construction signage will be used to ensure public safety.

The following elements are expected to be recommended or discussed in the project TMP:

- Public Information/Public Awareness Campaign
- Motorist Information Strategies
- Incident Management
- Construction Strategies
- Demand Management
- Alternate Route Strategies
- Other Strategies
- As part of the Construction Zone Enforcement Enhancement Program, the CHP will be utilized as needed. CHP assistance will be paid for under the Construction Engineering Management contract.
- Lane Requirement Charts: mandates roadway facilities to be open for public use
- Liquidated damages will be addressed during PS&E
- Caltrans Freeway Service Patrol

- Caltrans Transportation Management Team (TMT) coordination

A TMP data sheet is included in Attachment D that estimates the associated cost for these strategies.

Stage Construction

Staging of construction would be required for all work on the Proposed Project. In addition to the TMP elements, all work areas will be protected by temporary safety devices, such as Temporary Railing (Type K), Temporary Crash Cushions, and other safety features in accordance, with Federal, State, and Local Agency requirements.

Conceptual staging concepts have been developed to minimize traffic impacts during construction, assess the constructability of the proposed improvements and provide a basis for estimating stage construction costs. Results are summarized in this section. The number of through lanes on the mainline SR-241 and SR-91 freeway facilities will be maintained by restriping the existing lanes using reduced lane widths and shifting traffic within the corridors to maintain the existing capacity. The *91 Express Lanes* would be re-striped while maintaining the two toll lanes in the eastbound direction. It is anticipated that construction stages will overlap with construction anticipated to begin in mid-2018 and complete in 2020.

Construction would occur in two main stages: Stages 1 and 2. Stage 1 would occur in two phases identified as Stages 1A and 1B. The majority of the work would occur in Stage 1A.

Stage 1A construction involves widening within the median of both the northbound and SB SR-241 roadbeds as well as widening of EB SR-91 to the outside. The estimated duration for Stage 1A is 9 months.

- Both the SR-241 roadbeds would be re-striped to maintain the existing four-lane configuration. During this stage, a portion of the new median-to-median connector would also be constructed, as well as widening of the Windy Ridge Wildlife UC bridge. The SR-241/SR-91 median-to-median connector OC (south) bridge would be constructed with falsework over the NB SR-241 to WB SR-91 connector and over EB SR-91.
- Stage 1A also includes widening of the eastbound and westbound roadbed of SR-91. Eastbound and westbound SR-91 would be re-striped to maintain the same number of GP lanes, as well maintaining the two eastbound toll lanes. This also includes widening of the Gypsum Canyon Road UC bridge.
- Ramp work on Stage 1A at Gypsum Canyon Road involves re-striping the EB SR-91 off ramp and the EB loop on ramp to allow construction of the two realigned EB SR-91 ramps. One lane will be provided on the off ramp and two lanes on the on ramp. Temporary pavement would be constructed at the intersection of the eastbound on ramp and Gypsum Canyon Road to allow complete closure and construction of the eastbound direct on ramp during this stage.
- The existing NB SR-241 to EB SR-91 connector would be re-striped to provide two lanes during widening of the eastbound SR-91 as well as construction of the realigned northbound SR-241 to the eastbound SR-91 connector. The southern abutment for the proposed SR-241/SR-91 median-to-median connector OC (north) bridge could also be constructed in Stage 1A.

Stage 1B construction involves completion of the remaining portions of the ramps, remaining portions of the NB SR-241 to EB SR-91 connector and remaining portions of EB SR-91 freeway lanes. Construction of these remaining portions would require temporary detours with weekend or nighttime closures of various portions of the ramps and the realigned NB SR-241 to EB SR-91 connector. The estimated duration for Stage 1B is 4 months.

Stage 2 construction involves completion of the proposed SR-241/SR-91 median-to-median connector OC (north) bridge over falsework and construction of all the median work along SR-91 from the Gypsum Canyon Road UC to the Coal Canyon UC. The contractor will need access to the median of SR-91 in Stage 2 to complete the new connector construction. Once stage 1 is completed, EB SR-91 traffic will be shifted to the south away from the median onto the widened section of SR-91 to allow space for construction activities. Construction access to the median can be accomplished through:

- Coal Canyon UC is used by emergency and maintenance vehicles as a turnaround from eastbound to westbound only. Construction vehicles may use Coal Canyon as a similar turnaround. In addition, construction vehicles may access the median by entering from underneath the Coal Canyon UC. Temporary shoring and grading may need to be constructed to allow a drivable access route. This access option would be closely coordinated with Caltrans, OCTA, and RCTC. Any restrictions with respect to the timing of access would be clearly stated in the project specifications during the Final Design phase. The following restrictions would apply to work along the Coal Canyon Undercrossing ramps and within the undercrossing:
    - No parking or equipment storage
    - Maintenance of the existing fence that separates the paved road from the dirt trail
    - No work within the wildlife trail on the east side of the existing fence
    - No nighttime work
- Construction vehicles may access the median by entering from underneath Gypsum Canyon Undercrossing. To allow an opening for construction access, part of the existing bridge deck would be removed. Temporary shoring and grading may need to be constructed to allow a drivable access route. This access option would be closely coordinated with Caltrans, OCTA, and RCTC. Construction vehicles would access Gypsum Canyon Road using the SR-91 on- and off- ramps.
- Construction vehicles that meet express lane requirements may enter the lanes, paying a toll as applicable. Coordination will be required with Caltrans and OCTA to create additional ingress/egress points into the median from the *91 Express Lanes* and whether to permit vehicles larger than the allowable express lane limitations.

OCTA has regularly scheduled maintenance activities for the *91 Express Lanes* every three weeks on Sunday mornings. This maintenance occurs from approximately 6 am until 12 pm. The entire *91 Express Lanes* facility is shut down during this time. This would provide an opportunity to coordinate with OCTA for approval to use these closures to transport large construction equipment to the construction site in the median of SR-91 between the eastbound and westbound *91 Express Lanes*.

It may be necessary to have temporary nighttime closures of the *91 Express Lanes* for construction activities such as erecting falsework, striping lanes, and installing median signs. These closures would be coordinated with Caltrans and OCTA during the Final Design phase. The estimated duration for Stage 2 is 11 months.

Storm Water Data Report

The Proposed Project is within Santa Ana RWQCB jurisdiction. A PA/ED level Storm Water Data Report (SWDR) has been prepared for this Proposed Project per the guidelines given in the Caltrans Project Planning and Design Guide (PPDG). The total new impervious area due to the Proposed Project is 20.5 acres. The proposed treatment area is 25.6 acres. The permanent treatment BMP strategy will be determined at a later stage of design when more technical information is available; however, biofiltration strips/swales and media filters will be considered at this phase. The final selection of permanent BMPs will be determined during PS&E.

Temporary construction storm water pollution controls will be installed as early in the construction process as possible to provide additional protection and for utilization in addressing construction storm water impacts. The following are the minimum temporary construction site BMPs that have been designated:

- Hydraulic Mulch
- Temporary Soil Binders
- Temporary Cover
- Temporary check dams
- Storm Drain Inlet Protection
- Temporary Fiber Rolls
- Gravel Bag Berm
- Stabilized Construction Entrance/Exit

The cover page of the SWDR is included in Attachment E of this DPR. The SWDR cover page shall be updated during the final PS&E design stage.

Accommodation of Oversize Loads

SR-91 is not on the Department of Defense Rural and Single Interstate Routing System that would meet the most urgent national defense needs. FHWA has made a commitment to the Department of Defense to maintain 16.07 ft (4.9 m) minimum vertical clearance on the Priority Network. Special accommodations of oversize loads are not a requirement for the Proposed Project as this section of SR-91 is on the National Network for STAA, Lifeline Route and Scenic Highway System and is not identified as routes on the Interregional Road System and SHELL network as published by Caltrans.

Graffiti Control

According to the PDPM, the Proposed Project location is within a graffiti-prone area. Anti-graffiti design details will be evaluated as part of aesthetic treatments to project features during the PS&E phase.

Geotechnical and Geological

A District Preliminary Geotechnical Report (DPGR) and Structures Preliminary Geotechnical Reports (SPGR) have been prepared during the PA/ED phase to develop preliminary recommendations for the foundation requirements.

The Proposed Project is considered feasible from a geotechnical standpoint with the following recommendations and conclusions:

- The maximum retaining wall height for the Proposed Project is on the order of 30 feet. For preliminary planning purposes, Caltrans standard walls and MSE walls appear to be suitable retaining wall types. At the locations where right-of-way is limited soldier pile walls can be considered, dependent on the subgrade materials present. A soil-nail or tieback wall may be required where a retaining wall supports a relatively high cut slope.
- The maximum cut slope for the Proposed Project is in the vicinity of Station 1488+00 (“EB91” Line) where a modification to the existing 1.5:1 cut slope is proposed. The existing slope is performing well from a global stability standpoint. The new slope will have a maximum height of 140 feet, similar to the height of the existing cut slope in this area. Considering that the slope height will not increase, and the slope will be regraded at 2:1 inclination with terrace drains, it is anticipated that the slope will be stable. The geology of this slope should be further evaluated during the next phase of the Proposed Project to confirm that adverse conditions are not present.
- Based on the currently available layout of the proposed improvements, cuts and fills are expected to reach design grades. This grading can be achieved using conventional earthwork methods. The proposed lane additions along SR-241 and SR-91 will be underlain by artificial fill and bedrock. The existing fills were placed in accordance with TCA and Caltrans guidelines, and expansive fills are not anticipated within four ft of finished grade along the SR-241 and SR-91 mainlines. Bedrock encountered near road grade along the proposed connector may need to be removed or remediated if found to be expansive. Areas of existing fill may need to be processed (scarified, moisture conditioned, and recompacted), or overexcavated, dependent on the actual conditions observed. Bridge embankments will be composed of sedimentary bedrock or new engineered fill, similar to the existing SR-241/SR-91 mainline connectors. The embankments would be constructed in accordance with Caltrans Standard Specifications.

Additional subsurface investigations will be required in the PS&E phase. Foundation Reports and Geotechnical Design Reports will also be prepared during the PS&E phase and submitted to the Geotechnical Services branch for review and approval.

The following geologic/geotechnical hazards have been assessed for the Proposed Project.

- The Project area is not located within an Earthquake Fault Zone, therefore the potential for fault-induced ground rupture to occur within the Project area is considered very low.
- The closest active fault to the site is the Whittier Fault Zone. The Peralta Hills Fault is located approximately 2.5 miles west-southwest of the proposed SR-

241 Wildlife Undercrossing Widening. Seismic design recommendations for the proposed structures will be provided in the Preliminary Foundation Report.

- The elevated portions of the Project area underlain by bedrock and artificial fill over bedrock are not considered susceptible to liquefaction. Historic high groundwater levels in the vicinity of the Proposed Project have been mapped at 10 to 40 feet below ground surface. Liquefaction potential will be evaluated as the project proceeds.
- Landslides/unstable areas were previously located within the Project area on SR-241, however, they have been removed/stabilized during construction of SR-241. The existing 1.5:1 cutslope located in the vicinity of SR-91 Station 1488+00 ("ML1" Line). This slope is currently undergoing considerable erosion, due to the nature of the Santiago Formation, and the steep 1.5:1 inclination of this slope. Further evaluation of this and other slopes which will be impacted by the proposed improvements will be required as the project proceeds.
- The soils within the Project area can be somewhat expansive and compressible. These potential hazards should be further evaluated as the project proceeds. Most of the proposed improvements will be founded in existing or new engineered fill. The existing fills were placed in accordance with Caltrans guidelines, and expansive fills are not anticipated within 4 feet of finished grade. Between direct connector Stations 528+50 and 531+00 ("241DC5" Line), future geotechnical investigations should evaluate the expansion potential of the Vaqueros/Sespe formation bedrock exposed at or near subgrade.
- The potential for ground subsidence is considered low because the Project area is not located in an area of significant groundwater withdrawal.
- It is anticipated that onsite bedrock will be rippable using convention methods and equipment because significantly deep cuts are not expected within the Project area.
- Based on the distribution of mapped soil units along the alignment, the Project area is considered to have a moderate erosion potential.
- There is no potential impact to the Project due to a tsunami or seiche due to the Project's vicinity to the Pacific Ocean, minimum surface elevation, and the fact that there are no enclosed bodies of waters adjacent to the study area.

Materials Report

A Preliminary Materials Report has been prepared during the PA/ED phase to develop preliminary recommendations for the pavement structural section requirements. Earthwork and paving included within the scope of work for this preliminary materials report shall conform to the Caltrans Standard Specifications (Caltrans, 2015a). The following recommendations for pavement section design are intended for preliminary planning:

- Subgrade soils underlying the proposed pavement sections shall have a minimum R-value of 28, EI less than 50, and PI less than 12, and shall be noncorrosive to steel and concrete.
- A minimum of four-foot overexcavation will be required.

- Where pavement will be constructed on the top of an existing embankment, and at the base of any overexcavation, scarify the top 6 inches of the removal, moisture-condition to near-optimum moisture content and recompact to 95 percent relative compaction in accordance with Caltrans Standard Specifications for subgrade preparation.
- Backfill materials shall have a minimum R-value of 28, EI less than 50, and PI less than 12, and should be noncorrosive to steel and concrete.
- Fills shall be compacted to 95 percent relative compaction to a depth of 2.5 feet below finished grade (or 0.5 foot below the grading plane – whichever is deeper) per Section 19-5 of the Caltrans Standard Specifications (Caltrans, 2015a). Fills below the above-mentioned depth can be compacted to 90 percent relative compaction. The fills should be placed within 2 percent of optimum moisture content per CTM 216.
- Aggregate subbase and aggregate base shall be selected as defined in the Caltrans Standard Specifications (Caltrans, 2015a).
- All earthworks shall be performed in accordance with the Caltrans Standard Specifications except as indicated in the special provisions prepared for the Proposed Project improvements. Fill placed on sloping ground shall be properly keyed and benched into existing ground and placed as specified in Section 19-6 of the Caltrans Standard Specifications (Caltrans, 2015a).
- Compressible surficial materials, including topsoil, loose alluvium, and unsuitable fill, shall be completely removed prior to fill placement. Geotechnical personnel in the field during construction shall determine the actual depth and extent of removals. In areas where fill will be placed, the ground surface shall be observed to be firm and unyielding before fill placement.
- To minimize potential erosion, all finished slopes or slopes denuded by the construction shall be planted as soon as practical after grading. Local areas may require additional erosion-control measures at the discretion of the geotechnical personnel.

A Final Materials Report will be prepared during the PS&E phase and submitted to Caltrans District 12 Materials and Research Branch for review and approval.

Life Cycle Cost Analysis

Life Cycle Cost Analysis (LCCA) evaluates the cost effectiveness of alternative pavement design for new roadway or for existing roadway requiring Capital Preventative Maintenance, rehabilitation or reconstruction. HDM Topics 612 and 619 identify situations where a LCCA must be performed to assist in determining the most appropriate pavement alternative for a project. Caltrans practice is to perform a LCCA when scoping a project and during the PA/ED phase. The life cycle costs consists of the agency costs, the road user costs, future maintenance and rehabilitation, and routine annual maintenance. The LCCA performed four separate analyses for the Proposed Project. The analyses compared pavement alternatives for the new construction of the SR-241 new connector and the SR-91 Gypsum Canyon Road eastbound ramps, and for the widening of SR-241 and SR-91. Based on the LCCA Procedures Manual (August 2013) only the eastbound off-ramp Gypsum Canyon Road was analyzed because it best represents all of the ramps for the Proposed Project. The results from the eastbound off-ramp Gypsum Canyon Road

would be applied to the other ramps. The LCCA considered a 40-year design life for the SR-241 new connector and the SR-91 mainline widening per LCCA Procedures Manual. The LCCA considered 20- and 40-year design lives for the SR-241 mainline widening and the SR-91 ramps per the LCCA Procedures Manual. The design lives and pavement types presented in the LCCA and summarized in Table 23 and Table 24 are consistent with the flow charts presented in the LCCA Procedures Manual Figures 2-1 and 2-2. Table 23 summarizes the Traffic Indices (TI) used in the LCCA.

Table 23: Traffic Index

Location	20-Year Design Life	40-Year Design Life
SR-91 Eastbound Mainline	n/a	16
SR-241 Mainline and Direct Connector	12	13
SR-91 Eastbound Ramps	10	11

Pavement alternatives for the analysis are based on the TI values, Figures 2-1 and 2-2 in the LCCA Procedures Manual, the scope of the proposed improvements, recommended 20- and 40- year (if applicable) design lives, and the recommended pavement structural sections from the Preliminary Materials Report. Table 24 summarizes the pavement alternatives and results of the LCCA.

Table 24: Pavement Alternatives and LCCA Summary

SR-91 Widening	**Material**	**Design Life**	**R-Value**	**TI**	**Total Life Cycle Costs**
LCCA Alt #1	Jointed Plain Concrete Pavement	40-year	10≤R≤40	16	$4,598,480
LCCA Alt #2	Continuously Reinforced Concrete Pavement	40-Year	10≤R≤40	16	$4,620,000
SR-241 Widening	**Material**	**Design Life**	**R-Value**	**TI**	**Total Life Cycle Costs**
LCCA Alt #1	Hot Mix Asphalt with Rubberized Hot Mix Asphalt	20-Year	28	12	$4,148,060
LCCA Alt #2	Hot Mix Asphalt with Rubberized Hot Mix Asphalt	40-Year	28	13	$7,565,360
SR-241 New Connector (New Construction)	**Material**	**Design Life**	**R-Value**	**TI**	**Total Life Cycle Costs**
LCCA Alt #1	Hot Mix Asphalt with Rubberized Hot Mix Asphalt	40-Year	28	13	$5,350,960
LCCA Alt #2	Continuously Reinforced Concrete Pavement	40-Year	10≤R≤40	13	$1,788,000
SR-91 Ramps (New Construction)	**Material**	**Design Life**	**R-Value**	**TI**	**Total Life Cycle Costs**
LCCA Alt #1	Hot Mix Asphalt with Rubberized Hot Mix Asphalt	20-Year	20	10	$649,560
LCCA Alt #2	Hot Mix Asphalt with Rubberized Hot Mix Asphalt	40-Year	20	11	$2,350,900
LCCA Alt #3	Jointed Plain Concrete Pavement	40-Year	10≤R≤40	11	$345,170

The analysis was performed using RealCost, Version 2.5.2CA to obtain the deterministic results as specified in the LCCA Procedures Manual. The initial construction costs were determined with Caltrans Contract Costs Data tool and maintenance and rehabilitation costs were determined using methodology outlined in the LCCA Procedures Manual.

The results yielding the lowest life cycle cost for the LCCA alternative s of each pavement alternative are provided below:

Widening SR-91 Eastbound:

The recommended pavement structural section for the SR-91 eastbound widening is Alternative #1 Jointed Plain Concrete Pavement with a 40-year design life for R-values 10≤R≤40 based on the overall life cycle cost of the pavement type.

Widening SR-241 Northbound and Southbound:

The recommended pavement structural section for the SR-241 northbound and southbound widening is Alternative #1 Hot Mix Asphalt with Rubberized Hot Mix Asphalt with a 0.25' layer of Asphalt Treated Permeable Base with a 20-year design life for R-

values 28. Asphalt Treated Permeable Base is recommended for pavement and drainage continuity as recommended in the Draft Preliminary Materials Report.

New Construction/Connector SR-241 Northbound and Southbound:

The recommended pavement structural section for the SR-241 northbound and southbound new connector is Alternative #2 Continuously Reinforced Concrete Pavement with a 40-year design life for R-value 10≤R≤40 based on the overall life cycle cost of the pavement type.

New Construction SR-91/Gypsum Canyon Road Ramps:

The recommended pavement structural section for the new construction of all the SR-91/Gypsum Canyon Road eastbound on- and off-ramps is Alternative #3 Jointed Plain Concrete Pavement with a 40-year design life for R-value 10≤R≤40 based on the overall life cycle cost of the pavement type.

Concept of Operations

The Build Alternative proposes construction of a two-lane median-to-median connector between SR-241 and *91 Express Lanes*. A separate toll system description has been prepared entitled the Concept of Operations and provides details of the proposed toll connector lanes policies, operation, and toll collection system (*SR-241/SR-91 Express Lanes Connector Project: Concept of Operations*).

The Concept of Operations of the ELC are expected to meet the following goals and objectives:

- Provide a safe, reliable, predictable commute for *91 Express Lanes* and SR-241 customers
- Optimize vehicle throughput within the system from SR-241 to Green River Interchange along SR-91 and vice versa
- Pay debt service of the ELC and maintain debt service coverage
- Increase average vehicle occupancy
- Generate sufficient revenue to sustain the financial viability of the ELC
- Provide compatibility with Automated License Plate Recognition technology, declaration lane, and transponder based toll collection methods
- Establish trigger points based on performance monitoring using an algorithm

8. FUNDING, PROGRAMMING AND ESTIMATE

Funding

Funding for the Proposed Project is from F/ETCA private funds. The PA/ED phase is anticipated to be complete in August 2017. It is anticipated that F/ETCA will implement the PA/ED, PS&E and Right-of-Way phases with Caltrans providing oversight for the Proposed Project. It has been determined that the Proposed Project is eligible for federal-aid funding. Additional state and federal funding may be pursued for the Final Design, right-of-way, and construction phases. Table 25 shows the Proposed Project funding amounts anticipated to be required by funding source and fiscal year.

Table 25: Project Funding

Year	Fund	Engineering (PA/ED and PS&E)	R/W (including Support)	Construction (including Support)
		In thousands of dollars ($1,000)		
Prior	Private Funds	$3,557		
2017/2018	Private Funds			$60,000
2018/2019	Private Funds			$60,000
2019/2020	Private Funds			$60,000
Subtotal		$3,557	$0	$180,000
Total		$183,557		

Programming

Proposal Programming Data

The Proposed Project is programmed in the SCAG adopted 2015 FTIP Consistency Amendment as Project ID No. ORA111207; Description: HOV/HOT CONNECTOR: NB SR-241 TO EB SR-91, WB SR-91 TO SB SR-241 (1 LANE EACH DIR) AS REQ, BY 2020 PER SCAG/TCA MOU 4/05/01. Funding sources are shown in Table 26. TCA is committed to completing the PA/ED (EA Phase Code 0) and PS&E (EA Phase Code 1) phases.

Combined Projects

The Proposed Project is not in proximity to other projects where it is cost effective to combine projects from different programs or elements for the purposes of design or construction.

Multiple Counties

The Proposed Project improvements are located within the Counties of Orange and Riverside. The only improvements proposed within the County of Riverside are advance signage.

Table 26: Capital Outlay Support and Project Estimates

Fund Source	Fiscal Year Estimate						
Private Funds	Prior	2016/17	2017/18	2018/19	Future	Future	Total
Component	In thousands of dollars ($1,000)						
PA&ED Support	$3,557						$3,557
PS&E Support		$18,686					$18,686
Right-of-Way Support		$25					$25
Construction Support				$20,607			$20,607
Right-of-Way		$543					$543
Construction				$137,381			$137,381
Total	$3,557	$19,254	0	$157,988	0	0	$180,799

Support Cost Ratio

Following public circulation, the proposed estimate for capital outlay support for the programmed engineering phase will be modified to be consistent with the programmed

amount. The fiscal year estimates for capital outlay support are shown in Table 26. The support cost ratio is 33.13%.

Estimate

The total escalated construction capital cost is estimated to be $137,381,000. The primary capital costs of the Proposed Project are attributable to roadway costs associated with the realignment of EB SR-91 to accommodate the median-to-median connector and the OC structure costs. The estimated cost for roadway improvements is $94,923,119, and the estimated cost for structures is $42,457,362. A detailed cost estimate has been provided in Attachment B.

9. DELIVERY SCHEDULE

Based on the schedule in Table 27, early right of way acquisition will be requested during PA/ED phase. Table 27 lists the major project milestones for the Proposed Project.

Table 27: Project Milestones

Project Milestones		Milestone Date (Month/Day/Year)	Milestone Designation (Target/Actual)
PROGRAM PROJECT	M015	1/17/2012	Actual
BEGIN ENVIRONMENTAL	M020	6/27/2013	Actual
NOTICE OF PREPERATION (NOP)	M30	3/13/2015	Actual
NOTICE OF INTENT (NOI)	M35	3/20/2015	Actual
CIRCULATE DPR & DRAFT SUPPLEMENTAL EIR/EIS and SECTION 4(f) EVALUATION EXTERNALLY	M120	11/14/2016	Target
PA&ED	M200	12/7/2017	Target
DRAFT STRUCTURES PS&E	M378	8/1/2017	Target
PROJECT PS&E	M380	12/31/2017	Target
RIGHT-OF-WAY CERTIFICATION	M410	12/1/2017	Target
READY TO LIST	M460	2/5/2018	Target
ADVERTISE	M480	4/5/2018	Target
AWARD	M495	7/12/2018	Target
APPROVE CONTRACT	M500	8/1/2018	Target
CONTRACT ACCEPTANCE	M600	2/28/2020	Target
END PROJECT	M800	7/1/2020	Target

10. RISKS

Caltrans Project Delivery Directive PD-09 requires that risk management be applied to all capital outlay projects and major maintenance projects delivered by Caltrans. Per the risk management, a level 3 risk level has been applied to the Proposed Project based upon

the anticipated project cost. A risk register has been prepared and is included in Attachment J.

11. FHWA COORDINATION

The Proposed Project has been identified as a "Project of Division Interest" since it is identified as a complex Intelligent Transportation Systems (ITS) project. Coordination meetings were held with Jesse Glazer, ITS & Operations Engineer for Southern California of FHWA's Cal-South Office, to review the Concept of Operations, project geometrics and major project requirements. Meetings were held on May 28, 2014, May 29, 2014, July 30, 2014, July 31, 2014, August 11, 2015, and August 13, 2015. The Proposed Project was designated by FHWA as an Oversight Project.

12. PROJECT REVIEWS

A geometric workshop was held and the proposed nonstandard project design features have been coordinated with Caltrans District 12 Design staff and Caltrans Headquarters design staff, Andrew Oshrin, Ann Truong, Leo Chen and David Cordova, in March 2015 and in October 2015, with Caltrans District 12 Design staff Andrew Oshrin, Christopher Le, and Leo Chen.

13. PROJECT PERSONNEL

Foothill/Eastern Transportation Corridor Agency (F/ETCA)

Juliet Su Project Manager	(949) 754-3430
David Lowe Chief Engineer	(949) 754-3491

Caltrans District 12

Leo Chen Project Manager Project Management	(657) 328-6301
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Smita Deshpande Branch Chief Generalist Branch	(657) 328-6151

Bassem Barsoum (949) 724-2331
Area Traffic Engineer
Traffic Operations North

Consultant Team

Tim Haile (909) 974-4922
Project Manager – Michael Baker International

Alan Su (949) 855-5788
Project Engineer – Michael Baker International

Lisa Williams (949) 553-0666
Environmental Project Manager – LSA Associates, Inc.

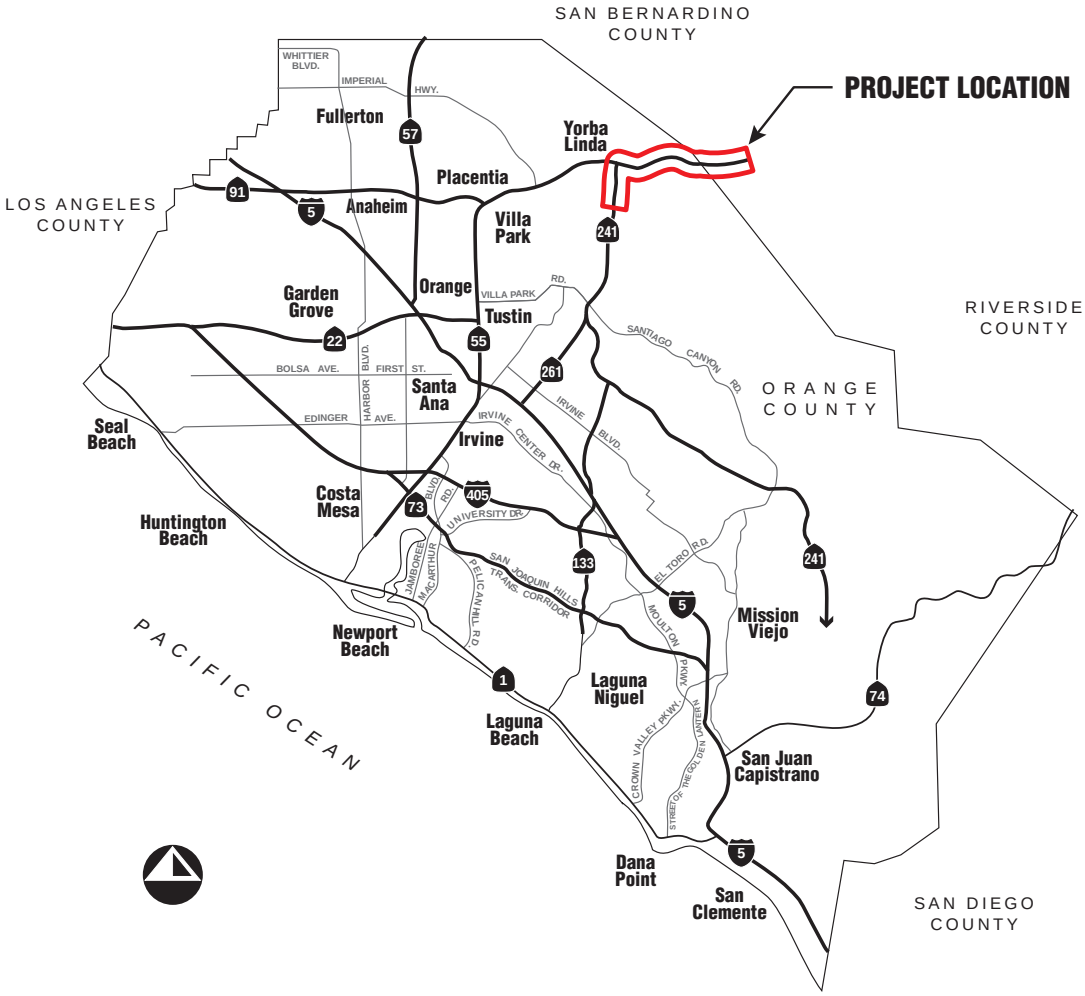
14. ATTACHMENTS

Attachment A	Project Location Map (1 page)
Attachment B	Project Cost Estimate (10 pages)
Attachment C	Right-of-Way Data Sheet (7 pages)
Attachment D	Transportation Management Plan Data Sheet (2 pages)
Attachment E	Storm Water Data Report (Cover Sheet) (1 page)
Attachment F	Draft Supplemental Environmental Impact Report/Environmental Impact Statement and Section 4(f) Evaluation (Cover and Title Sheet) (2 pages)
Attachment G	Geometric Drawings (38 pages)
Attachment H	Advance Planning Studies (APS) (5 pages)
Attachment I	Existing Utility Plans (17 pages)
Attachment J	Risk Register (2 pages)
Attachment K	Design Standards Risk Assessment (5 pages)

12-Ora-241 PM 36.1/39.1
12-Ora-91 PM 14.7/18.9
08-Riv-91 PM 0.0/1.5

Attachment A

Project Location Map



SR-241/SR-91 EXPRESS LANES CONNECTOR

Project Location Map

12-Ora-241 PM 36.1/39.1
12-Ora-91 PM 14.7/18.9
08-Riv-91 PM 0.0/1.5

Attachment B

Project Cost Estimate

Preliminary Cost Estimate

Project ID: 1200020097

Type of Estimate :	PA/ED
Program Code :	CAXT7 – 2015 FTIP
Project Limits :	12-ORA-241 PM 36.1/39.1, 12-ORA-91 PM 14.7/18.9, 08-RIV-91 PM 0.0/1.5
Description:	SR-241/91 Express Lanes Connector SDPR Approval/Environmental Document
Scope :	The purpose of the Express Lanes Connector project is to implement the buildout of the Eastern Transportation Corridor, and be compatible with the proposed SR-91 Corridor Improvement Project, while minimizing environmental and financial impacts
Alternative :	Build Alternative

	Current Cost	Escalated Cost
ROADWAY ITEMS	$ 89,041,400	$ 94,923,119
STRUCTURE ITEMS	$ 39,826,578	$ 42,457,362
SUBTOTAL CONSTRUCTION COST	$ 128,867,978	$ 137,380,481
RIGHT OF WAY	$ 543,267	$ 543,267
TOTAL CAPITAL OUTLAY COST	$ 129,412,000	$ 137,924,000
PR/ED SUPPORT	$ 3,557,000	$ 3,557,000
PS&E SUPPORT	$ 18,686,000	$ 18,686,000
RIGHT OF WAY SUPPORT	$ 25,100	$ 25,100
CONSTRUCTION SUPPORT	$ 20,607,000	$ 20,607,000
TOTAL CAPITAL OUTLAY SUPPORT COST*	$ 42,875,100	$ 42,875,100
TOTAL PROJECT COST	$ 173,000,000	$ 181,000,000

If Project has been programmed enter	Programmed Amount	$ -
	Month / Year	
Date of Estimate (Month/Year)	8 / 2016	
Estimated Date of Construction Start (Month/Year)	8 / 2018	
Number of Working Days	500 Working Days	
	Month / Year	
Estimated Mid-Point of Construction (Month/Year)	8 / 2019	
Number of Plant Establishment Days	Days	

Estimated Project Schedule

PID Approval	1/17/2012
PA/ED Approval	12/7/2017
PS&E	12/31/2017
RTL	2/5/2018
Begin Construction	8/1/2018

Approved by Project Manager

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

I. ROADWAY ITEMS SUMMARY

	Section		Cost
1	**Earthwork**	$	8,567,500
2	**Pavement Structural Section**	$	12,365,300
3	**Drainage**	$	4,347,900
4	**Specialty Items**	$	12,218,900
5	**Environmental**	$	2,378,100
6	**Traffic Items**	$	8,848,600
7	**Detours**	$	-
8	**Minor Items**	$	-
9	**Roadway Mobilization**	$	4,872,700
10	**Supplemental Work**	$	4,437,800
11	**State Furnished**	$	7,309,000
12	**Contingencies**	$	14,840,300
13	**Overhead**	$	8,855,300
	TOTAL ROADWAY ITEMS	**$**	**89,041,400**

Estimate Prepared By _____

Name and Title Date Phone

Estimate Reviewed By _____

Name and Title Date Phone

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

SECTION 1: EARTHWORK

Item code		Unit	Quantity		Unit Price ($)			Cost
160101	Clearing & Grubbing	LS	1	x	54,000.00	=	$	54,000
170101	Develop Water Supply	LS	1	x	100,000.00	=	$	100,000
190101	Roadway Excavation	CY	560,900	x	15.00	=	$	8,413,500

TOTAL EARTHWORK SECTION ITEMS	**$**	**8,567,500**

SECTION 2: PAVEMENT STRUCTURAL SECTION

Item code		Unit	Quantity		Unit Price ($)			Cost
150605	Remove Fence	LF	1,205	x	10.00	=	$	12,050
150860	Remove Base and Surfacing	CY	21,500	x	20.00	=	$	430,000
153247	Remove Concrete (Miscellaneous)	CY	50	x	200.00	=	$	10,000
250201	Class 2 Aggregate Subbase	CY	16,350	x	30.00	=	$	490,500
260203	Class 2 Aggregate Base	CY	35,350	x	40.00	=	$	1,414,000
290201	Asphalt Treated Permeable Base	CY	3,280	x	140.00	=	$	459,200
280000	Lean Concrete Base	CY	8,650	x	160.00	=	$	1,384,000
390132	Hot Mix Asphalt (Type A)	TON	32,350	x	90.00	=	$	2,911,500
394071	Place Hot Mix Asphalt Dike	LF	13,000	x	4.00	=	$	52,000
394090	Place Hot Mix Asphalt (Misc. Area)	SQYD	1,000	x	10.00	=	$	10,000
401050	Jointed Plain Concrete Pavement	CY	23,600	x	220.00	=	$	5,192,000

TOTAL STRUCTURAL SECTION ITEMS	**$**	**12,365,300**

SECTION 3: DRAINAGE

Item code		Unit	Quantity		Unit Price ($)			Cost
150203	Abandon Culvert	EA	17	x	1,500.00	=	$	25,500
152604	Modify Inlet	EA	10	x	1,000.00	=	$	10,000
150809	Remove Culvert	LF	4,605	x	30.00	=	$	138,150
150820	Remove Inlet	EA	42	x	1,150.00	=	$	48,300
150857	Remove Asphalt Concrete Surfacing	SQFT	12,440	x	5.00	=	$	62,200
155003	Cap Inlet	EA	18	x	1,500.00	=	$	27,000
510502	Minor Concrete (Minor Structure)	CY	788	x	1,600.00	=	$	1,260,800
620100	18" Alternative Pipe Culvert	LF	180	x	75.00	=	$	13,500
620140	24" Alternative Pipe Culvert	LF	24,800	x	85.00	=	$	2,108,000
620181	30" Alternative Pipe Culvert	LF	1,040	x	150.00	=	$	156,000
620300	48" Alternative Pipe Culvert	LF	140	x	300.00	=	$	42,000
650042	60" RCP Pipe	LF	60	x	500.00	=	$	30,000
681103	3" Plastic Pipe (Edge Drain)	LF	2,500	x	20.00	=	$	50,000
708021	36" Alternative Pipe Inlet	LF	50	x	500.00	=	$	25,000
705315	24" Alternative Flared End Section	EA	8	x	1,100.00	=	$	8,800
703233	Grated Line Drain	LF	1,400	x	150.00	=	$	210,000
721017	Rock Slope Protection (Facing, Method B)	CY	42	x	300.00	=	$	12,600
721420	Concrete (Ditch Lining)	CY	100	x	1,200.00	=	$	120,000

TOTAL DRAINAGE ITEMS $ 4,347,900

SECTION 4: SPECIALTY ITEMS

Item code		Unit	Quantity		Unit Price ($)			Cost
150662	Remove Metal Beam Guard Railing	LF	1,818	x	15.00	=	$	27,270
150833	Remove Retaining Wall (LF)	LF	6,530	x	25.00	=	$	163,250
157560	Bridge Removal (Portion 55-0724L)	LS	1	x	20,000.00	=	$	20,000
157560	Bridge Removal (Portion Gypsum Canyon Ro	LS	1	x	10,000.00	=	$	10,000
475020A	Retaining Wall (Type 1)	SQFT	63,010	x	125.00	=	$	7,876,250
477020	Retaining Wall (MSE)	SQFT	9,600	x	115.00	=	$	1,104,000
832005	Midwest Guardrail System	LF	14,750	x	35.00	=	$	516,250
839543	Transition Railing *(Type WB-31)*	EA	16	x	3,500.00	=	$	56,000
839585	Alternative Flared Terminal System	EA	13	x	3,000.00	=	$	39,000
839701	Concrete Barrier (Type 60)	LF	20,767	x	100.00	=	$	2,076,700
839704	Concrete Barrier (Type 60D)	LF	2,700	x	50.00	=	$	135,000
839725	Concrete Barrier (Type 736)	LF	5,370	x	25.00	=	$	134,250
839726	Concrete Barrier (Type 736A)	LF	1,015	x	60.00	=	$	60,900

TOTAL SPECIALTY ITEMS $ 12,218,900

SECTION 5: ENVIRONMENTAL

5A - ENVIRONMENTAL MITIGATION

Item code		Unit	Quantity		Unit Price ($)			Cost
	Biological Mitigation	LS	1	x	1,000,000.00	=	$	1,000,000

Subtotal Environmental *$ 1,000,000*

5B - LANDSCAPE AND IRRIGATION

Item code		Unit	Quantity		Unit Price ($)			Cost
210251	Erosion Control (Bonded Fiber Matrix)(Acre)	Acre	23	x	7,200.00	=	$	165,600

Subtotal Landscape and Irrigation *$ 165,600*

5C - NPDES

Item code		Unit	Quantity		Unit Price ($)			Cost
130100	Job Site Management	LS	1	x	250,000.00	=	$	250,000
130300	Prepare SWPPP	LS	1	x	61,600.00	=	$	61,600
130310	Rain Event Action Plan	EA	62	x	500.00	=	$	31,000
130320	Storm Water Sampling and Analysis Day	Day	28	x	6,575.00	=	$	184,100
130330	Storm Water Annual Report	EA	4	x	2,000.00	=	$	8,000
130530	Temporary Hydraulic Mulch (Bonded Fiber Matrix)	SQYD	212,961	x	0.25	=	$	53,240
130560	Temporary Soil Binders	SQYD	221,961	x	0.18	=	$	39,953
130570	Temporary Cover	SQYD	7,000	x	3.00	=	$	21,000
130610	Temporary Check Dams	EA	110	x	6.00	=	$	660
130620	Temporary Drainage Inlet Protection	EA	45	x	230.00	=	$	10,350
130640	Temporary Fiber Rolls	LF	8,750	x	2.10	=	$	18,375
130650	Temporary Gravel Bag Berm	LF	1,750	x	5.70	=	$	9,975
130680	Temporary Silt Fence	LF	14,300	x	3.20	=	$	45,760
130710	Temporary Construction Enterance	EA	4	x	2,800.00	=	$	11,200
130730	Street Sweeping	LS	1	x	372,000.00	=	$	372,000
130900	Temporary Concrete Washout	LS	1	x	6,500.00	=	$	6,500

Supplemental Work for NPDES

(These costs are not accounted in total here but under Supplemental Work on sheet 7 of 11).

066595	Water Pollution Control Maintenance Sharing*	LS	1	x	76,760.00	=	$	76,760
066596	Additional Water Pollution Control**	LS	1	x	6,000.00	=	$	6,000
066597	Storm Water Sampling and Analysis***	LS	1	x	6,000.00	=	$	6,000

Subtotal NPDES (Without Supplemental Work) *$ 1,212,473*

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

**Applies to both SWPPPs and WPCP projects.

*** Applies only to project with SWPPPs.

TOTAL ENVIRONMENTAL $ 2,378,100

SECTION 6: TRAFFIC ITEMS

6A - Traffic Electrical

Item code		Unit	Quantity		Unit Price ($)			Cost
150757	Remove Sign Structure (EA)	EA	2	x	5,000.00	=	$	10,000
560208	Furnish Sign Structure (Tubular)	LB	460,000	x	5.00	=	$	2,300,000
560209	Install Sign Structure (Tubular)	LB	460,000	x	1.00	=	$	460,000
498052	60" CIDHC Pile (Sign Foundation)	LF	500	x	930.00	=	$	465,000
860090	Maintain Existing Traffic Management System Elements During Construction	LS	1	x	5,000.00	=	$	5,000
860810	Inductive Loop Detectors	EA	20	x	500.00	=	$	10,000
860460	Lighting and Sign Illumination	LS	1	x	205,000.00	=	$	205,000
8609XX	Traffic Monitoring Stations	LS	1	x	50,000.00	=	$	50,000
861088	Modify Ramp Meter System	LS	1	x	50,000.00	=	$	50,000
86XXXX	Fiber Optic Communication System	LS	1	x	1,467,000.00	=	$	1,467,000
860532	Changeable Message Sign System (LS)	LS	1	x	160,000.00	=	$	160,000
037376	High Mast CCTV	LS	1	x	140,000.00	=	$	140,000
TBD	Temporary Traffic Management System	LS	1	x	35,000.00	=	$	35,000

$ 5,357,000

6B - Traffic Signing and Striping

Item code		Unit	Quantity		Unit Price ($)			Cost
120090	Construction Area Signs	LS	1	x	100,000.00	=	$	100,000
150701	Remove Yellow Painted Traffic Stripe	LF	41,000	x	3.00	=	$	123,000
150710	Remove Traffic Stripe	LF	123,000	x	1.00	=	$	123,000
150710A	Remove Traffic Stripe/Pavement Markers (OCTA Buffer)	LF	7,000	x	4.00	=	$	28,000
150713	Remove Pavement Marking	SQFT	300	x	3.50	=	$	1,050
150722	Remove Pavement Marker	EA	4,100	x	1.50	=	$	6,150
150742	Remove Roadside Sign	EA	24	x	130.00	=	$	3,120
566011	Roadside Sign (One Post)	EA	22	x	315.00	=	$	6,930
566012	Roadside Sign (Two Post)	EA	2	x	650.00	=	$	1,300
560244	Furnish Laminated Panel Sign (1"-Type A)	SQFT	6,900	x	30.00	=	$	207,000
560XXX	Install Sign Panels	SQFT	6,900	x	8.00	=	$	55,200
82010X	Delineator (Class X)	EA	1,200	x	70.00	=	$	84,000
840656	Paint Traffic Stripe	LF	201,000	x	4.00	=	$	804,000
850111	Pavement Marker (retroreflective)	EA	30,000	x	3.00	=	$	90,000

Subtotal Traffic Signing and Striping *$ 1,632,750*

6C - Stage Construction and Traffic Handling

Item code		Unit	Quantity		Unit Price ($)			Cost
120100	Traffic Control System	LS	1	x	360,000.00	=	$	360,000
120120	Type III Barricade	EA	100	x	200.00	=	$	20,000
120159	Temporary Traffic Stripe (Paint)	LF	144,000	x	1.00	=	$	144,000
120159A	Temporary Traffic Stripe (Paint)(OCTA Buffe	LF	7,000	x	5.00	=	$	35,000
120165	Channelizer (Surface Mounted)	EA	130	x	50.00	=	$	6,500
120165A	Channelizer (Surface Mounted)(OCTA Buffer	EA	600	x	50.00	=	$	30,000
120300	Temporary Pavement Marker	EA	4,400	x	2.00	=	$	8,800
120300A	Temporary Pavement Marker (OCTA Buffer)	EA	900	x	2.00	=	$	1,800
129150	Temporary Traffic Screen	LF	48,000	x	5.00	=	$	240,000
128650	Portable Changeable Message Signs	EA	8	x	3,750.00	=	$	30,000
129000	Temporary Railing (Type K)	LF	48,000	x	20.00	=	$	960,000
129100	Temp. Crash Cushion Module	EA	91	x	250.00	=	$	22,750

Subtotal Stage Construction and Traffic Handling *$ 1,858,850*

TOTAL TRAFFIC ITEMS $ 8,848,600

SECTION 7: DETOURS

Include constructing, maintaining, and removal

Item code		Unit	Quantity		Unit Price ($)		Cost
						TOTAL DETOURS	**$ -**
						SUBTOTAL SECTIONS 1-7	$ 48,726,300

SECTION 8: MINOR ITEMS

8A - Americans with Disabilities Act Items
8B - Bike Path Items
8C - Other Minor Items

	Total of Section 1-7	$	48,726,300	x	0.0%	= $	-
						TOTAL MINOR ITEMS	**$ -**

SECTIONS 9: MOBILIZATION

Item code							
999990	Total Section 1-8	$	48,726,300	x	10%	= $	4,872,630
						TOTAL MOBILIZATION	**$ 4,872,700**

SECTION 10: SUPPLEMENTAL WORK

Item code		Unit	Quantity		Unit Price ($)		Cost
066063	Traffic Management Plan - Public Information	LS	1	x	1,817,352.00	= $	1,817,352
066670	Payment Adjustments For Price Index Fluctuations	LS	1	x	2,800.00	= $	2,800
066700	Partnering	LS	1	x	70,000.00	= $	70,000
066920	Dispute Review Board	LS	1	x	22,500.00	= $	22,500
XXXXXX	Some Item			x		= $	-
	*Cost of **NPDES** Supplemental Work specified in Section 5C*					= $	88,760
	Total Section 1-8	$	48,726,300		5%	= $	2,436,315
						TOTAL SUPPLEMENTAL WORK	**$ 4,437,800**

SECTION 11: STATE FURNISHED MATERIALS AND EXPENSES

Item code		*Unit*	*Quantity*		*Unit Price ($)*		*Cost*
	Total Section 1-8	$	48,726,300		15%	=	$ 7,308,945

TOTAL STATE FURNISHED $7,309,000

SECTION 12: TIME-RELATED OVERHEAD

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

Item code		*Unit*	*Quantity*		*Unit Price ($)*		*Cost*
070018	Time-Related Overhead	WD	500	X	17710.6	=	$8,855,300

TOTAL TIME-RELATED OVERHEAD $8,855,300

SECTION 13: CONTINGENCY

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

	Total Section 1-11	$	74,201,100	x	20%	=	$14,840,220

TOTAL CONTINGENCY $14,840,300

II. STRUCTURE ITEMS

	Bridge 1	Bridge 2	Bridge 3
DATE OF ESTIMATE	12/01/15	12/01/15	12/01/15
Bridge Name	SR-241/SR-91 Connector OC (North)	SR-241/SR-91 Connector OC (South)	Windy Ridge Wildlife UC (Widen)
Bridge Number	57-XXX	57-XXX	57-0724L
Structure Type	CIP/PS Conc Box Girder	CIP/PS Conc Box Girder	CIP/PS Conc Box Girder
Width (Feet) [out to out]	58.83 LF	58.83 LF	25.00 LF
Total Bridge Length (Feet)	1590.00 LF	570.00 LF	175.00 LF
Total Area (Square Feet)	93545 SQFT	33533 SQFT	3719 SQFT
Structure Depth (Feet)	12.00 LF	9.25 LF	7.83 LF
Footing Type (pile or spread)	Pile	Pile	Spread
Cost Per Square Foot	$278.99	$317.35	$377.18
COST OF EACH STRUCTURE	**$26,097,928.00**	**$10,641,729.29**	**$1,402,714.00**

	Bridge 4		
DATE OF ESTIMATE	12/01/15	00/00/00	00/00/00
Bridge Name	Gypsum Canyon Road UC (Widen)	xxxxxxxxxxxxxxxxxx	xxxxxxxxxxxxxxxxxx
Bridge Number	55-0506	57-XXX	57-XXX
Structure Type	CIP/PS Conc Box Girder	xxxxxxxxxxxxxxxxxx	xxxxxxxxxxxxxxxxxx
Width (Feet) [out to out]	46.00 LF	0.00 LF	0.00 LF
Total Bridge Length (Feet)	132.42 LF	0.00 LF	0.00 LF
Total Area (Square Feet)	6091 SQFT	0.00 SQFT	0.0 SQFT
Structure Depth (Feet)	6.00 LF	0.00 LF	0.00 LF
Footing Type (pile or spread)	Pile	xxxxxxxxxxxxxxxxxx	xxxxxxxxxxxxxxxxxx
Cost Per Square Foot	$276.49	$0.00	$0.00
COST OF EACH STRUCTURE	**$1,684,206.48**	**$0.00**	**$0.00**

TOTAL COST OF BRIDGES	**$39,826,577.76**
TOTAL COST OF BUILDINGS	**$0.00**

TOTAL COST OF STRUCTURES[1]	**$39,826,577.76**

Estimate Prepared By: _____ _____
XXXXXXXXXXXXXXXX ------ Division of Structures Date

[1]Structure's Estimate includes Overhead and Mobilization.
Add more sheets if needed. Call them 9a, 9b, 9c, …, etc

III. RIGHT OF WAY

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

A)	A1)	Acquisition, including Excess Land Purchases, Damages & Goodwill,	$	282,267
K)		Utility Relocation (Construction Cost)	$	261,000

L) **TOTAL RIGHT OF WAY ESTIMATE** **$543,267**

(Excluding Item #8 - Hazardous Waste)

M) **TOTAL R/W ESTIMATE: Escalated** **$543,267**

N) **Right of Way Support $ 25,080**

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

Utility Estimate Prepared By _____ Utiliy Coordinator[2] Phone

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

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

12-Ora-241 PM 36.1/39.1
12-Ora-91 PM 14.7/18.9
08-Riv-91 PM 0.0/1.5

Attachment C

Right-of-Way Data Sheet

To: District Division Chief
Division of Right of Way and Land Surveys

Attn: Linda Lundblad, Branch Chief
District 12 – Local Programs

Date: 11-03-16

Co. ORA/RIV Rte. 241 and 91
Expense Authorization 12-0K9700

Subject: **RIGHT OF WAY DATA SHEET – LOCAL PUBLIC AGENCIES**

Project Description: **SR- 241 / SR-91 Express Lanes Connector Project**
12-ORA-241 PM 36.1/39.1
12-ORA-91 PM 14.7/18.9
08-RIV-91 PM 0.0/1.5

Right of way necessary for the subject project will be the responsibility of **The Transportation Corridor Agencies (TCA).**

The information in this data sheet was developed by **Overland, Pacific & Cutler, Inc. in collaboration with Michael Baker International.**

I. Right of Way Engineering

Will Right of Way Engineering be required for this project?

- No ☐
- Yes ☒ (If yes, submit a copy of the *Right of Way Engineering Surveys and Mapping Services checklist for Locally Funded Projects.* This checklist includes, but is not limited to, the following items.)

  - Hard copy (base map) ☒
  - Appraisal map ☒
  - Acquisition documents ☒
  - Property Transfer Documents ☒
  - R/W Record Map ☒
  - Record of Survey ☒

II. *Engineering Surveys*

1. Is any surveying or photogrammetric mapping required?
   No ☐ Yes ☒ if yes, complete the following:

2. Datum Requirements

   Yes ☒ Project will adhere to the following criteria:
   - Horizontal – Horizontal control will be provided in terms of the California Coordinate System of 1983, Zone 6, based locally upon Orange County Surveyor's GPS geodetic control system.
   - Vertical – Vertical control will be provided in terms of NAVD88, based locally upon Orange County Surveyor's benchmarks
   - Units – US Survey Feet

3. Will land survey monument perpetuation be scoped into the project, if required?

   Yes ☒
   No ☐ Provide explanation on additional page.

III. *Parcel Information (Land and Improvements)*

Are there any property rights required within the proposed project limits?

No ☐ Yes ☒ (Complete the following.)

	Part Take	Full Take	Estimate $
A. Number of Vacant Land Parcels	1	0	$282,267
B. Number of Single Family Residential Units	0	0	$0
C. Number of Multifamily Residential Units	0	0	$0
D. Number of Commercial/Industrial Parcels	0	0	$0
E. Number of Farm/Agricultural Parcels	0	0	$0
F. Permanent and/or Temporary Easements	0	0	$0
G. Other Parcels (define in "Remarks" section)	0	0	$0
Totals*	**1**	**0**	**$282,267**

***Costs include 20% contingency & escalated for 1 years at 3% per year**

Provide a general description of the right of way and excess lands required (zoning, use, improvements, critical, or sensitive parcels, etc.).

For this project, 5.09 acres (221,720 sq. ft.) of right of way is required. It affects one vacant land parcel owned by County of Orange. No major impacts are anticipated as a result of the proposed acquisition.

At the end of construction, County of Orange to transfer to State free and clear of all liens and encumbrances. HMDD to be performed by TCA.

It is anticipated that the above parcel would require early acquisition to meet the project schedule as identified in Section XI.

The above parcel acquisition will be purchased in fee and the permanent maintenance easement will be reserved by TCA as part of the fee transfer to Caltrans after construction.

IV. *Dedications*

Are there any property rights which have been acquired, or anticipate will be acquired, through the "dedication" process for the Project?

No ☒ Yes ☐ (Complete the following.)

Number of dedicated parcels _____

Have the dedication parcel(s) been accepted by the municipality involved?

V. *Excess Lands/Relinquishments*

Are there Caltrans property rights which may become excess lands or potential relinquishment areas?

No ☒ Yes ☐ (Provide an explanation on additional page.)

VI. *Relocation Information*

Are relocation displacements anticipated?

No ☒ Yes ☐ (Complete the Following.)

A. Number of Single Family Residential Units		
Estimated RAP Payments	_____	_____
B. Number of Multifamily Residential Units		
Estimated RAP Payments	_____	_____
C. Number of Business/Nonprofit		
Estimated RAP Payments	_____	_____
D. Number of Farms		
Estimated RAP Payments	_____	_____
E. Other (define in the "Remarks" section)		
Estimated RAP Payments	_____	_____
Total	_____	_____

VII. *Utility Relocation Information*

Do you anticipate any utility facilities or utility rights of way to be affected?

No ☐ Yes ☒ (Complete the following.)

	Facility	Owner	Estimated Relocation Expense: State Obligation	Local Obligation	Utility Owner Obligation
A	Gas Line (underground)	SCG	$0	$25,000	$0
B	Electric Line (underground)	SCE	$0	$50,000	$0
C	Potholing	N/A	$0	$10,000	$0
D	Telephone Lines (underground)	AT&T	$0	$112,500	$0
E	2 new manholes	AT&T	$0	$20,000	$0
	Sub-Total			$217,500	
	Contingency (20%)			$43,000	
	Grand Total			$261,000	
	Use as Estimate			**$261,000**	
	Number of Facilities	5			

Any additional information concerning utility involvement on this project?

N/A

VIII. *Rail Information*

Are railroad facilities or railroad rights of way affected?

No ☒ Yes ☐ (Complete the following.)

Describe the railroad facilities to be affected.

	Owner's Name	Transverse Crossing	Longitudinal Encroachment
A.	N/A	N/A	N/A

Discuss types of agreements and rights required from railroads. Are grade crossings that require services contracts, or grade separations that require construction and maintenance agreements involved?

IX. *Clearance Information*

Are there improvements that require clearance?

No ☒ Yes ☐ (Complete the following.)

A. Number of structures to be Demolished 0
Estimated Cost of Demolition $0

X. *Hazardous Materials/Waste*

Are there any site(s) and/or improvements(s) in the Project Limits that are known to contain

hazardous materials? None ☒ Yes ☐ (Explain in the "Remarks" section.)

Are there any site(s) and or improvement(s) in the Project Limits that are suspected to contain

hazardous waste? None ☒ Yes ☐ (Explain in the "Remarks" section.)

XI. *Project Scheduling*

	Proposed lead time		Completion Date
* Preliminary Engineering Surveys	Completed	months	April 2011
* R/W Engineering Submittals	7	months	April 2017
* R/W Appraisals/Acquisition	8	months	November 2017
Proposed Environmental Clearance	36	months	November 2017
Proposed R/W Certification	2	months	December 2017

XII. *Proposed Funding*

	Local	State	Federal	Other
Acquisition	$282,267			
Utilities	$261,000			
Relocation Assistance Program	$0			
Loss of Business Goodwill	$0			
Structures Testing + Demolition	$0			
Condemnation	$0			
R/W Support Cost	$25,080			
TOTAL	$568,347			
COMBINED TOTAL	**$568,347**			

XIII. *Remarks*

Project Scheduling has not been determined at this time; however, below is the Project Milestone Schedule:

Release of the Draft SEIR/EIS – November 2016
Public Hearing – November 2016
Final SEIR/EIS – November 2017
ROD – December 2017
Begin Construction – August 2018
Project Opening – February 2020

Project Sponsor Consultant
Prepared by:

Joshua Cosper, P.E., P.L.S.
Overland, Pacific & Cutler, Inc.

11/3/2016
Date

Project Sponsor
Reviewed and Approved by:

Juliet Su
Corridor Manager - Design
Transportation Corridor Agencies

11/4/2016
Date

Caltrans
Reviewed based on information provided to date:

for Linda Lundblad, Branch Chief
District 12 – Local Programs

11-4-2016
Date

1. Name of utility companies involved in project:

   - Southern California Edison Company (SCE)
   - Southern California Gas Company (SCG)
   - AT&T (PacBell) AT&T)
   - Santa Ana Regional Interceptor (SARI)
   - Four Corners Pipeline (Questar)

2. Types of facilities and agreements required:

Facility Type	Notice to Owners/Utility Agreements
Underground Electric Lines	Yes/Yes
Underground Gas Lines	Yes/Yes
Underground Telephone Lines	Yes/Yes

3. Is any facility a longitudinal encroachment in existing or proposed access controlled right of way? **No.**

   Disposition of longitudinal encroachment(s):
   ☐ Relocation required.
   ☐ Exception to policy needed.
   ☐ Other. Explain.
   None

4. Additional information concerning utility involvements on this project, i.e., long lead time materials, growing or species seasons, customer service seasons (no transmission tower relocations in summer).
   None

5. PMCS Input Information
   Total estimated cost of State's obligation for utility relocation on this project:

$ 261,000

Utility Involvements

U4-1	0	U5-7	0
-2	0	-8	0
-3	0	-9	2
-4	2		

Prepared By:

Joseph W. Sawtelle

April 13, 2016

Right of Way Utility Coordinator
Joseph W. Sawtelle, P.E.

Date

12-Ora-241 PM 36.1/39.1
12-Ora-91 PM 14.7/18.9
08-Riv-91 PM 0.0/1.5

Attachment D

Transportation Management Plan Data Sheet

TRANSPORTATION MANAGEMENT PLAN DATA SHEET

(Preliminary TMP Elements and Costs)

Co/Rte/PM: 12-0RA-241 PM 36.1/39.1; 12-ORA-91 PM 14.7/18.9; 08-RIV-91 PM 0.0/1.5 EA 0K97000 Alternative No. BUILD

Project Limit: On Route SR-241 and SR-91 between SR-241 Windy Ridge Toll Plaza and SR-91/Coal Canyon UC

Project Description: State Route 241/91 Express Lanes Connector Project

1) Public Information		
☒	a. Brochures and Mailers	$ 5,000
☒	b. Press Release	
☐	c. Paid Advertising	$ 150,000
☐	d. Public Information Center/Kiosk	$
☒	e. Public Meeting/Speakers Bureau	$ 60,000
☒	f. Telephone Hotline	$ 30,000
☒	g. Internet	$ 10,000
☐	h. Others	$
2) Motorists Information Strategies		
☐	a. Changeable Message Signs (Fixed)	$
☒	b. Changeable Message Signs (Portable)	$ 60,000
☒	c. Ground Mounted Signs	$ 12,000
☒	d. Highway Advisory Radio	$ 6,000
☐	e. Caltrans Highway Information Network (CHIN)	
☐	f. Others	$
3) Incident Management		
☒	a. Construction Zone Enhanced Enforcement Program (COZEEP)	$ 222,000
☒	b. Freeway Service Patrol	$ 647,352
☐	c. Traffic Management Team	
☐	d. Helicopter Surveillance	$
☐	e. Traffic Surveillance Stations (Portable CCTV and traffic monitoring stations)	$ 100,000
☒	f. Others Call Boxes	$ 5,000
☒	g. Others Project Needs	$ 50,000
☒	h. Others TMT	$ 50,000

4) Construction Strategies

- ☐ a. Lane Closure Chart
- ☐ b. Reversible Lanes
- ☐ c. Total Facility Closure
- ☐ d. Contra Flow
- ☐ e. Truck Traffic Restrictions $
- ☐ f. Reduced Speed Zone $
- ☐ g. Connector and Ramp Closures
- ☐ h. Incentive and Disincentive $
- ☒ i. Moveable Barrier $ 100,000
- ☐ j. Others _____ $

5) Demand Management

- ☐ a. HOV Lanes/Ramps (New or Convert) $
- ☐ b. Park and Ride Lots $
- ☐ c. Rideshare Incentives $
- ☐ d. Variable Work Hours
- ☐ e. Telecommute
- ☐ f. Ramp Metering (Temporary Installation) $
- ☐ g. Ramp Metering (Modify Existing) $
- ☐ h. Others _____ $

6) Alternative Route Strategies

- ☐ a. Add Capacity to Freeway Connector $
- ☐ b. Street Improvement (traffic signal timing modification and striping modification) $
- ☐ c. Traffic Control Officers $
- ☐ d. Parking Restrictions
- ☒ e. Others Detours $ 10,000

7) Other Strategies

- ☐ a. Application of New Technology $
- ☒ b. Others Traffic Control System $ 200,000
- ☒ c. Others Maintain Traffic $ 100,000

TOTAL ESTIMATED COST OF TMP ELEMENTS = $ 1,817,352

Attachment E

Storm Water Data Report (Cover Sheet)

Dist-County-Route: 12-ORA-241/91; 08-RIV-91
Post Mile Limits: 12-ORA-241 PM 36.1/39.1 (SR-241); 12-ORA-91 PM 14.7/18.9 (SR-91); 08-RIV-91 PM 0.0/1.5
Project Type: Tolled Direct Connectors
Project ID (or EA): 0K9700
Program Identification: SR-241/91 Express Lanes Connector Project
Phase: ☐ PID ☒ PA/ED ☐ PS&E

Regional Water Quality Control Board(s): Santa Ana

Is the Project required to consider Treatment BMPs? Yes ☒ No ☐
If yes, can Treatment BMPs be incorporated into the project? Yes ☒ No ☐
If No, a Technical Data Report must be submitted to the RWQCB at least 30 days prior to the projects RTL date. List RTL Date: _____

Total Disturbed Soil Area: 43.9 acres Risk Level: 2
Estimated: Construction Start Date: August 1, 2018 Construction Completion Date: February 28, 2020
Notification of Construction (NOC) Date to be submitted: July 1, 2018

Erosivity Waiver	Yes ☐	Date: _____	No ☒
Notification of ADL reuse (if Yes, provide date)	Yes ☐	Date: _____	No ☒
Separate Dewatering Permit (if yes, permit number)	Yes ☐	Permit # _____	No ☒

This Report has been prepared under the direction of the following Licensed Person. The Licensed Person attests to the technical information contained herein and the date upon which recommendations, conclusions, and decisions are based. Professional Engineer or Landscape Architect stamp required at PS&E.

Terrence Chen, Registered Project Engineer — 8/04/16 Date

I have reviewed the stormwater quality design issues and find this report to be complete, current and accurate:

Leo Chen, Project Manager — 9/15/16 *Date*

Richard Reed, Designated Maintenance Representative — 9/15/16 *Date*

Eric Dickson, Designated Landscape Architect Representative — 9/15/16 *Date*

[Stamp Required for PS&E only) *Grace Pina-Garrett, District/Regional Design SW Coordinator* — 9/12/16 *Date*

12-Ora-241 PM 36.1/39.1
12-Ora-91 PM 14.7/18.9
08-Riv-91 PM 0.0/1.5

Attachment F

Environmental Document (Cover and Title Sheet)

SR-241/SR-91 Express Lanes Connector Project

ORANGE COUNTY, CALIFORNIA
DISTRICT 12
12-ORA-241 PM 36.1/39.1
12-ORA-91 PM 14.7/18.9
08-RIV-91 PM 0.0/1.5
EA No. 12-0K9700
Project No. 1200020097

Administrative Draft Supplemental Environmental Impact Report/Environmental Impact Statement and Section 4(f) Evaluation

Prepared by the
State of California Department of Transportation
and
The Foothill/Eastern Transportation Corridor Agency

The environmental review, consultation, and any other action required in accordance with applicable Federal laws for this project is being, or has been, carried out by Caltrans under its assumption of responsibility pursuant to 23 USC 327.

Caltrans will issue a single document that consists of the Final Environmental Impact Statement and Record of Decision pursuant to Pub. L. 112-141, 126 Stat. 405, Section 1319(b) unless it is determined that statutory criteria or practicability considerations preclude issuance of such a combined document.

Caltrans
CALIFORNIA DEPARTMENT OF TRANSPORTATION

July 2016

SCH No. 1989010410
12-ORA-241 PM 36.1/39.1
12-ORA-91 PM 14.7/18.9
08-RIV-91 PM 0.0/1.5
EA No. 12-0K9700
Project No. 1200020097

Construct a direct connector between State Route 241(SR-241) and the State Route 91 (SR-91) Tolled Express Lanes, from Orange County, (12-ORA-241 PM 36.1/39.1 and 12-ORA-91 PM 14.7/18.9 to 08-RIV-91 PM 0.0/1.5) to the Riverside County line.

DRAFT SUPPLEMENTAL ENVIRONMENTAL IMPACT REPORT/ENVIRONMENTAL IMPACT STATEMENT

Submitted Pursuant to: (State) Division 13, California Public Resources Code
(Federal) 42 USC 4332(2)(C) and 49 USC 303

THE STATE OF CALIFORNIA
Department of Transportation

Cooperating Agency:
United States Army Corps of Engineers

Responsible Agencies:

United States Department of Fish and Wildlife
California Department of Fish and Wildlife
Foothill Eastern Transportation Corridor Agency
Regional Water Quality Control Board
County of Orange
California Transportation Commission

10/24/16
Date of Approval

Ryan Chamberlain
District Director
California Department of Transportation
NEPA and CEQA Lead Agency

The following person may be contacted for more information about this document:

Smita Deshpande,
Generalist Branch Chief
California Department of Transportation, District 12
1750 East Fourth Street, Suite 100
Santa Ana, CA 92705
D12.SR241-91ELC@dot.ca.gov

Abstract: The purpose of the Proposed Project is to implement the build out of the Eastern Transportation Corridor (ETC), as approved in 1994. The overall objective of the ETC project was to accommodate traffic growth associated with planned and approved development in Orange County. The need for the Proposed Project is to address roadway deficiencies including: peak-hour demand exceeding capacity between the SR-241 and SR-91 connectors, lack of connectivity between tolled/managed facilities, and weaving between general purpose connectors and median lanes reducing traffic flow. The F/ETCA, in cooperation with Caltrans, proposes to construct a direct connector between SR-241 and the *91 Express Lanes*. Currently, there is no direct connection between the SR-241 toll road and the *91 Express Lanes*. A Preferred Alternative was identified by the Project Development Team, which is the Proposed Project (the Build Alternative) discussed in this document. The only substantial effects from the Proposed Project include impacts to paleontological resources and biological resources. Caltrans will issue a single document that consists of the Supplemental Final Environmental Impact Statement and Record of Decision pursuant to Pub. L. 112-141, 126 Stat. 405, Section 1319(b) unless it is determined that statutory criteria or practicability considerations preclude issuance of such a combined document.

Submit comments on this document to: Smita Deshpande, Generalist Branch Chief , Division of Environmental Analysis, Department of Transportation, District 12, 1750 East Fourth Street, Suite 100, Santa Ana CA 92705, D12.SR241-91ELC@dot.ca.govby January 5, 2017.

12-Ora-241 PM 36.1/39.1
12-Ora-91 PM 14.7/18.9
08-Riv-91 PM 0.0/1.5

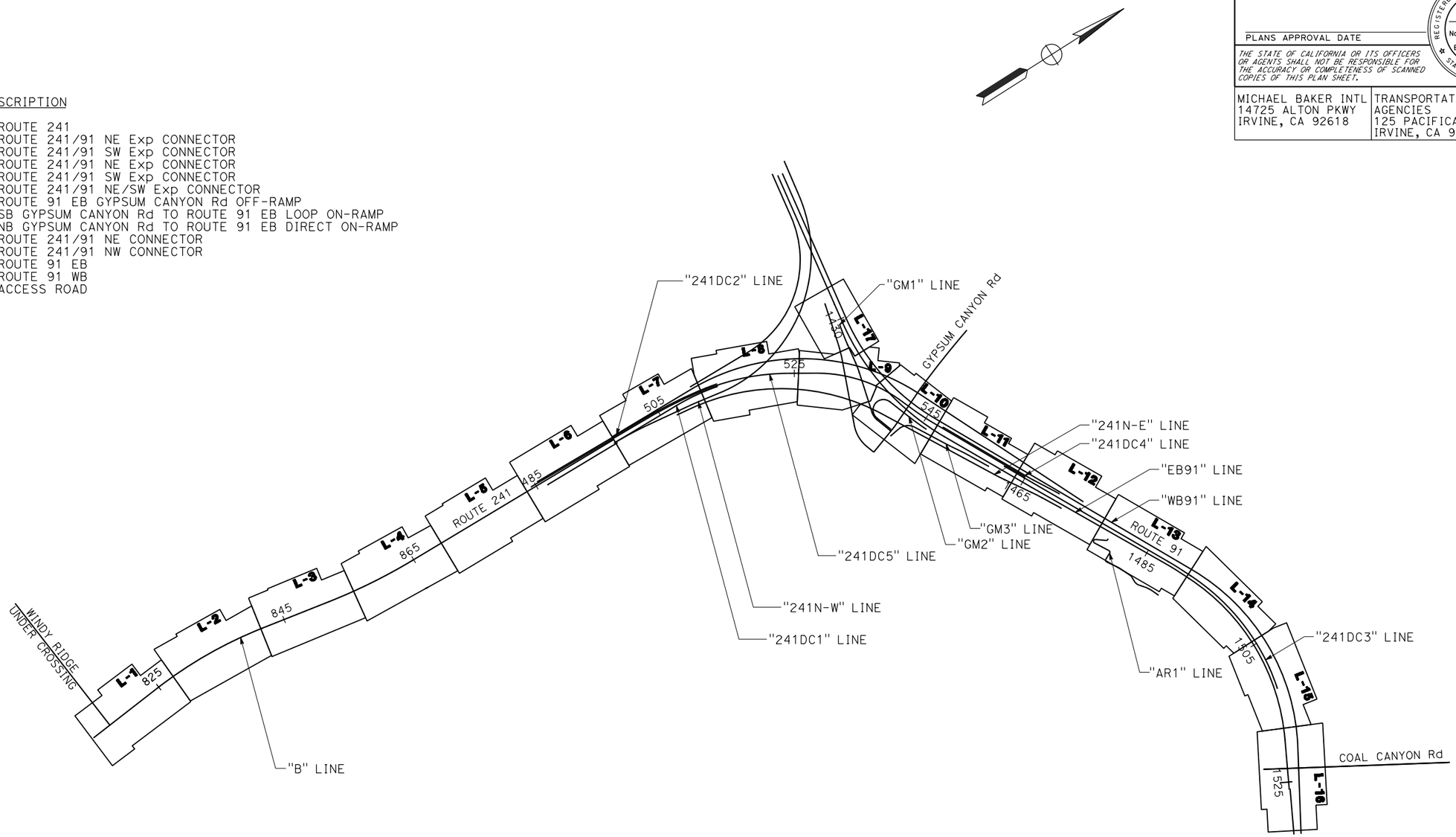
Attachment G

Geometric Drawings

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

LINE INDEX

LINE	DESCRIPTION
"B" LINE	℄ ROUTE 241
"241DC1" LINE	℄ ROUTE 241/91 NE Exp CONNECTOR
"241DC2" LINE	℄ ROUTE 241/91 SW Exp CONNECTOR
"241DC3" LINE	℄ ROUTE 241/91 NE Exp CONNECTOR
"241DC4" LINE	℄ ROUTE 241/91 SW Exp CONNECTOR
"241DC5" LINE	℄ ROUTE 241/91 NE/SW Exp CONNECTOR
"GM1" LINE	℄ ROUTE 91 EB GYPSUM CANYON Rd OFF-RAMP
"GM2" LINE	℄ SB GYPSUM CANYON Rd TO ROUTE 91 EB LOOP ON-RAMP
"GM3" LINE	℄ NB GYPSUM CANYON Rd TO ROUTE 91 EB DIRECT ON-RAMP
"241N-E" LINE	℄ ROUTE 241/91 NE CONNECTOR
"241N-W" LINE	℄ ROUTE 241/91 NW CONNECTOR
"EB91" LINE	℄ ROUTE 91 EB
"WB91" LINE	℄ ROUTE 91 WB
"AR1" LINE	℄ ACCESS ROAD



KEY MAP
NO SCALE

DRAFT

K-1

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12, 8	Ora, Riv	241, 91, 91	36.1/39.1, 14.7/18.9, 0.0/1.5		

REGISTERED CIVIL ENGINEER — X/X/XX DATE

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14725 ALTON PKWY
IRVINE, CA 92618

TRANSPORTATION CORRIDOR AGENCIES
125 PACIFICA, SUITE 100
IRVINE, CA 92618

REVISED BY	DATE REVISED

CALCULATED-DESIGNED BY: mohamed.ghonim 10-OCT-2016 17:57
CHECKED BY:
SUPERVISOR:
CONSULTANT FUNCTIONAL SUPERVISOR: TIM HAILE
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans

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NOTE:
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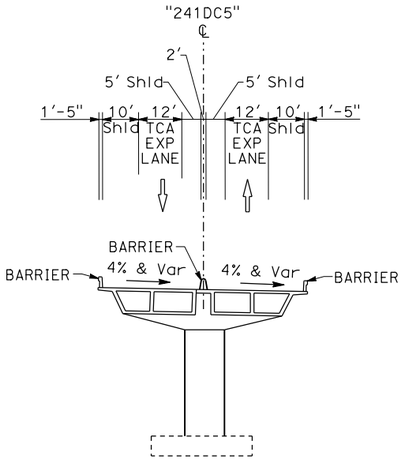
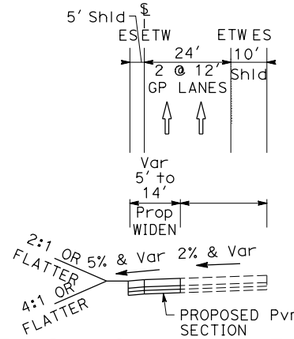


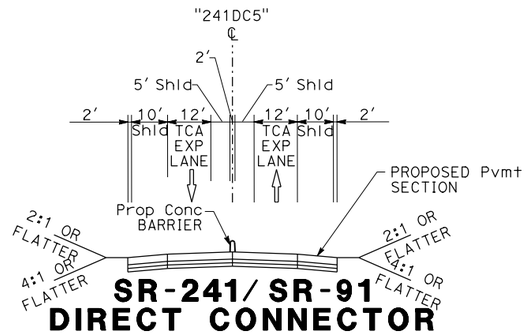
SR-241/ SR-91 DIRECT CONNECTOR

Sta 515+83.91 to Sta 521+53.91 "241 DC5" LINE
Sta 531+33.91 to Sta 547+28.91 "241 DC5" LINE



NB SR-241 - WB SR-91 CONNECTOR

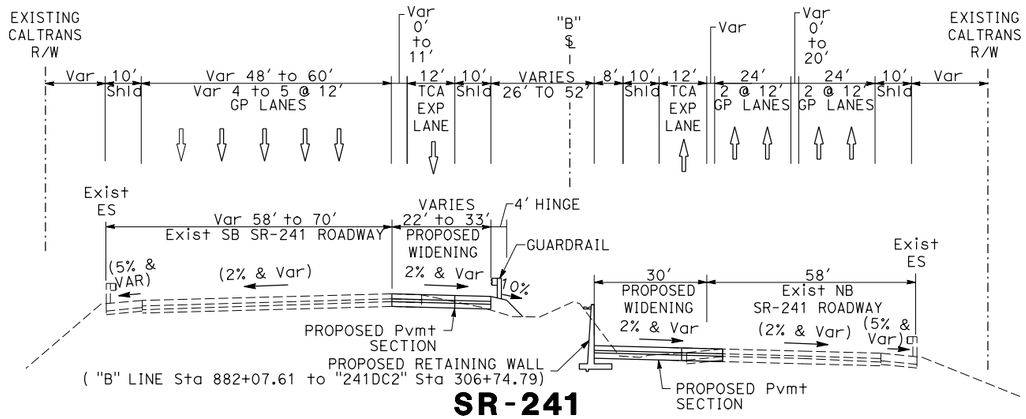
Sta 602+36.41 to Sta 617+12.28 "241N-W" LINE



SR-241/ SR-91 DIRECT CONNECTOR

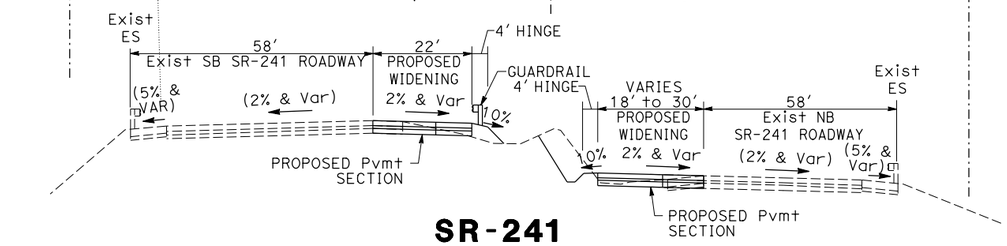
Sta 521+53.91 to Sta 531+83.91 "241DC5" LINE
Sta 512+00.00 to Sta 515+83.91 "241DC5" LINE

DRAFT



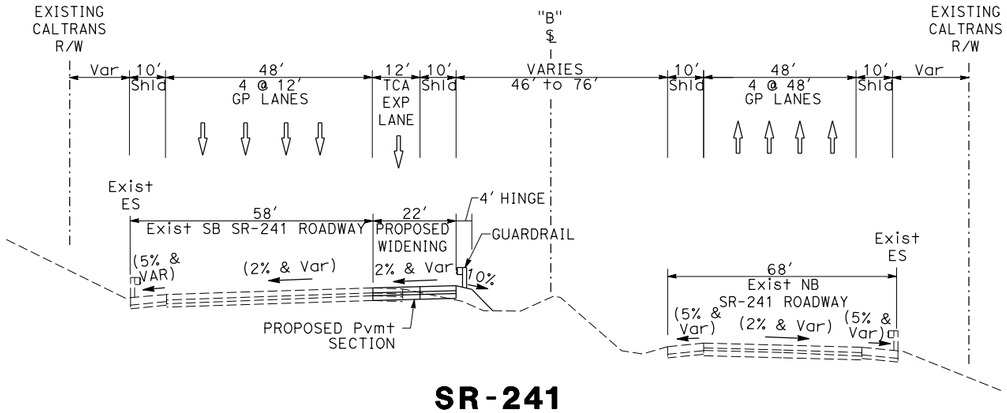
SR-241

Sta 879+99.48 to Sta 897+59.76 SB "B" LINE
Sta 897+50.23 NB



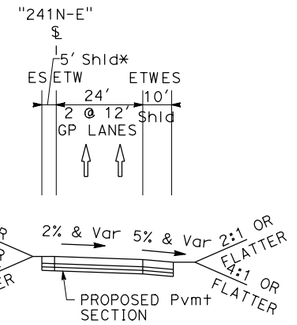
SR-241

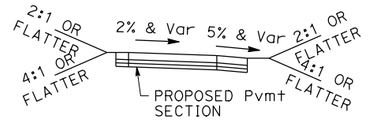
Sta 852+51.59 to Sta 879+99.48 "B" LINE



SR-241

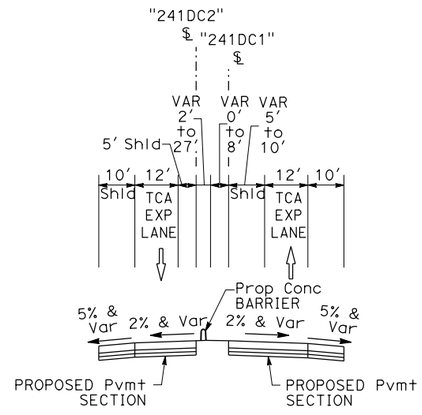
Sta 815+19.00 to Sta 852+51.59 "B" LINE





NB SR-241 - EB SR-91 CONNECTOR

Sta 55+69.17 to Sta 70+99.30 "241N-E" LINE
*Sta 55+69.17 to Sta 65+17.69 Gore



SR-241 CONNECTOR

Sta 297+34.66 to Sta 314+07.23 "241DC2" LINE
Sta 97+56+.65 to Sta 113+99.77 "241DC1" LINE

TYPICAL SECTIONS

NO SCALE

X-1

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12, 8	Ora, Riv	241, 91, 91	36.1/39.1, 14.7/18.9, 0.0/1.5		

REGISTERED CIVIL ENGINEER — X/X/XX DATE

PLANS APPROVAL DATE

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14725 ALTON PKWY
IRVINE, CA 92618

TRANSPORTATION CORRIDOR AGENCIES
125 PACIFICA, SUITE 100
IRVINE, CA 92618

REVISED BY	DATE REVISED

CALCULATED-DESIGNED BY: mohamed.ghonim 10-OCT-2016 17:57
CHECKED BY:
CONSULTANT FUNCTIONAL SUPERVISOR: TIM HAILE
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans

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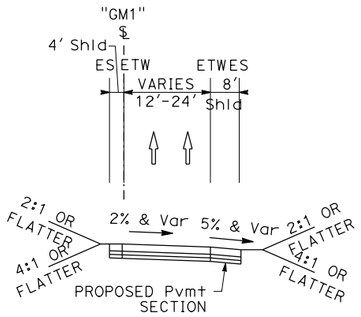
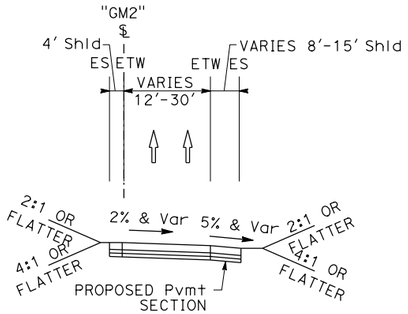


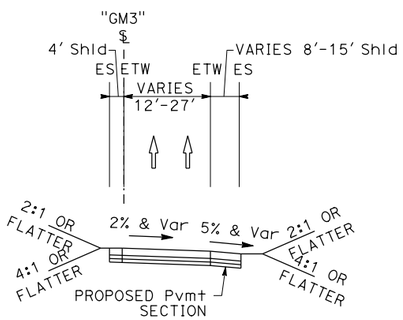
EB GYPSUM CANYON OFF RAMP

Sta 31+00.00 to Sta 47+75.73 "GM1" LINE



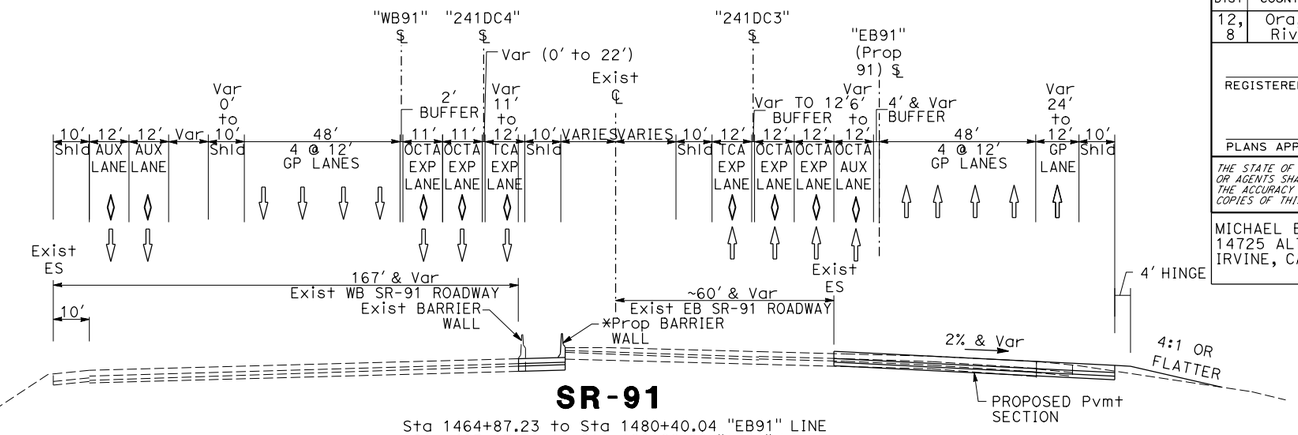
EB GYPSUM CANYON LOOP ON RAMP

Sta 36+00.00 to Sta 49+50.91 "GM2" LINE



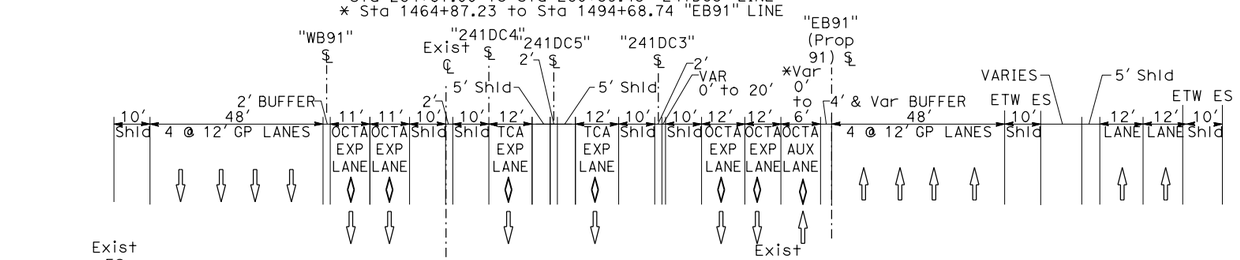
EB GYPSUM CANYON HOOK ON RAMP

Sta 43+92.05 to Sta 59+59.88 "GM3" LINE



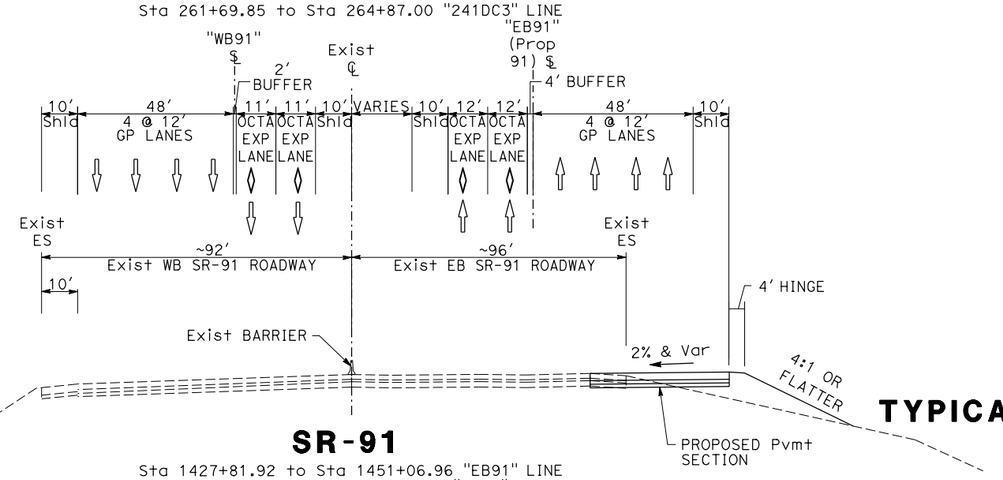
SR-91

Sta 1464+87.23 to Sta 1480+40.04 "EB91" LINE
Sta 465+17.31 to Sta 480+68.66 "WB91" LINE
Sta 464+87.00 to Sta 470+22.49 "241DC4" LINE
Sta 264+87.00 to Sta 280+39.43 "241DC3" LINE
* Sta 1464+87.23 to Sta 1494+68.74 "EB91" LINE



SR-91

Sta 1451+06.96 to Sta 1464+87.23 "EB91" LINE
Sta 451+42.52 to Sta 465+17.31 "WB91" LINE
Sta 547+28.91 to Sta 561+06.02 "241DC5" LINE
Sta 451+69.85 to Sta 464+87.00 "241DC4" LINE
Sta 261+69.85 to Sta 264+87.00 "241DC3" LINE



SR-91

Sta 1427+81.92 to Sta 1451+06.96 "EB91" LINE
Sta 428+75.68 to Sta 451+42.52 "WB91" LINE

TYPICAL SECTIONS

NO SCALE

X-2

DRAFT

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12, 8	Ora, Riv	241, 91, 91	36.1/39.1, 14.7/18.9, 0.0/1.5		

REGISTERED CIVIL ENGINEER — X/X/XX DATE

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IRVINE, CA 92618

TRANSPORTATION CORRIDOR AGENCIES
125 PACIFICA, SUITE 100
IRVINE, CA 92618

REVISED BY	DATE REVISED

CALCULATED-DESIGNED BY: mohamed.ghonim
CHECKED BY:
CONSULTANT FUNCTIONAL SUPERVISOR: TIM HAILE
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans

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NOTE:

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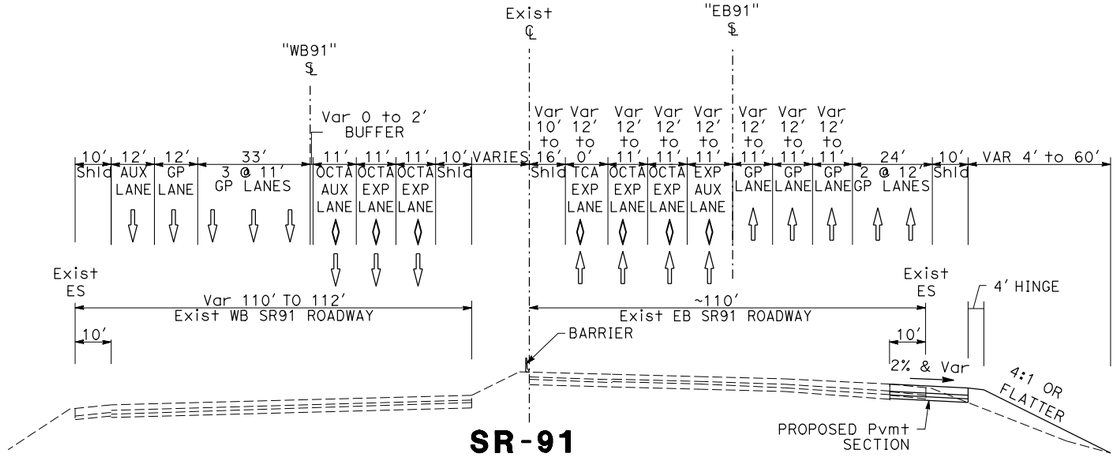
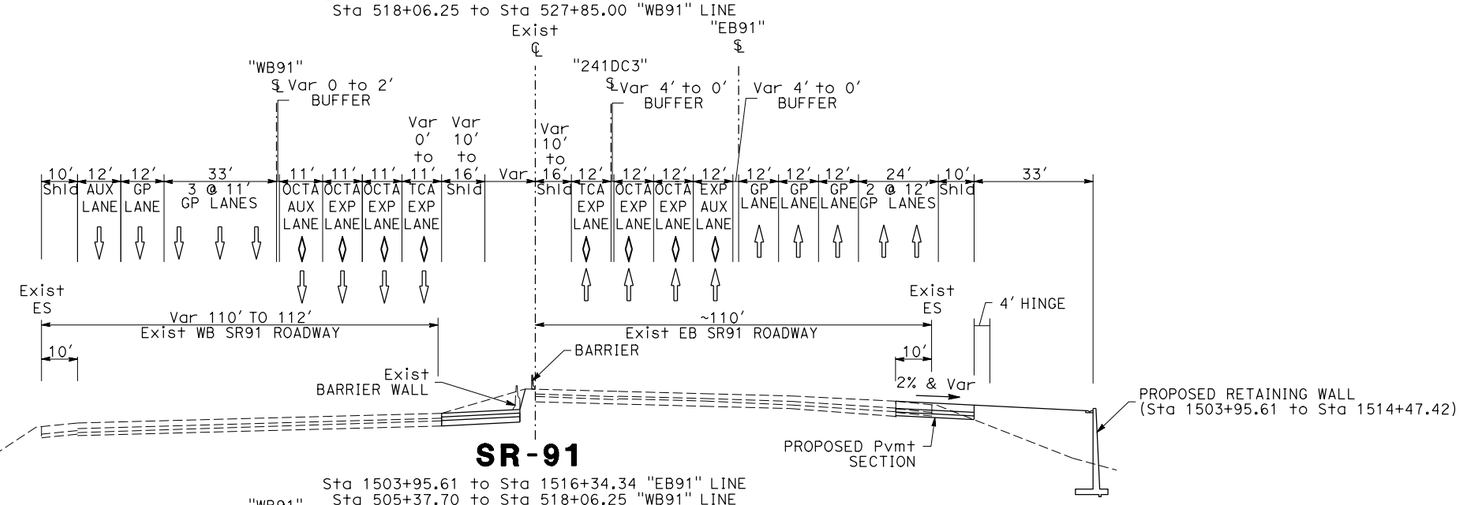


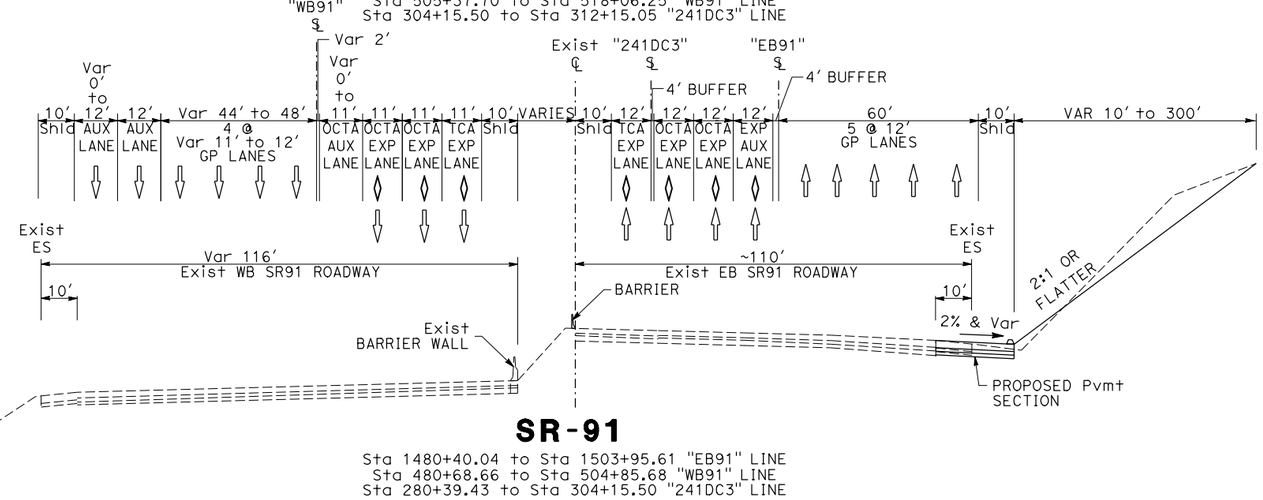
SR-91

Sta 1516+34.34 to Sta 1525+94.34 "EB91" LINE
Sta 518+06.25 to Sta 527+85.00 "WB91" LINE



SR-91

Sta 1503+95.61 to Sta 1516+34.34 "EB91" LINE
Sta 505+37.70 to Sta 518+06.25 "WB91" LINE
Sta 304+15.50 to Sta 312+15.05 "241DC3" LINE



SR-91

Sta 1480+40.04 to Sta 1503+95.61 "EB91" LINE
Sta 480+68.66 to Sta 504+85.68 "WB91" LINE
Sta 280+39.43 to Sta 304+15.50 "241DC3" LINE

TYPICAL SECTIONS

NO SCALE

X-3

DRAFT

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12, 8	Ora, Riv	241, 91, 91	36.1/39.1, 14.7/18.9, 0.0/1.5		

REGISTERED CIVIL ENGINEER — DATE X/X/XX

PLANS APPROVAL DATE

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14725 ALTON PKWY
IRVINE, CA 92618

TRANSPORTATION CORRIDOR AGENCIES
125 PACIFICA, SUITE 100
IRVINE, CA 92618

DATE REVISED	REVISED BY

CALCULATED-DESIGNED BY: mohamed.ghonim 10-OCT-2016 17:57

CHECKED BY:

CONSULTANT FUNCTIONAL SUPERVISOR: TIM HAILE

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

Caltrans

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Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12, 8	Ora, Riv	241, 91, 91	36.1/39.1, 14.7/18.9, 0.0/1.5		

REGISTERED CIVIL ENGINEER — X/X/XX DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — No. — Exp. — CIVIL — STATE OF CALIFORNIA

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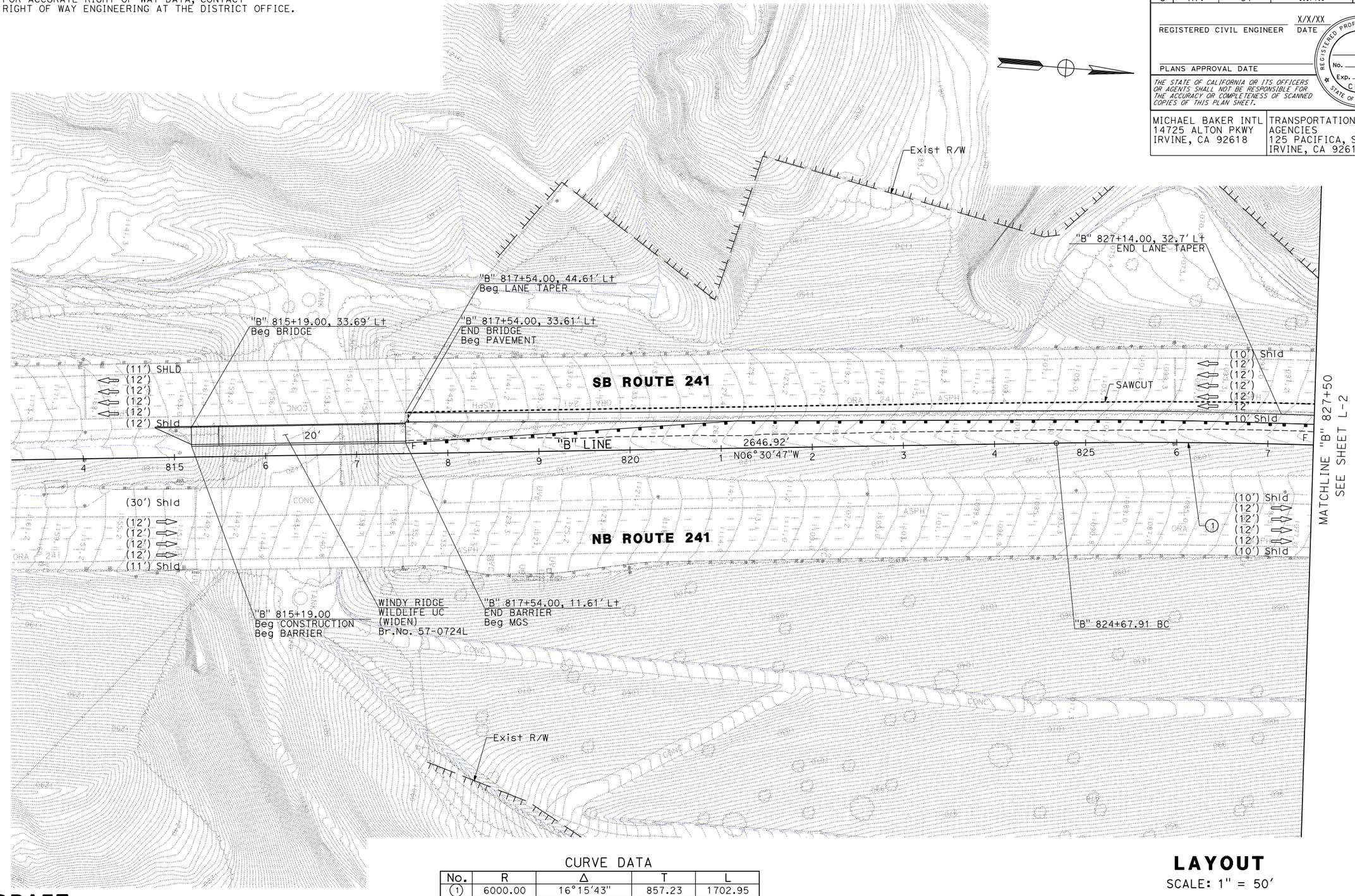
MICHAEL BAKER INTL
14725 ALTON PKWY
IRVINE, CA 92618

TRANSPORTATION CORRIDOR AGENCIES
125 PACIFICA, SUITE 100
IRVINE, CA 92618



CURVE DATA

No.	R	Δ	T	L
(1)	6000.00	16°15'43"	857.23	1702.95

LAYOUT
SCALE: 1" = 50'

L-1

DRAFT

LAST REVISION 00-00-14 | DATE PLOTTED => 10-OCT-2016 | TIME PLOTTED => 17:57

REVISED BY	DATE REVISED

CALCULATED-DESIGNED BY: mohamed.ghonim 10-OCT-2016 17:57
CHECKED BY:
CONSULTANT FUNCTIONAL SUPERVISOR: TIM HAILE
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans

H:\pdata\10107774\CADD\TransPW\Div\Layout\7774-ST-001.dgn

BORDER LAST REVISED 7/2/2010 | USERNAME => mohamed.ghonim | DGN FILE => 7774-ST-001.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 0000 | PROJECT NUMBER & PHASE 1200020097

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

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12, 8	Ora, Riv	241, 91, 91	36.1/39.1, 14.7/18.9, 0.0/1.5		

REGISTERED CIVIL ENGINEER — X/X/XX DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — No. — Exp. — CIVIL — STATE OF CALIFORNIA

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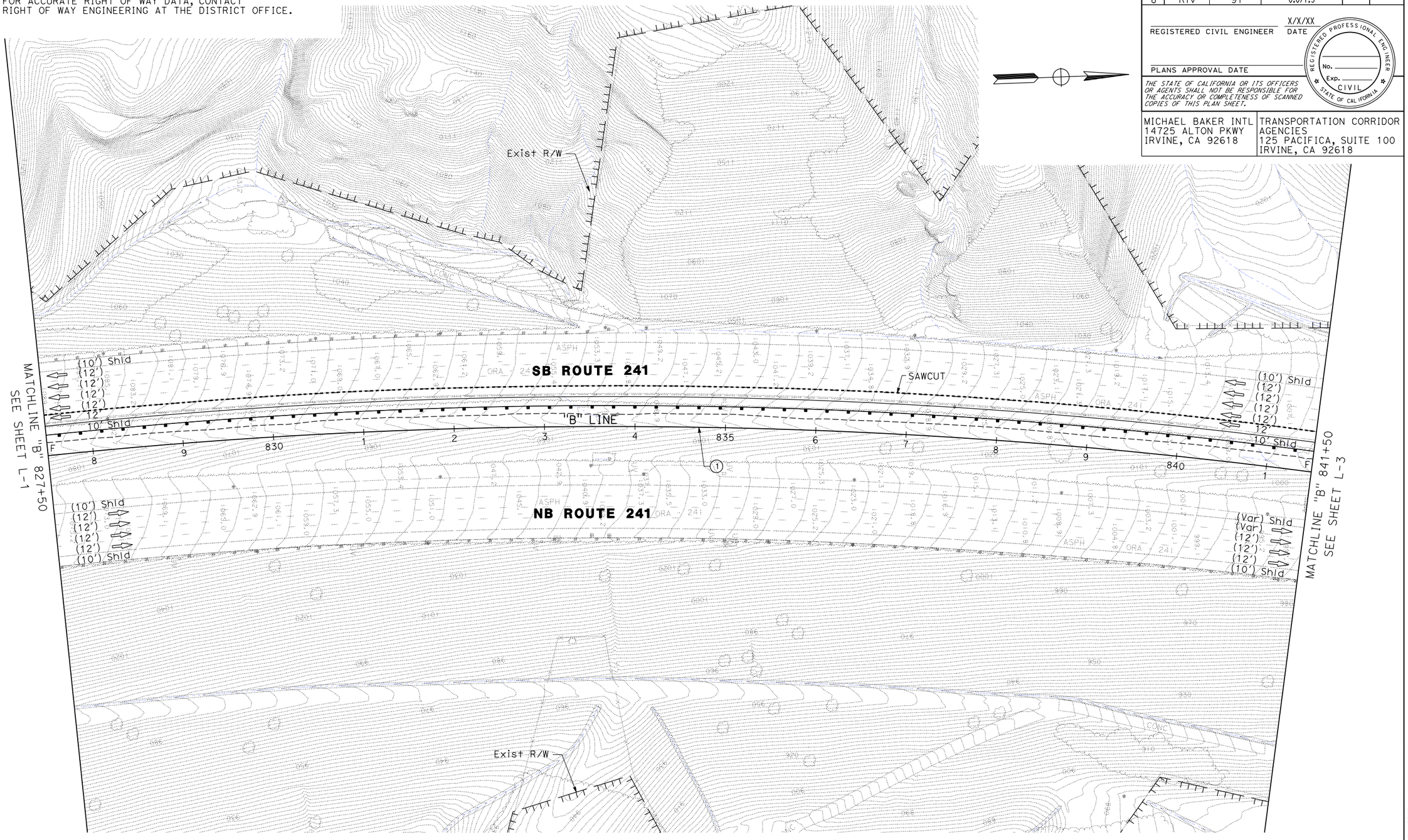
MICHAEL BAKER INTL
14725 ALTON PKWY
IRVINE, CA 92618

TRANSPORTATION CORRIDOR AGENCIES
125 PACIFICA, SUITE 100
IRVINE, CA 92618



CURVE DATA

No.	R	Δ	T	L
(1)	6000.00	16°15'43"	857.23	1702.95

LAYOUT
SCALE: 1" = 50'

DRAFT

L-2

LAST REVISION | DATE PLOTTED => 10-OCT-2016
00-00-14 | TIME PLOTTED => 17:57

H:\pdata\10107774\CADD\TransPW\Div\Layout\7774-ST-002.dgn
mohamed.ghonim 10-OCT-2016 17:57

REVISED BY	DATE REVISED

CALCULATED-DESIGNED BY
CHECKED BY
CONSULTANT FUNCTIONAL SUPERVISOR: TIM HAILE
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION — Caltrans

BORDER LAST REVISED 7/2/2010 | USERNAME => mohamed.ghonim | DGN FILE => 7774-ST-002.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 0000 | PROJECT NUMBER & PHASE 1200020097

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

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12, 8	Ora, Riv	241, 91, 91	36.1/39.1, 14.7/18.9, 0.0/1.5		

REGISTERED CIVIL ENGINEER — X/X/XX DATE

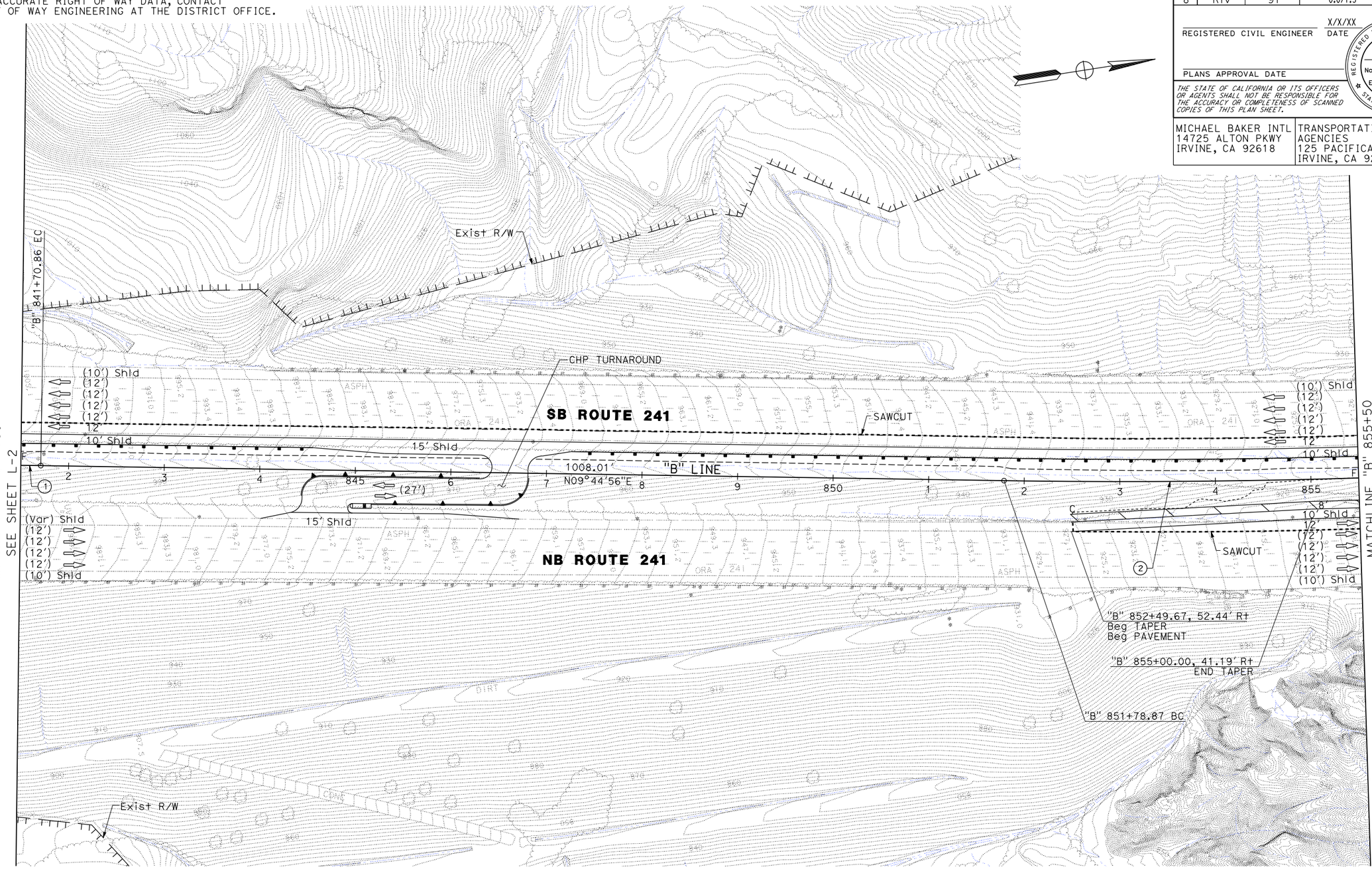
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — No. — Exp. — CIVIL — STATE OF CALIFORNIA

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

MICHAEL BAKER INTL
14725 ALTON PKWY
IRVINE, CA 92618

TRANSPORTATION CORRIDOR AGENCIES
125 PACIFICA, SUITE 100
IRVINE, CA 92618



CURVE DATA

No.	R	Δ	T	L
1	6000.00	16°15'43"	857.23	1702.95
2	8000.00	09°18'59"	651.85	1300.83

DRAFT

LAYOUT
SCALE: 1" = 50'

L-3

REVISED BY	DATE REVISED

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CONSULTANT FUNCTIONAL SUPERVISOR: TIM HAILE

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans

H:\pdata\10107774\CADD\TransPW\Div\Layout\7774-ST-003.dgn
mohamed.ghonim 10-OCT-2016 17:57

LAST REVISION 00-00-14
DATE PLOTTED => 10-OCT-2016
TIME PLOTTED => 17:57

BORDER LAST REVISED 7/2/2010
USERNAME => mohamed.ghonim
DGN FILE => 7774-ST-003.dgn
RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3
UNIT 0000
PROJECT NUMBER & PHASE 1200020097

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

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12, 8	Ora, Riv	241, 91, 91	36.1/39.1, 14.7/18.9, 0.0/1.5		

REGISTERED CIVIL ENGINEER — X/X/XX DATE

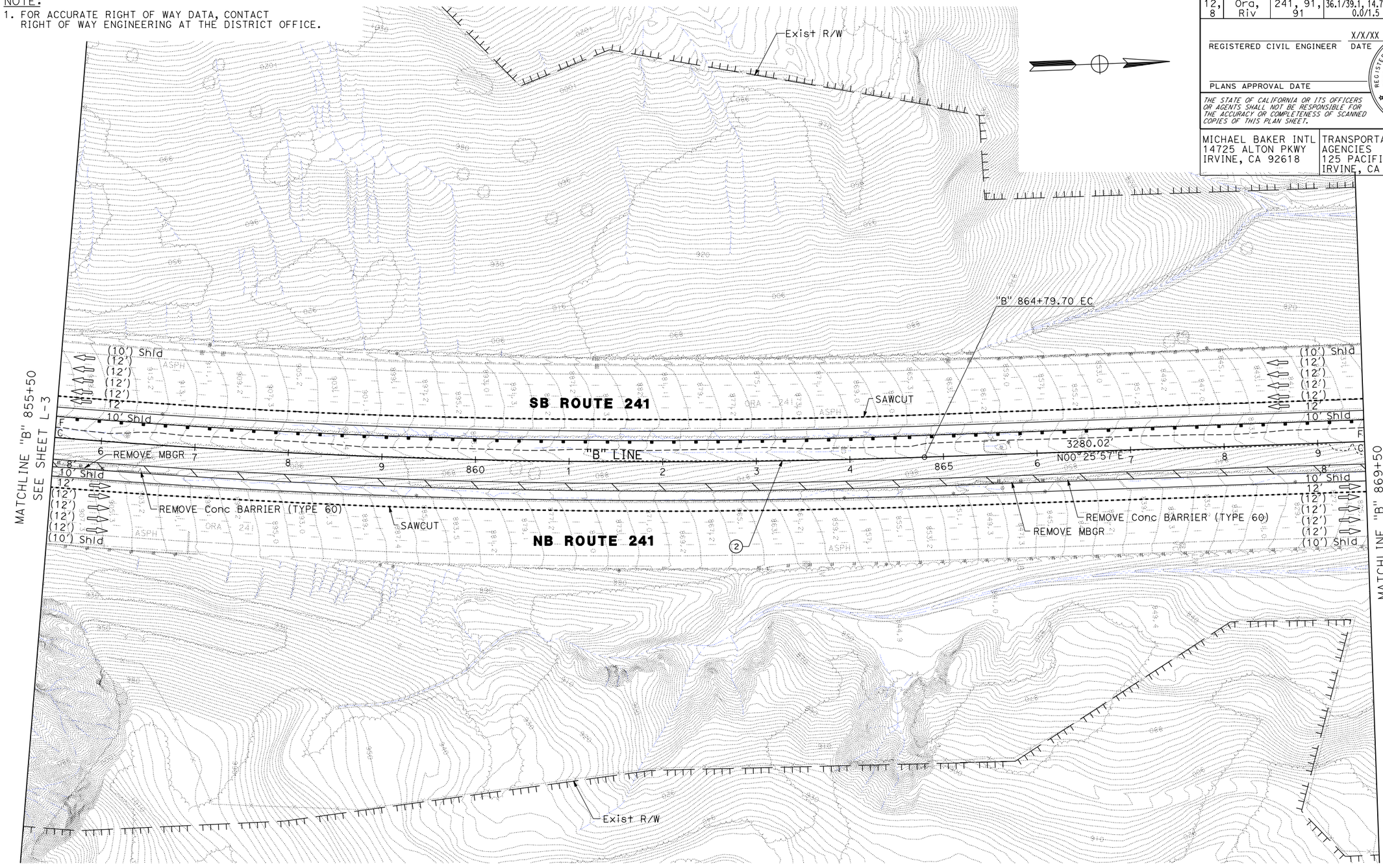
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — No. — Exp. — CIVIL — STATE OF CALIFORNIA

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

MICHAEL BAKER INTL
14725 ALTON PKWY
IRVINE, CA 92618

TRANSPORTATION CORRIDOR AGENCIES
125 PACIFICA, SUITE 100
IRVINE, CA 92618



CURVE DATA

No.	R	Δ	T	L
(2)	8000.00	09°18'59"	651.85	1300.83

LAYOUT
SCALE: 1" = 50'

DRAFT

L-4

LAST REVISION	DATE PLOTTED => 10-OCT-2016
00-00-14	TIME PLOTTED => 17:57

REVISED BY	DATE REVISED

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SUPERVISOR
CONSULTANT FUNCTIONAL SUPERVISOR — TIM HAILE
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION — Caltrans

mohamed.ghonim 10-OCT-2016 17:57
H:\pdata\10107774\CADD\TransPW\Div\Layout\7774-ST-004.dgn

BORDER LAST REVISED 7/2/2010 | USERNAME => mohamed.ghonim | DGN FILE => 7774-ST-004.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 0000 | PROJECT NUMBER & PHASE 1200020097

NOTE:

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

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12, 8	Ora, Riv	241, 91, 91	36.1/39.1, 14.7/18.9, 0.0/1.5		

REGISTERED CIVIL ENGINEER — X/X/XX DATE

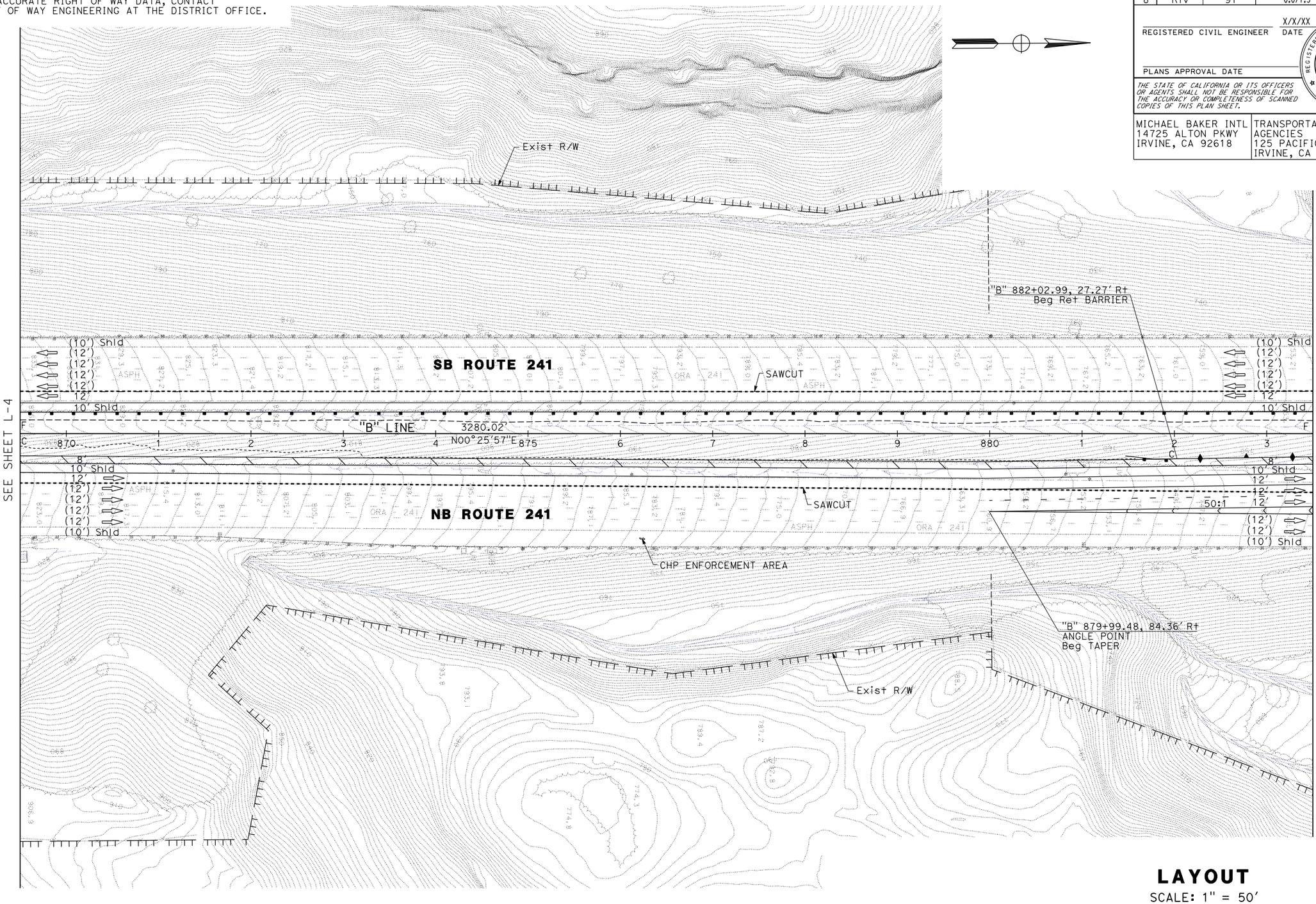
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — No. — Exp. — CIVIL — STATE OF CALIFORNIA

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

MICHAEL BAKER INTL
14725 ALTON PKWY
IRVINE, CA 92618

TRANSPORTATION CORRIDOR AGENCIES
125 PACIFICA, SUITE 100
IRVINE, CA 92618



LAYOUT

SCALE: 1" = 50'

DRAFT

L-5

REVISED BY	DATE REVISED

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CONSULTANT FUNCTIONAL SUPERVISOR: TIM HAILE

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Caltrans

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mohamed.ghonim 10-OCT-2016 17:57

LAST REVISION: 00-00-14
DATE PLOTTED => 10-OCT-2016
TIME PLOTTED => 17:57

BORDER LAST REVISED 7/2/2010

USERNAME => mohamed.ghonim
DGN FILE => 7774-ST-005.dgn

RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3

UNIT 0000

PROJECT NUMBER & PHASE 1200020097

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

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12, 8	Ora, Riv	241, 91, 91	36.1/39.1, 14.7/18.9, 0.0/1.5		

REGISTERED CIVIL ENGINEER — X/X/XX DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — No. — Exp. — CIVIL — STATE OF CALIFORNIA

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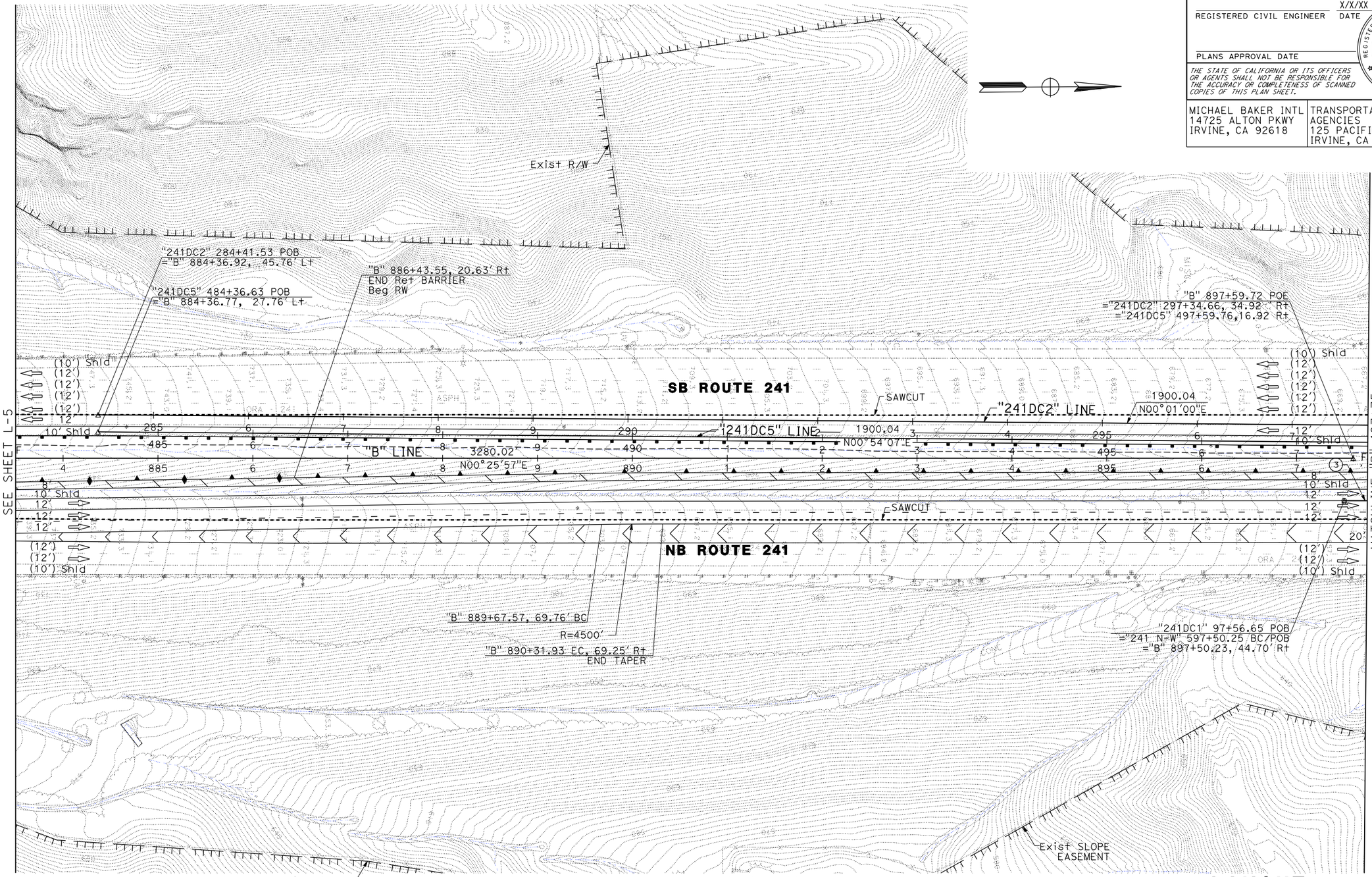
MICHAEL BAKER INTL
14725 ALTON PKWY
IRVINE, CA 92618

TRANSPORTATION CORRIDOR AGENCIES
125 PACIFICA, SUITE 100
IRVINE, CA 92618



CURVE DATA

No.	R	Δ	T	L
(3)	5116.00	06°05'50"	272.47	544.42

LAYOUT
SCALE: 1" = 50'

DRAFT

L-6

REVISED BY	DATE REVISED

CALCULATED-DESIGNED BY: mohamed.ghonim 10-OCT-2016 17:57
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CONSULTANT FUNCTIONAL SUPERVISOR: TIM HAILE

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

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LAST REVISION 00-00-14
DATE PLOTTED => 10-OCT-2016
TIME PLOTTED => 17:57

BORDER LAST REVISED 7/2/2010 | USERNAME => mohamed.ghonim | DGN FILE => 7774-ST-006.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 0000 | PROJECT NUMBER & PHASE 1200020097

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

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12, 8	Ora, Riv	241, 91, 91	36.1/39.1, 14.7/18.9, 0.0/1.5		

REGISTERED CIVIL ENGINEER — X/X/XX DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — No. — Exp. — CIVIL — STATE OF CALIFORNIA

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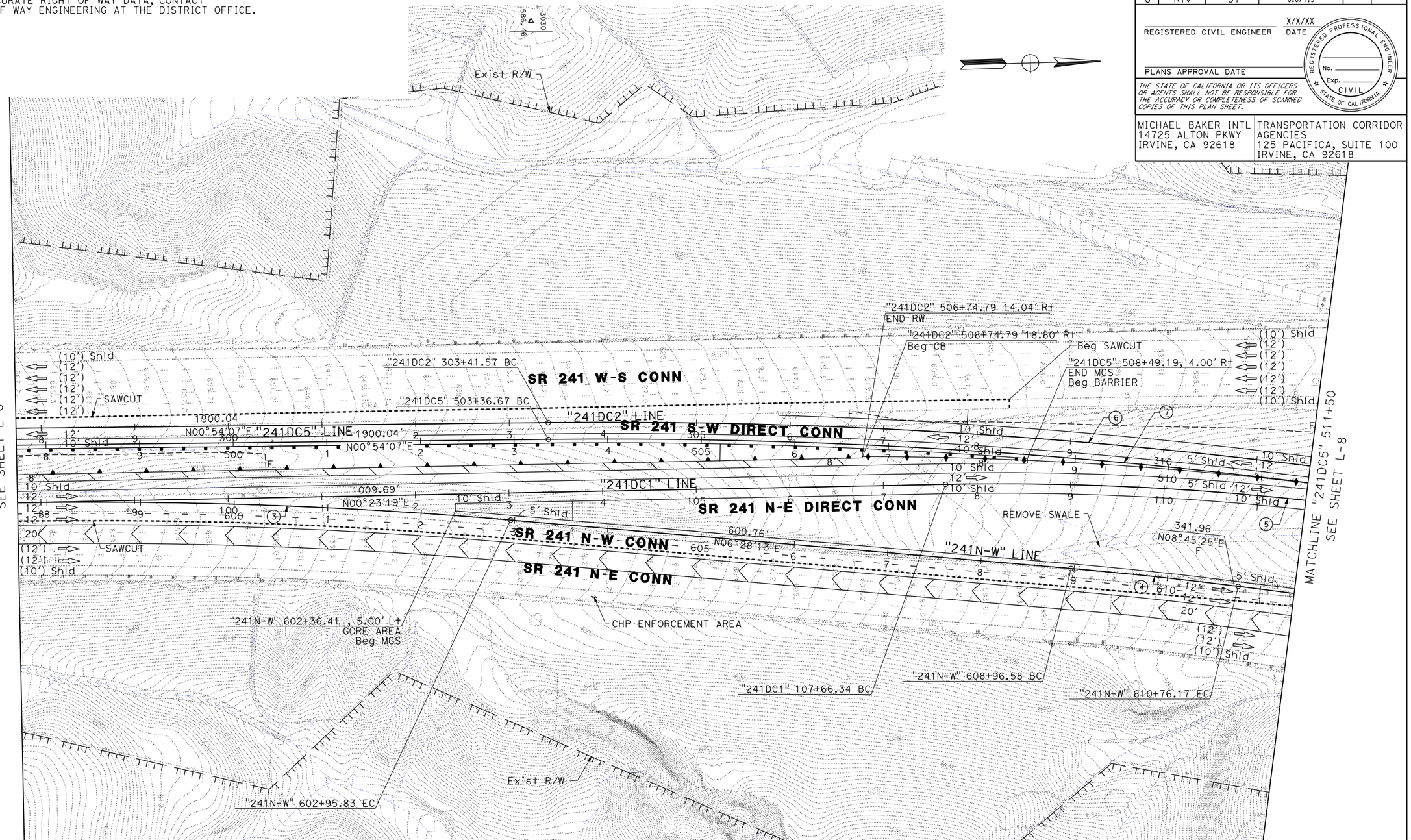
MICHAEL BAKER INTL
14725 ALTON PKWY
IRVINE, CA 92618

TRANSPORTATION CORRIDOR AGENCIES
125 PACIFICA, SUITE 100
IRVINE, CA 92618



CURVE DATA

No.	R	Δ	T	L
③	5140.00	06°04'56"	273.04	545.58
④	4500.00	02°17'12"	89.81	179.59
⑤	3000.00	12°05'51"	317.90	633.43
⑥	6000.00	08°40'00"	454.65	907.57
⑦	5982.00	08°40'00"	453.29	904.85

LAYOUT
SCALE: 1" = 50'

L-7

DRAFT

H:\pdata\10107774\CADD\TransPW\Div\Layout\7774-ST-007.dgn
mohamed.ghonim 10-OCT-2016 17:57

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CONSULTANT FUNCTIONAL SUPERVISOR	TIM HAILE	
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	Caltrans	
REVISED BY		
DATE REVISED		

BORDER LAST REVISED 7/2/2010	USERNAME => mohamed.ghonim DGN FILE => 7774-ST-007.dgn	RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3	UNIT 0000	PROJECT NUMBER & PHASE	1200020097

LAST REVISION 00-00-14
DATE PLOTTED => 10-OCT-2016
TIME PLOTTED => 17:57

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

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12, 8	Ora, Riv	241, 91, 91	36.1/39.1, 14.7/18.9, 0.0/1.5		

REGISTERED CIVIL ENGINEER — X/X/XX DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — No. — Exp. — CIVIL — STATE OF CALIFORNIA

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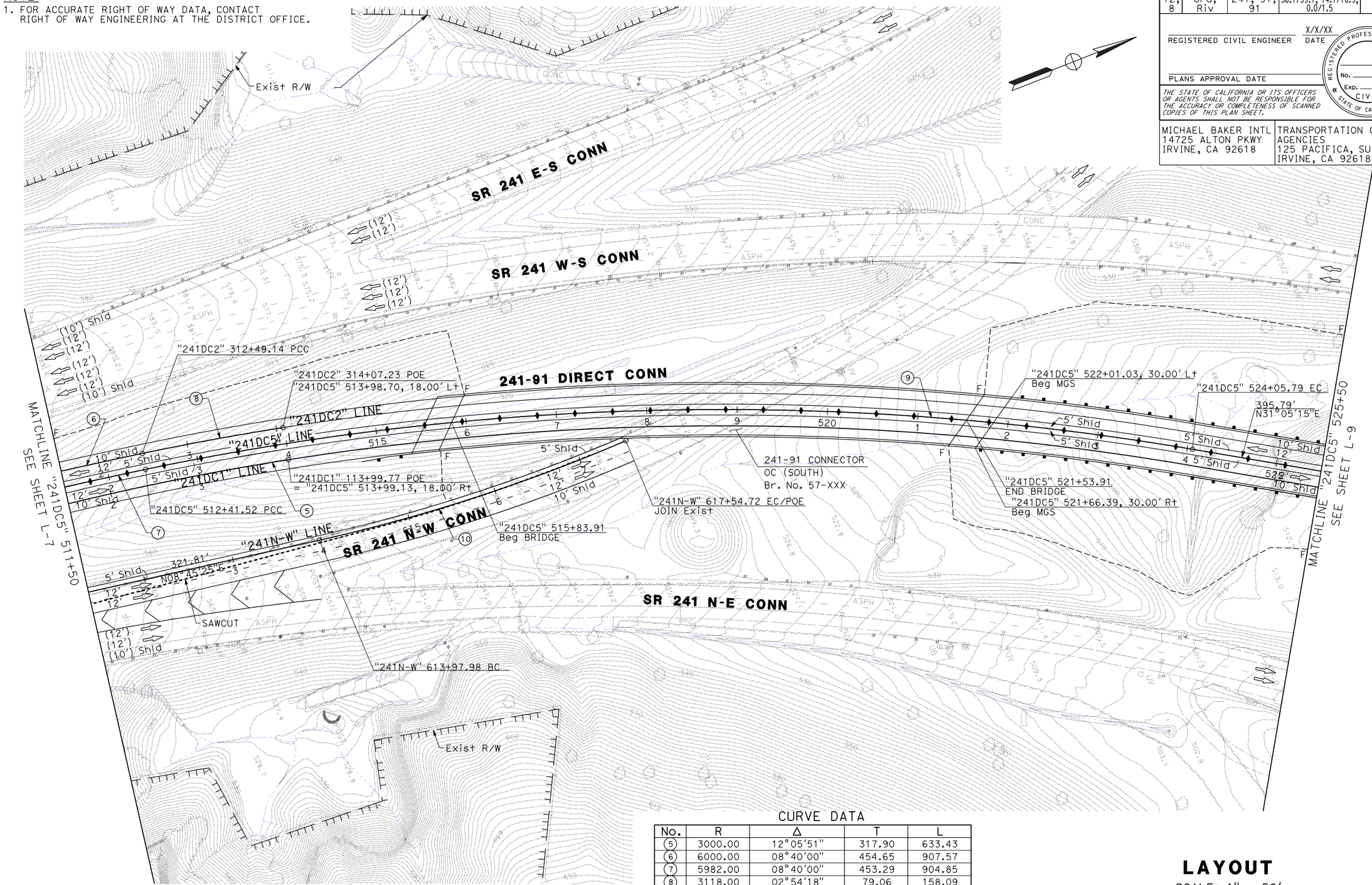
MICHAEL BAKER INTL
14725 ALTON PKWY
IRVINE, CA 92618

TRANSPORTATION CORRIDOR AGENCIES
125 PACIFICA, SUITE 100
IRVINE, CA 92618



CURVE DATA

No.	R	Δ	T	L
(5)	3000.00	12°05'51"	317.90	633.43
(6)	6000.00	08°40'00"	454.65	907.57
(7)	5982.00	08°40'00"	453.29	904.85
(8)	3118.00	02°54'18"	79.06	158.09
(9)	3100.00	21°31'07"	589.08	1164.27
(10)	1926.56	10°36'34"	178.88	356.74

LAYOUT
SCALE: 1" = 50'

DRAFT

L-8

REVISED BY	DATE REVISED

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TIM HAILE — CONSULTANT FUNCTIONAL SUPERVISOR
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION — Caltrans

LAST REVISION 00-00-14
DATE PLOTTED => 10-OCT-2016
TIME PLOTTED => 17:57

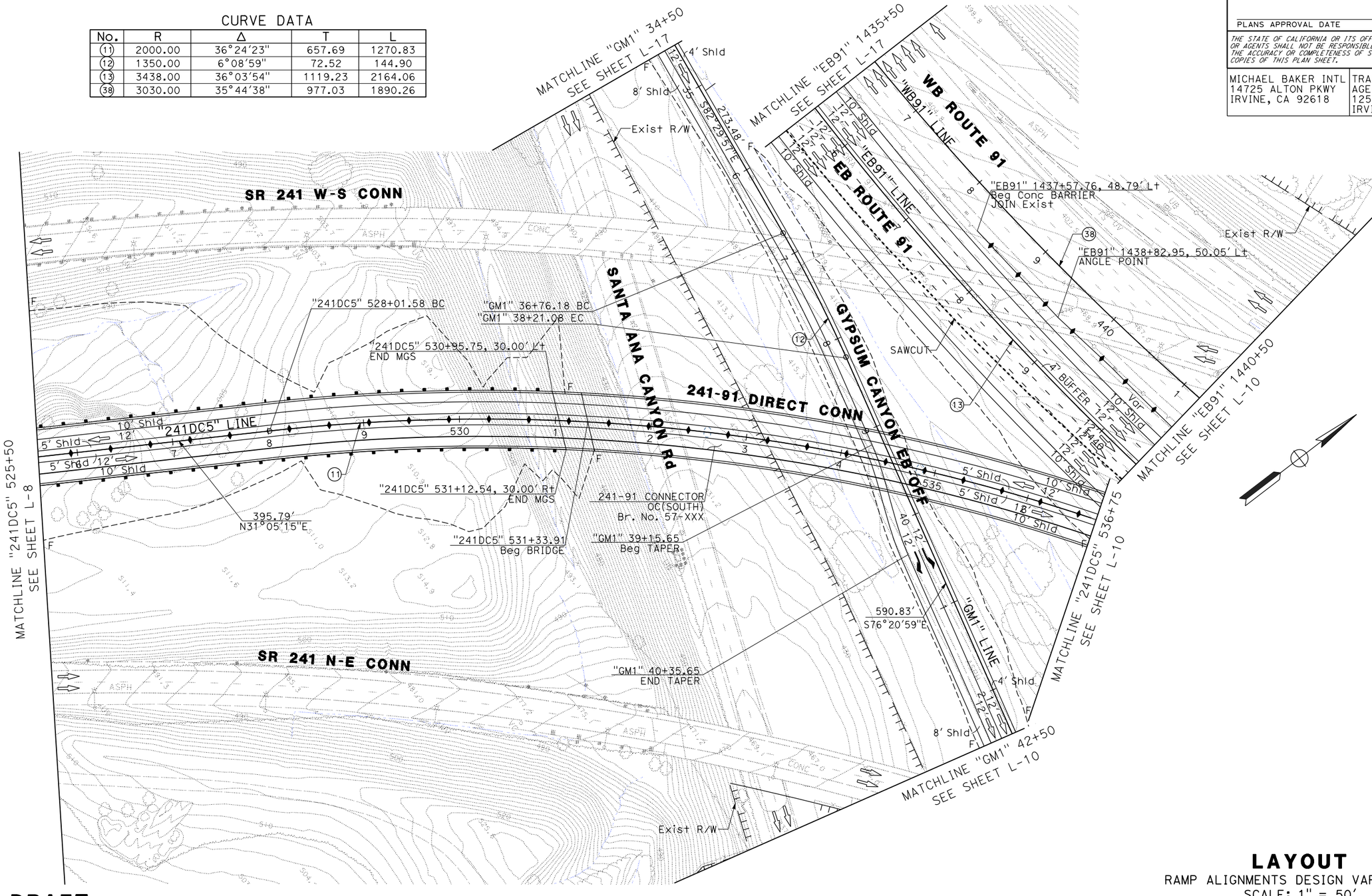
H:\pdata\10107774\CADD\TransPW\Div\Layout\7774-ST-008.dgn
mohamed.ghonim 10-OCT-2016 17:57

BORDER LAST REVISED 7/2/2010 | USERNAME => mohamed.ghonim | DGN FILE => 7774-ST-008.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 0000 | PROJECT NUMBER & PHASE 1200020097

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

CURVE DATA

No.	R	Δ	T	L
(11)	2000.00	36°24'23"	657.69	1270.83
(12)	1350.00	6°08'59"	72.52	144.90
(13)	3438.00	36°03'54"	1119.23	2164.06
(38)	3030.00	35°44'38"	977.03	1890.26



DRAFT

LAYOUT
RAMP ALIGNMENTS DESIGN VARIATION 1
SCALE: 1" = 50'

L-9

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12, 8	Ora, Riv	241, 91, 91	36.1/39.1, 14.7/18.9, 0.0/1.5		

REGISTERED CIVIL ENGINEER — X/X/XX DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — No. — Exp. — CIVIL — STATE OF CALIFORNIA

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

MICHAEL BAKER INTL
14725 ALTON PKWY
IRVINE, CA 92618

TRANSPORTATION CORRIDOR AGENCIES
125 PACIFICA, SUITE 100
IRVINE, CA 92618

REVISED BY	DATE REVISED

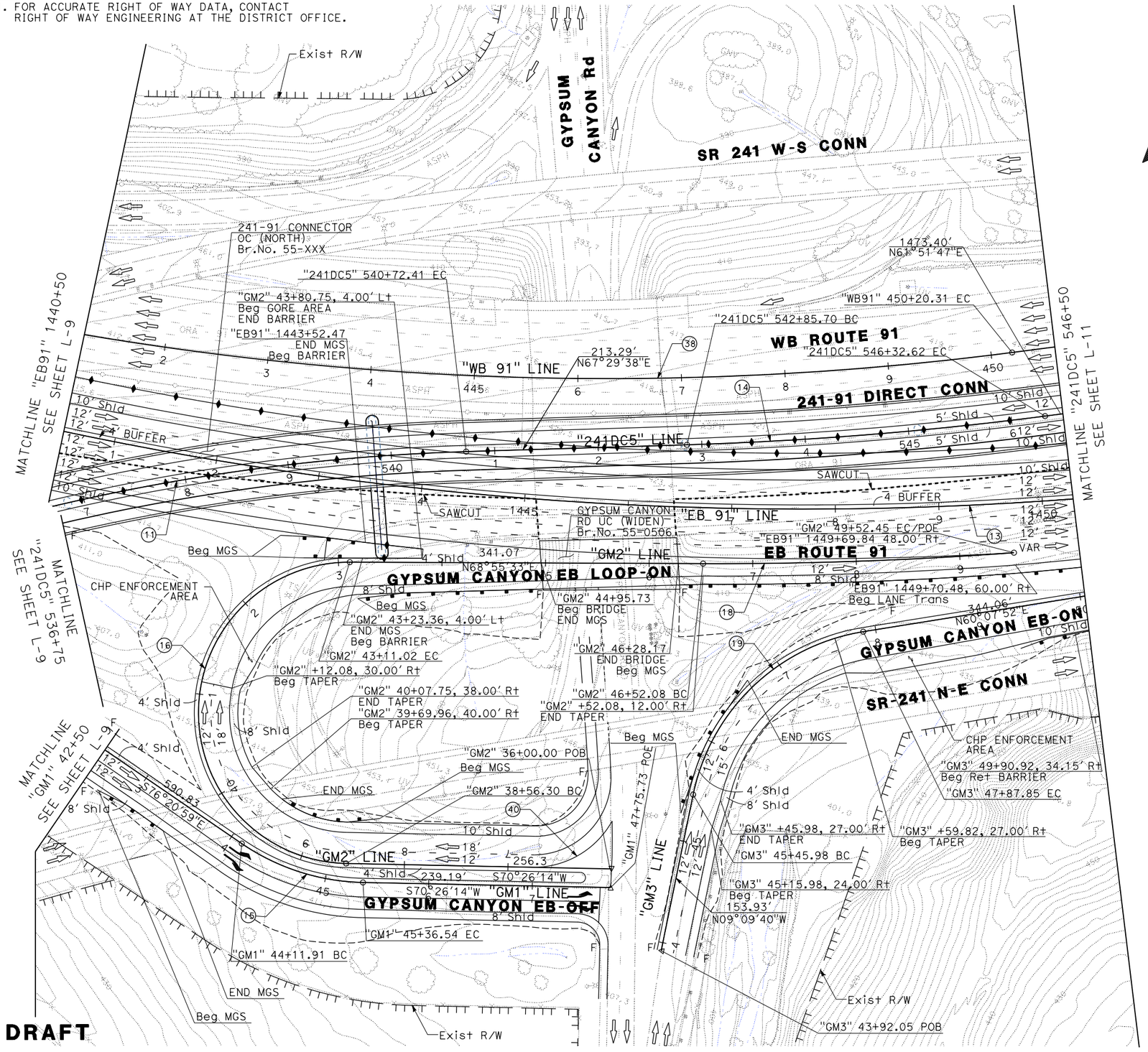
CALCULATED-DESIGNED BY: mohamed.ghonim
CHECKED BY:
CONSULTANT FUNCTIONAL SUPERVISOR: TIM HAILE
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans

H:\pdata\10107774\CADD\TransPW\Div\Layout\7774-ST-009.dgn 10-OCT-2016 17:57

LAST REVISION 00-00-14
DATE PLOTTED => 10-OCT-2016
TIME PLOTTED => 17:57

BORDER LAST REVISED 7/2/2010
USERNAME => mohamed.ghonim
DGN FILE => 7774-ST-009.dgn
RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3
UNIT 0000
PROJECT NUMBER & PHASE 1200020097

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



DRAFT

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12, 8	Ora, Riv	241, 91, 91	36.1/39.1, 14.7/18.9, 0.0/1.5		

REGISTERED CIVIL ENGINEER — DATE X/X/XX

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — No. — Exp. — CIVIL — STATE OF CALIFORNIA

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

MICHAEL BAKER INTL
14725 ALTON PKWY
IRVINE, CA 92618

TRANSPORTATION CORRIDOR AGENCIES
125 PACIFICA, SUITE 100
IRVINE, CA 92618

CURVE DATA

No.	R	Δ	T	L
(11)	2000.00	36°24'23"	657.69	1270.83
(13)	3438.00	36°03'54"	1119.23	2164.06
(14)	3530.00	5°37'51"	173.60	346.92
(15)	215.00	33°12'47"	64.12	124.63
(16)	145.50	179°03'35"	16961.33	454.72
(18)	3827.85	4°29'45"	150.26	300.37
(19)	200.00	69°17'32"	138.21	241.87
(38)	3030.00	35°44'38"	977.03	1890.26
(40)	86.92	63°59'49"	54.31	97.09

LAYOUT

RAMP ALIGNMENTS DESIGN VARIATION 1
SCALE: 1" = 50'

L-10

LAST REVISION 00-00-14
DATE PLOTTED => 10-OCT-2016
TIME PLOTTED => 17:58

H:\pdata\10107774\CADD\TransPW\Div\Layout\7774-ST-010.dgn
mohamed.ghonim 10-OCT-2016 17:58

REVISED BY	DATE REVISED

CALCULATED-DESIGNED BY
CHECKED BY
CONSULTANT FUNCTIONAL SUPERVISOR: TIM HAILE
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans

BORDER LAST REVISED 7/2/2010 | USERNAME => mohamed.ghonim | DGN FILE => 7774-ST-010.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 0000 | PROJECT NUMBER & PHASE 1200020097

NOTE:

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

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12, 8	Ora, Riv	241, 91, 91	36.1/39.1, 14.7/18.9, 0.0/1.5		

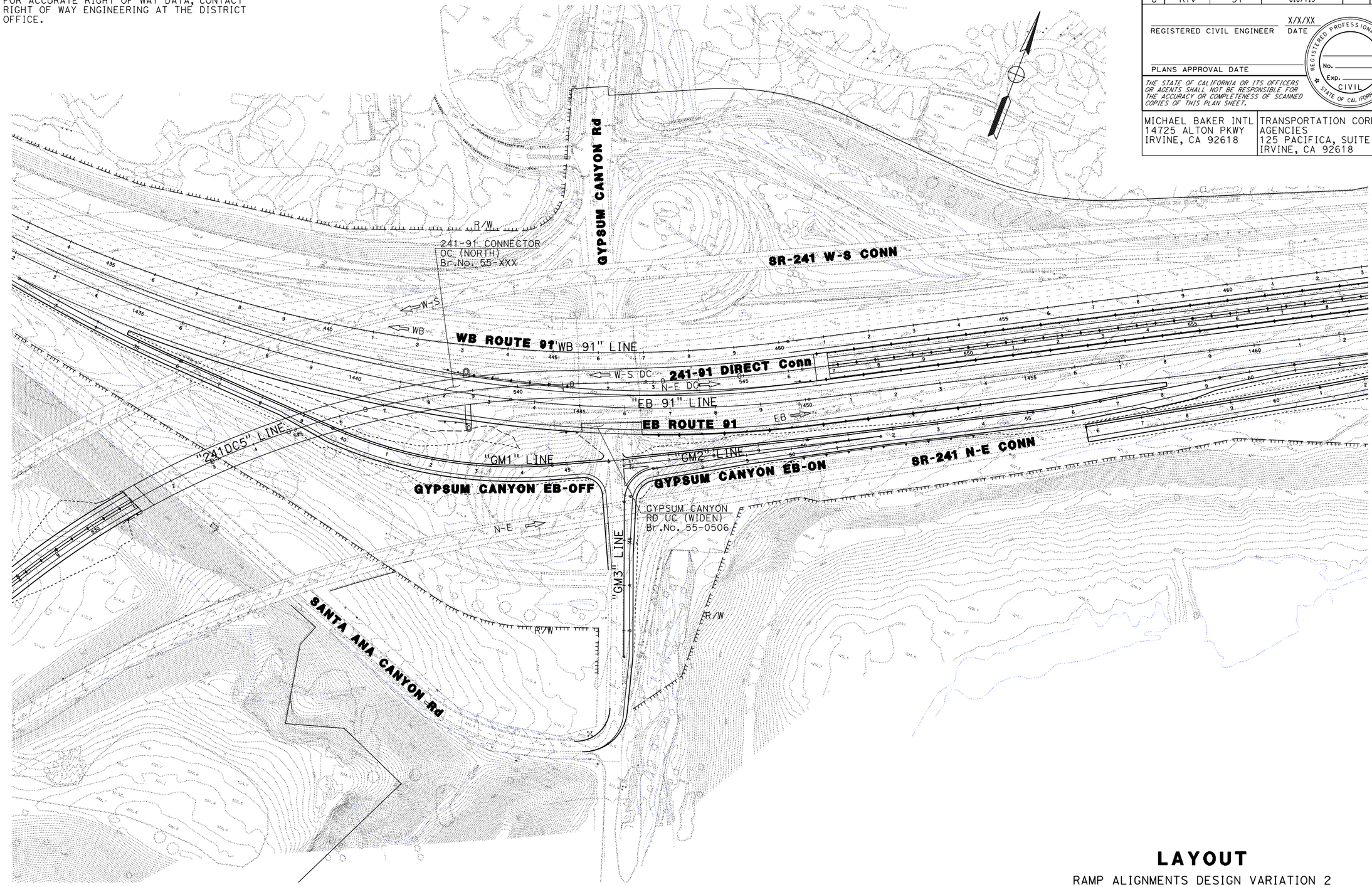
REGISTERED CIVIL ENGINEER — X/X/XX DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — No. — Exp. — CIVIL — STATE OF CALIFORNIA

MICHAEL BAKER INTL
14725 ALTON PKWY
IRVINE, CA 92618

TRANSPORTATION CORRIDOR AGENCIES
125 PACIFICA, SUITE 100
IRVINE, CA 92618



DRAFT

LAYOUT

RAMP ALIGNMENTS DESIGN VARIATION 2
SCALE: 1" = 100"

L-10A

LAST REVISION	DATE PLOTTED => 10-OCT-2016
00-00-14	TIME PLOTTED => 18:32

REVISED BY	DATE REVISED

CALCULATED-DESIGNED BY
CHECKED BY
TIM HAILE — CONSULTANT FUNCTIONAL SUPERVISOR

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION — Caltrans

mohamed.ghonim 10-OCT-2016 18:32

H:\pdata\10107774\CADD\TransPW\Div\Layout\7774-ST-010A\7774-ST-010a.dgn

BORDER LAST REVISED 7/2/2010	USERNAME => mohamed.ghonim DGN FILE => 7774-ST-010a.dgn	RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3	UNIT 0000	PROJECT NUMBER & PHASE 1200020097

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

CURVE DATA

No.	R	Δ	T	L
(13)	3438.00	36°03'54"	1119.23	2164.06
(20)	3000.00	2°55'34"	76.63	153.22
(21)	3000.00	3°11'29"	83.57	167.10
(22)	3000.00	3°00'12"	78.65	157.25

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12, 8	Ora, Riv	241, 91, 91	36.1/39.1, 14.7/18.9, 0.0/1.5		

REGISTERED CIVIL ENGINEER — X/X/XX DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — No. — Exp. — CIVIL — STATE OF CALIFORNIA

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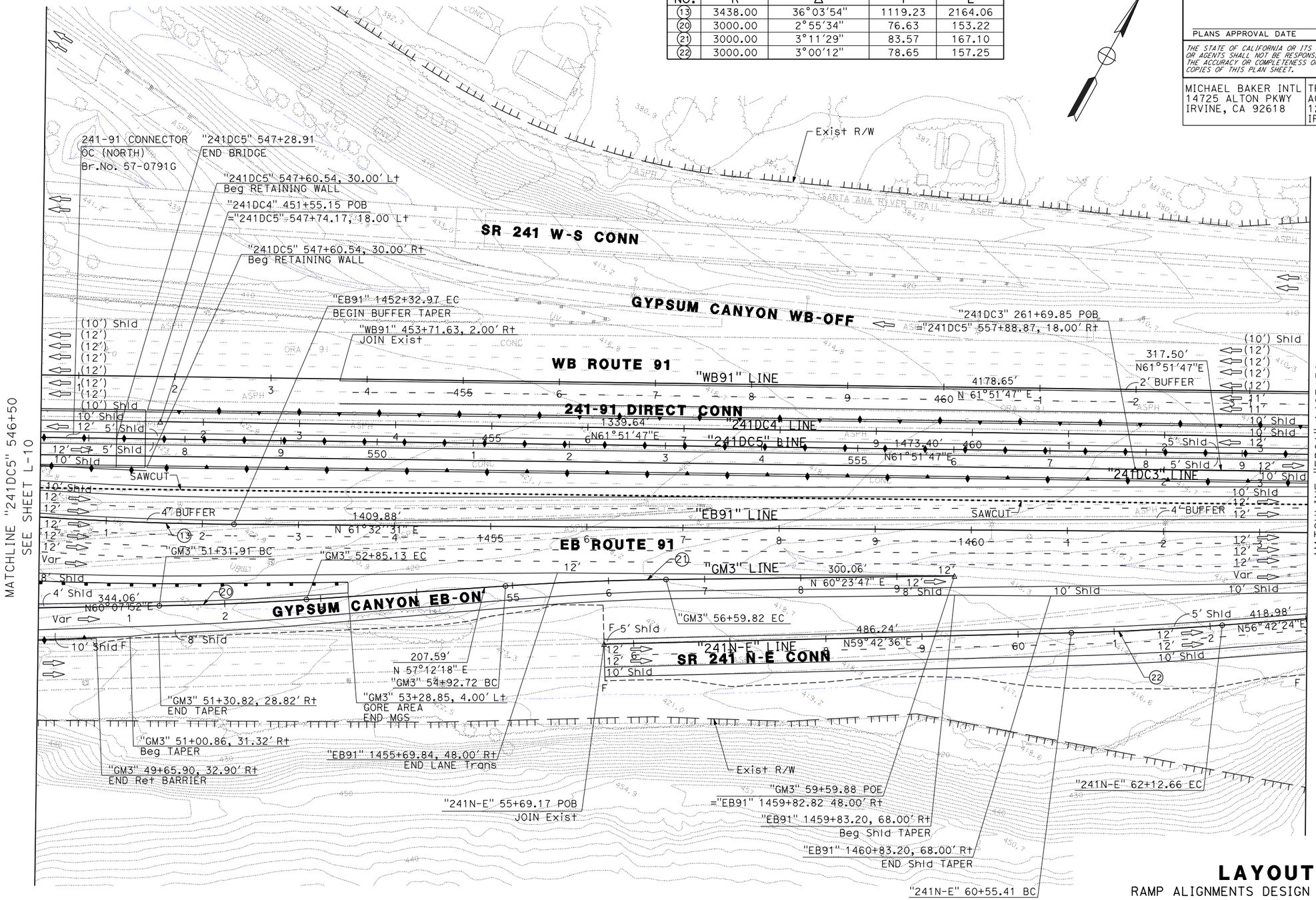
MICHAEL BAKER INTL
14725 ALTON PKWY
IRVINE, CA 92618

TRANSPORTATION CORRIDOR AGENCIES
125 PACIFICA, SUITE 100
IRVINE, CA 92618



LAYOUT

RAMP ALIGNMENTS DESIGN VARIATION 1
SCALE: 1" = 50'

L-11

DRAFT

H:\pdata\10107774\CADD\TransPWDiv\Layout\7774-ST-011.dgn
mohamed.ghonim 10-OCT-2016 17:58

REVISED BY	DATE REVISED

CALCULATED-DESIGNED BY
CHECKED BY
TIM HAILE — CONSULTANT FUNCTIONAL SUPERVISOR
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION — Caltrans

LAST REVISION 00-00-14 | DATE PLOTTED => 10-OCT-2016 | TIME PLOTTED => 17:58

BORDER LAST REVISED 7/2/2010 | USERNAME => mohamed.ghonim | DGN FILE => 7774-ST-011.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 0000 | PROJECT NUMBER & PHASE 1200020097

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

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12, 8	Ora, Riv	241, 91, 91	36.1/39.1, 14.7/18.9, 0.0/1.5		

REGISTERED CIVIL ENGINEER — X/X/XX DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — No. — Exp. — CIVIL — STATE OF CALIFORNIA

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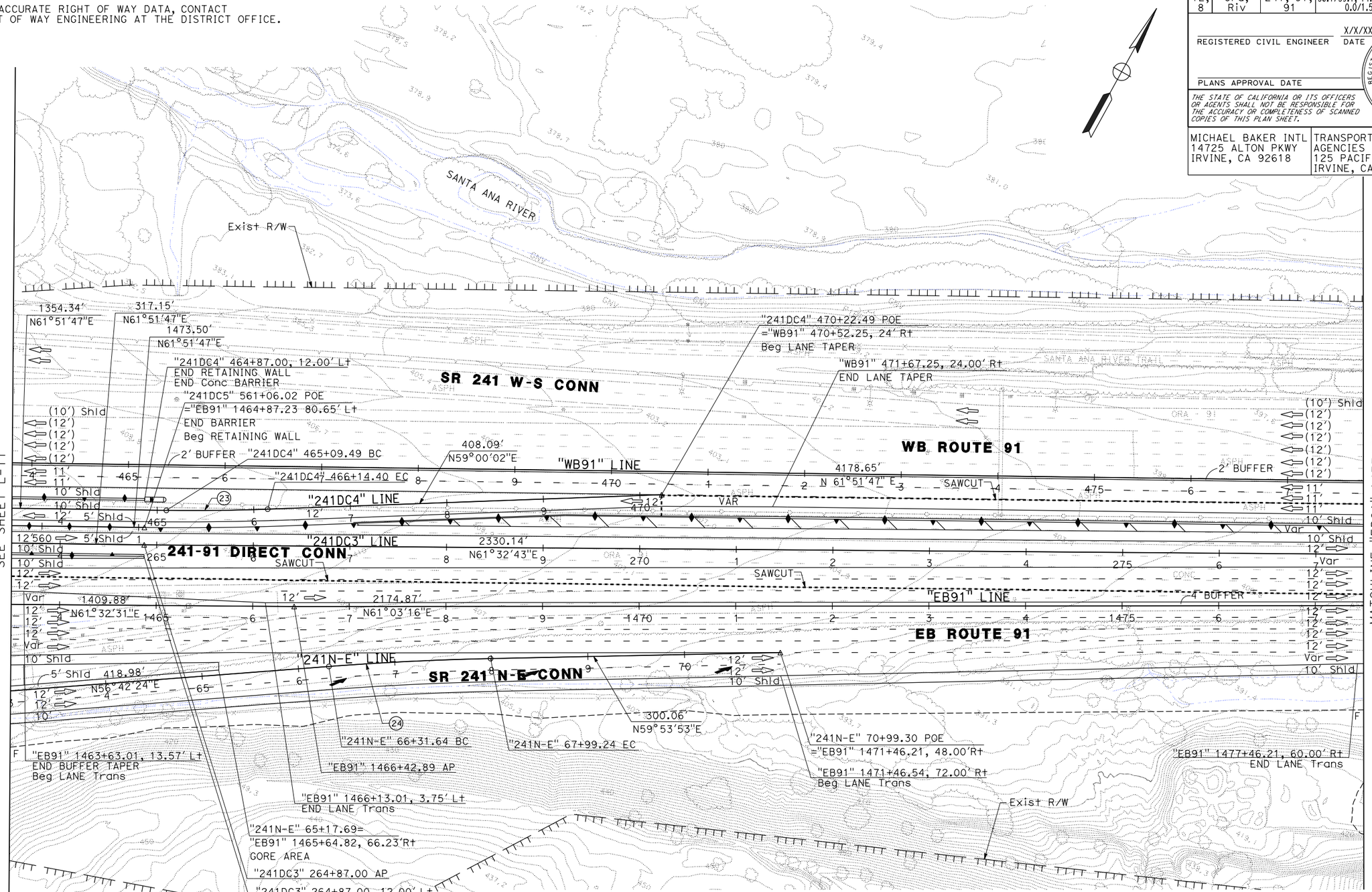
MICHAEL BAKER INTL
14725 ALTON PKWY
IRVINE, CA 92618

TRANSPORTATION CORRIDOR AGENCIES
125 PACIFICA, SUITE 100
IRVINE, CA 92618



CURVE DATA

No.	R	Δ	T	L
(23)	2100.00	2°51'45"	52.47	104.91
(24)	3000.00	3°12'04"	83.83	167.60

DRAFT

LAYOUT

RAMP ALIGNMENTS DESIGN VARIATION 1
SCALE: 1" = 50'

L-12

H:\pdata\10107774\CADD\TransPWDiv\Layout\7774-ST-012.dgn
mohamed.ghonim 10-OCT-2016 17:58

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION — Caltrans
CONSULTANT FUNCTIONAL SUPERVISOR: TIM HAILE
CALCULATED- DESIGNED BY
CHECKED BY
REVISED BY
DATE REVISED

LAST REVISION 00-00-14
DATE PLOTTED => 10-OCT-2016
TIME PLOTTED => 17:58

BORDER LAST REVISED 7/2/2010
USERNAME => mohamed.ghonim
DGN FILE => 7774-ST-012.dgn
RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3
UNIT 0000
PROJECT NUMBER & PHASE 1200020097

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

CURVE DATA

No.	R	Δ	T	L
(25)	3232.00	03°34'34"	100.75	201.43
(26)	3276.00	03°05'07"	102.27	204.47
(27)	25.00	65°27'12"	16.07	28.56
(28)	26.00	157°22'45"	129.99	71.42
(29)	25.00	94°29'20"	27.04	41.23
(30)	25.00	96°34'33"	28.05	42.14
(31)	100.00	08°30'10"	7.43	14.84
(32)	50.00	24°19'44"	10.78	21.23
(33)	120.00	40°02'14"	43.72	83.85
(34)	450.00	16°44'19"	66.20	131.46

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12, 8	Ora, Riv	241, 91, 91	36.1/39.1, 14.7/18.9, 0.0/1.5		

REGISTERED CIVIL ENGINEER — X/X/XX DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — No. — Exp. — CIVIL — STATE OF CALIFORNIA

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MICHAEL BAKER INTL
14725 ALTON PKWY
IRVINE, CA 92618

TRANSPORTATION CORRIDOR AGENCIES
125 PACIFICA, SUITE 100
IRVINE, CA 92618

Exist R/W

"241DC3" 288+17.13 BC

SANTA ANA RIVER TRAIL

WB ROUTE 91

"WB91" LINE

4178.65'
N 61°51'47" E

"241DC3" 290+21.60 EC

167.59'
N64°37'50"E

(10') Shld
(12')
2' BUFFER
11'
SAWCUT

2330.14'
N61°32'43"E
"241DC3" LINE

2174.87'
N61°03'16"E
"EB91" LINE

4' BUFFER
SAWCUT

EB ROUTE 91

MATCHLINE "EB91" 1477+50
SEE SHEET L-12

MATCHLINE "EB91" 1491+50
SEE SHEET L-14

24' MVP

"AR1" 10+00.00 POB
="EB91" 1479+32.54, 94.00' Rt

12.90'
S28°57'22"E

"AR1" 10+12.90 BC
"AR1" 10+41.46 EC

148.74'
S36°29'50"W

"AR1" 11+90.20 BC
"AR1" 14+90.99 BC
"AR1" 15+32.22 EC

229.37'
S59°07'05"W

"AR1" 12+61.62 EC

101.13'
N26°23'35"W

"AR1" 16+33.35 BC
"AR1" 16+75.49 EC
"AR1" 18+79.30 EC

188.97'
S57°01'52"W

"AR1" LINE

184.24'
S64°32'02"W

78.37'
S86°51'46"W

"AR1" 18+64.46 BC
"AR1" 20+84.77 EC

"EB91" 1488+17.72 BC
"EB91" 1490+19.15 EC

"AR1" 20+63.54 BC
"AR1" 21+63.14 BC
"AR1" 22+46.99 EC
"AR1" 23+22.56 BC
"AR1" 24+54.02 EC
"AR1" 25+56.47 POE

75.57'
S49°49'32"W

102.45'
S66°33'51"W

167.88'
N64°37'50"E

LAYOUT
SCALE: 1" = 50'

DRAFT

L-13

REVISED BY | DATE REVISED
CALCULATED-DESIGNED BY | CHECKED BY
CONSULTANT FUNCTIONAL SUPERVISOR: TIM HAILE
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans

H:\pdata\10107774\CADD\TransPW\Div\Layout\7774-ST-013.dgn
mohamed.ghonim 10-OCT-2016 17:58

LAST REVISION 00-00-14 | DATE PLOTTED => 10-OCT-2016 | TIME PLOTTED => 17:58

BORDER LAST REVISED 7/2/2010 | USERNAME => mohamed.ghonim | DGN FILE => 7774-ST-013.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 0000 | PROJECT NUMBER & PHASE 1200020097

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

CURVE DATA

No.	R	Δ	T	L
(35)	3000.00	51°52'00"	1458.88	2715.73
(36)	3044.00	38°07'54"	1052.05	2025.86
(39)	3000.00	57°24'04"	1642.49	3005.52

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12, 8	Ora, Riv	241, 91, 91	36.1/39.1, 14.7/18.9, 0.0/1.5		

REGISTERED CIVIL ENGINEER — X/X/XX DATE

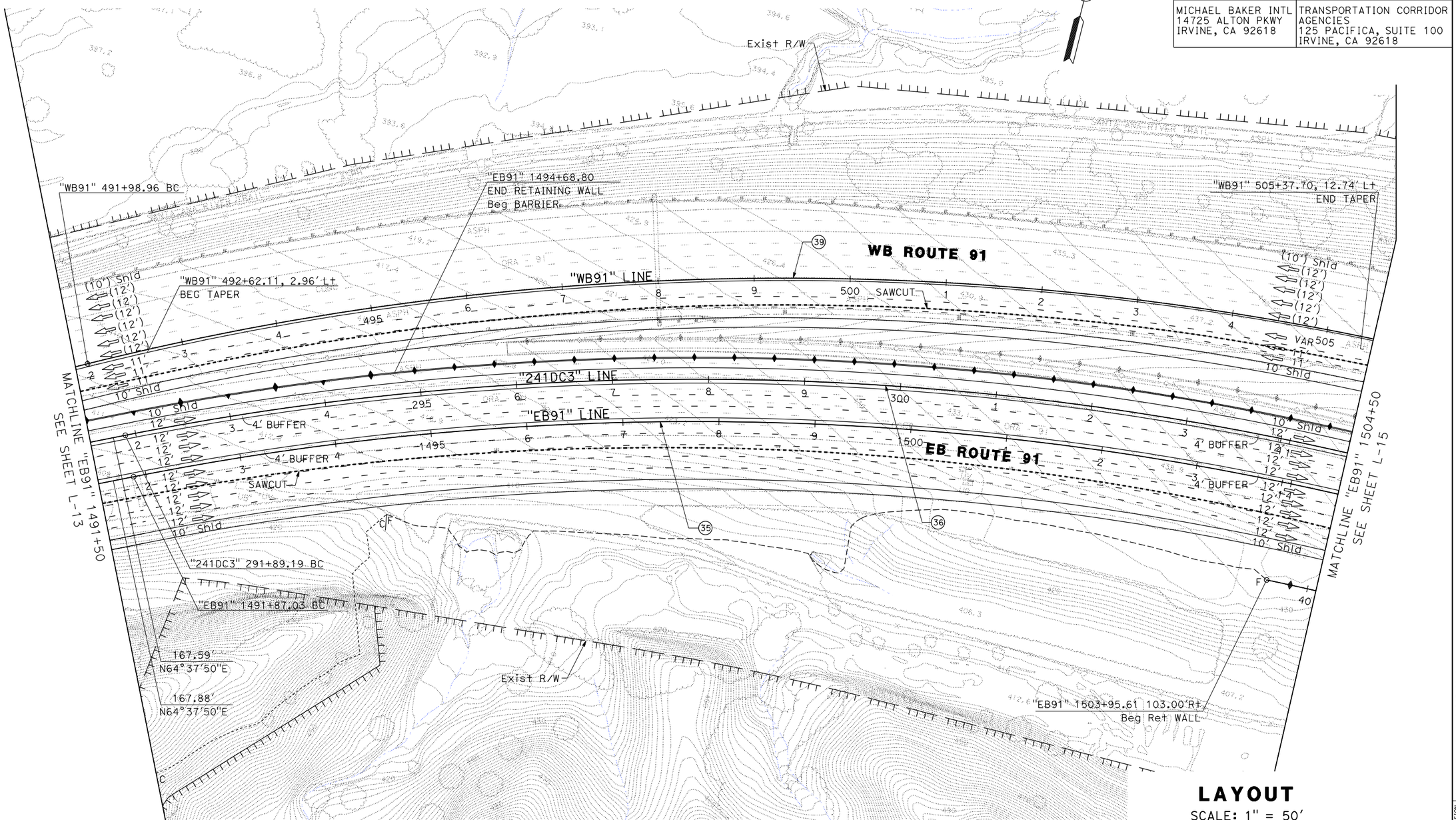
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — No. — Exp. — CIVIL — STATE OF CALIFORNIA

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

MICHAEL BAKER INTL
14725 ALTON PKWY
IRVINE, CA 92618

TRANSPORTATION CORRIDOR AGENCIES
125 PACIFICA, SUITE 100
IRVINE, CA 92618



LAYOUT
SCALE: 1" = 50'

DRAFT

L-14

LAST REVISION	DATE PLOTTED => 10-OCT-2016
00-00-14	TIME PLOTTED => 17:58

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CONSULTANT FUNCTIONAL SUPERVISOR: TIM HAILE

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
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mohamed.ghonim 10-OCT-2016 17:58

BORDER LAST REVISED 7/2/2010 | USERNAME => mohamed.ghonim | DGN FILE => 7774-ST-014.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 0000 | PROJECT NUMBER & PHASE 1200020097

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

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12, 8	Ora, Riv	241, 91, 91	36.1/39.1, 14.7/18.9, 0.0/1.5		

REGISTERED CIVIL ENGINEER — X/X/XX DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — No. — Exp. — CIVIL — STATE OF CALIFORNIA

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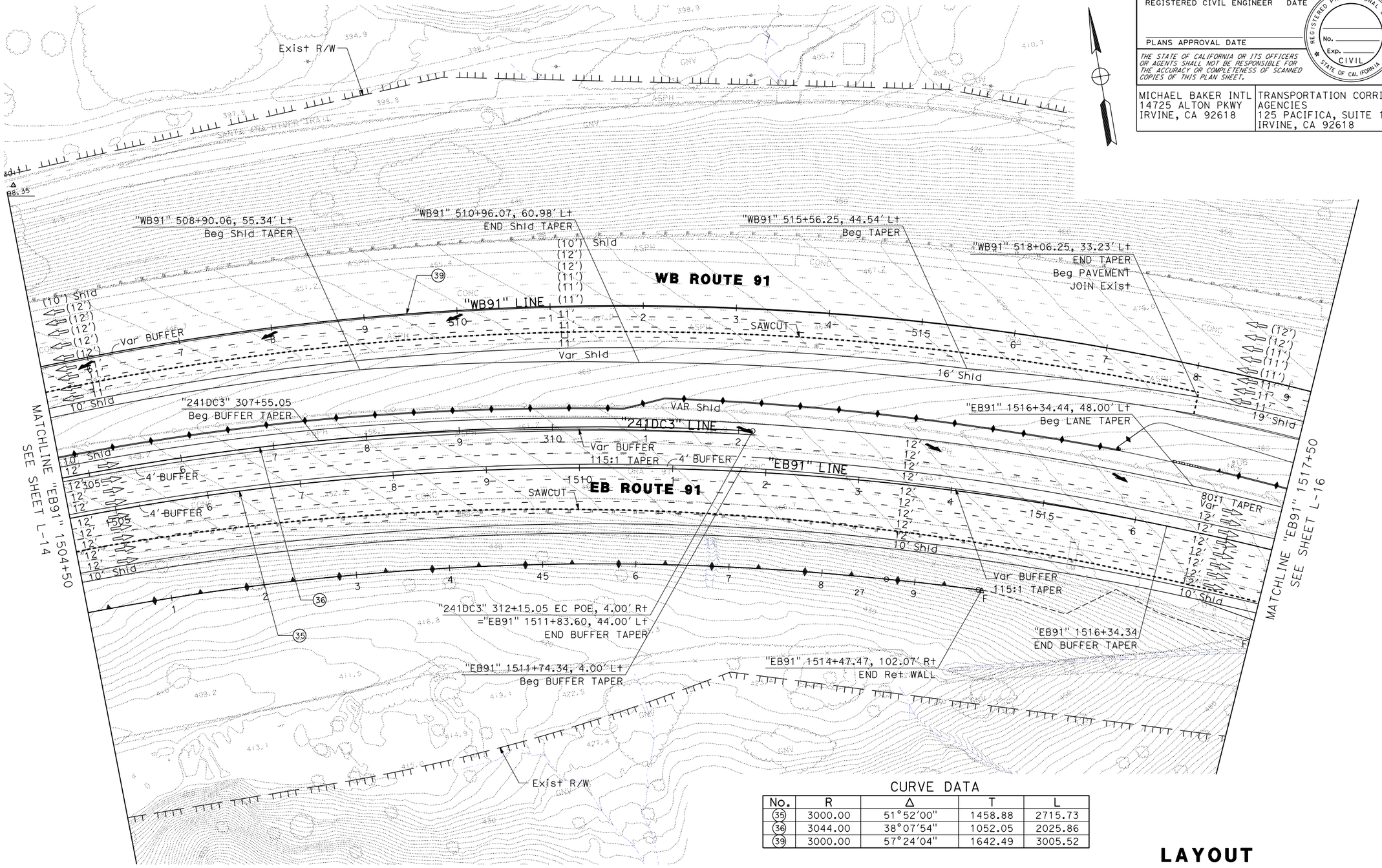
MICHAEL BAKER INTL
14725 ALTON PKWY
IRVINE, CA 92618

TRANSPORTATION CORRIDOR AGENCIES
125 PACIFICA, SUITE 100
IRVINE, CA 92618



CURVE DATA

No.	R	Δ	T	L
(35)	3000.00	51°52'00"	1458.88	2715.73
(36)	3044.00	38°07'54"	1052.05	2025.86
(39)	3000.00	57°24'04"	1642.49	3005.52

LAYOUT
SCALE: 1" = 50'

DRAFT

L-15

REVISED BY	DATE REVISED

CALCULATED-DESIGNED BY: mohamed.ghonim
CHECKED BY:
CONSULTANT FUNCTIONAL SUPERVISOR: TIM HAILE
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION — Caltrans

H:\pdata\10107774\CADD\TransPW\Div\Layout\7774-ST-015.dgn
mohamed.ghonim 10-OCT-2016 17:58

LAST REVISION: 00-00-14
DATE PLOTTED => 10-OCT-2016
TIME PLOTTED => 17:58

BORDER LAST REVISED 7/2/2010
USERNAME => mohamed.ghonim
DGN FILE => 7774-ST-015.dgn
RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3
UNIT 0000
PROJECT NUMBER & PHASE 1200020097

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

CURVE DATA

No.	R	Δ	T	L
(35)	3000.00	51°52'00"	1458.88	2715.73
(39)	3000.00	57°24'04"	1642.49	3005.52

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12, 8	Ora, Riv	241, 91, 91	36.1/39.1, 14.7/18.9, 0.0/1.5		

REGISTERED CIVIL ENGINEER — X/X/XX DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — No. — Exp. — CIVIL — STATE OF CALIFORNIA

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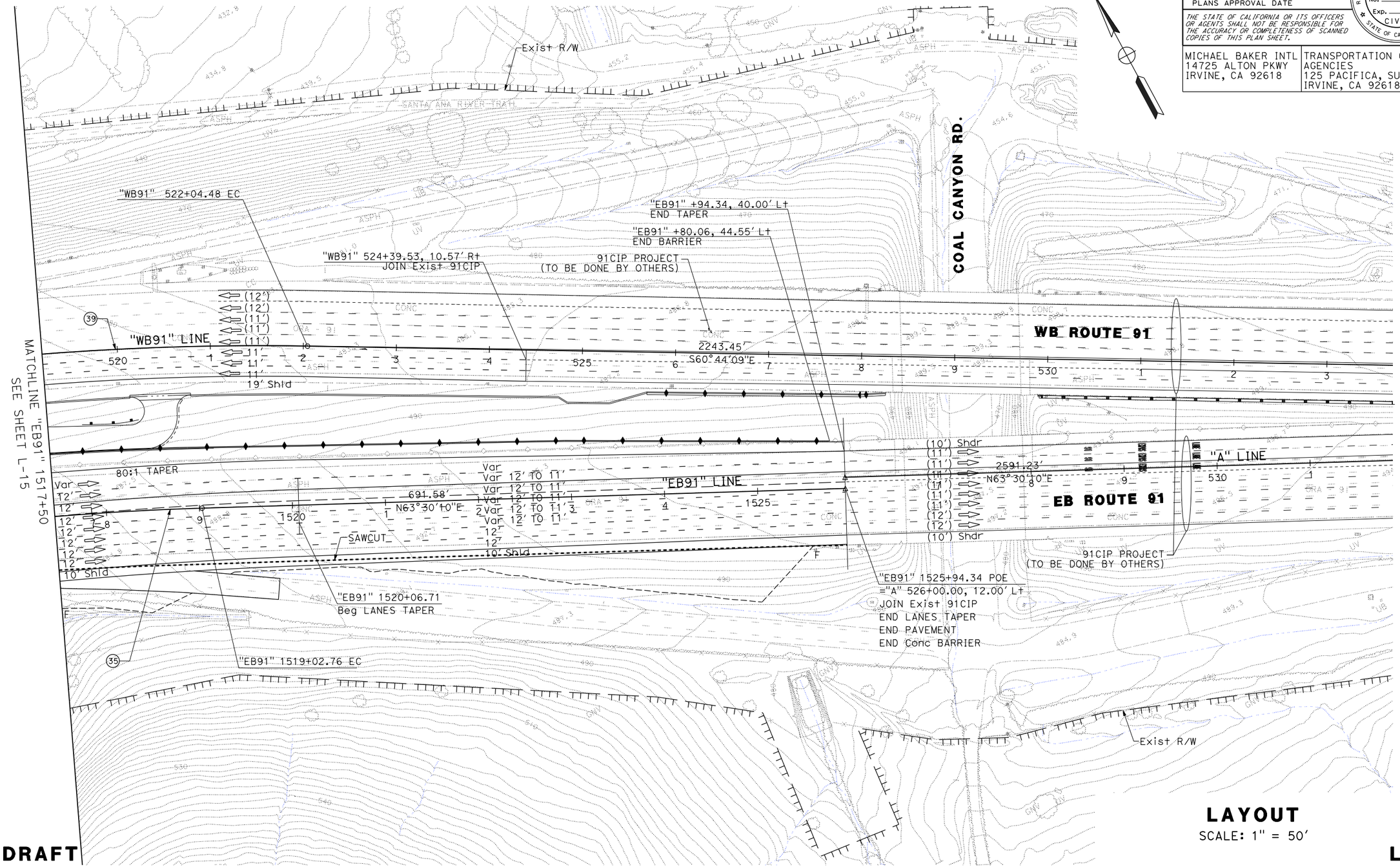
MICHAEL BAKER INTL
14725 ALTON PKWY
IRVINE, CA 92618

TRANSPORTATION CORRIDOR AGENCIES
125 PACIFICA, SUITE 100
IRVINE, CA 92618



LAYOUT
SCALE: 1" = 50'

L-16

DRAFT

REVISED BY	DATE REVISED
CALCULATED-DESIGNED BY	CHECKED BY
SUPERVISOR	

mohamed.ghonim 10-OCT-2016 17:58

H:\pdata\10107774\CADD\TransPW\Div\Layout\7774-ST-016.dgn

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans
CONSULTANT FUNCTIONAL SUPERVISOR: TIM HAILE

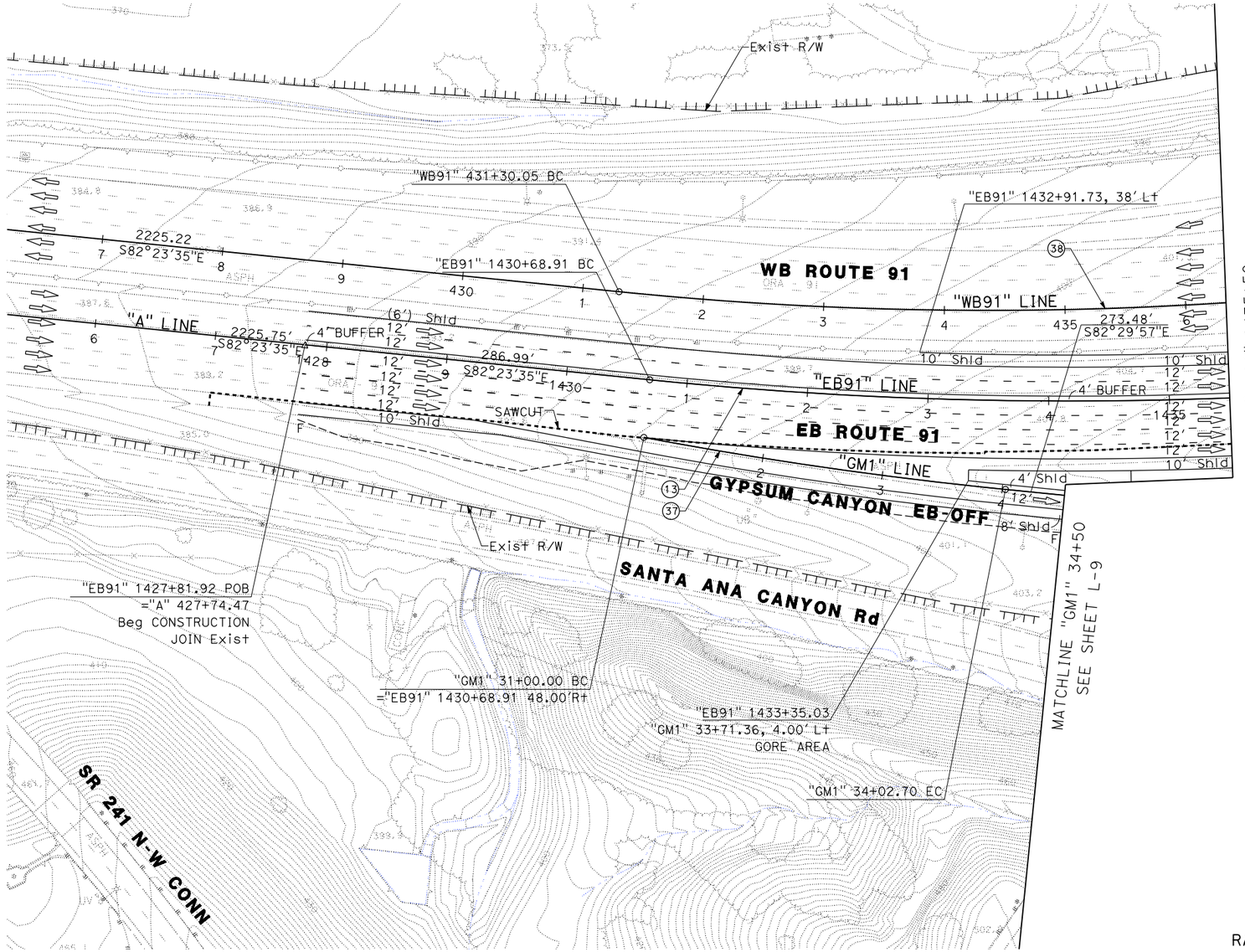
LAST REVISION 00-00-14
DATE PLOTTED => 10-OCT-2016
TIME PLOTTED => 17:58

BORDER LAST REVISED 7/2/2010 | USERNAME => mohamed.ghonim | DGN FILE => 7774-ST-016.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 0000 | PROJECT NUMBER & PHASE 1200020097

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

CURVE DATA

No.	R	Δ	T	L
(13)	3438.00	36°03'54"	1119.23	2164.06
(37)	3486.00	4°58'31"	151.44	302.70
(38)	3030.00	35°44'38"	977.05	1890.26



Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12, 8	Ora, Riv	241, 91, 91	36.1/39.1, 14.7/18.9, 0.0/1.5		

REGISTERED CIVIL ENGINEER — X/X/XX DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — No. — Exp. — CIVIL — STATE OF CALIFORNIA

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MICHAEL BAKER INTL
14725 ALTON PKWY
IRVINE, CA 92618

TRANSPORTATION CORRIDOR AGENCIES
125 PACIFICA, SUITE 100
IRVINE, CA 92618

LAYOUT

RAMP ALIGNMENTS DESIGN VARIATION 1
SCALE: 1" = 50'

L-17

DRAFT

REVISED BY	DATE REVISED

CALCULATED-DESIGNED BY: ryoung
CHECKED BY:
CONSULTANT FUNCTIONAL SUPERVISOR: TIM HAILE
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans

H:\pdata\10107774\CADD\TransPW\Div\Layout\7774-ST-017.dgn
25-OCT-2016 11:08
ryoung

LAST REVISION 00-00-14
DATE PLOTTED => 25-OCT-2016
TIME PLOTTED => 11:08

BORDER LAST REVISED 7/2/2010 | USERNAME => ryoung, DGN FILE => 7774-ST-017.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 0000 | PROJECT NUMBER & PHASE 1200020097

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12, 8	Ora, Riv	241, 91, 91	36.1/39.1, 14.7/18.9, 0.0/1.5		

REGISTERED CIVIL ENGINEER — X/X/XX DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — No. — Exp. — CIVIL — STATE OF CALIFORNIA

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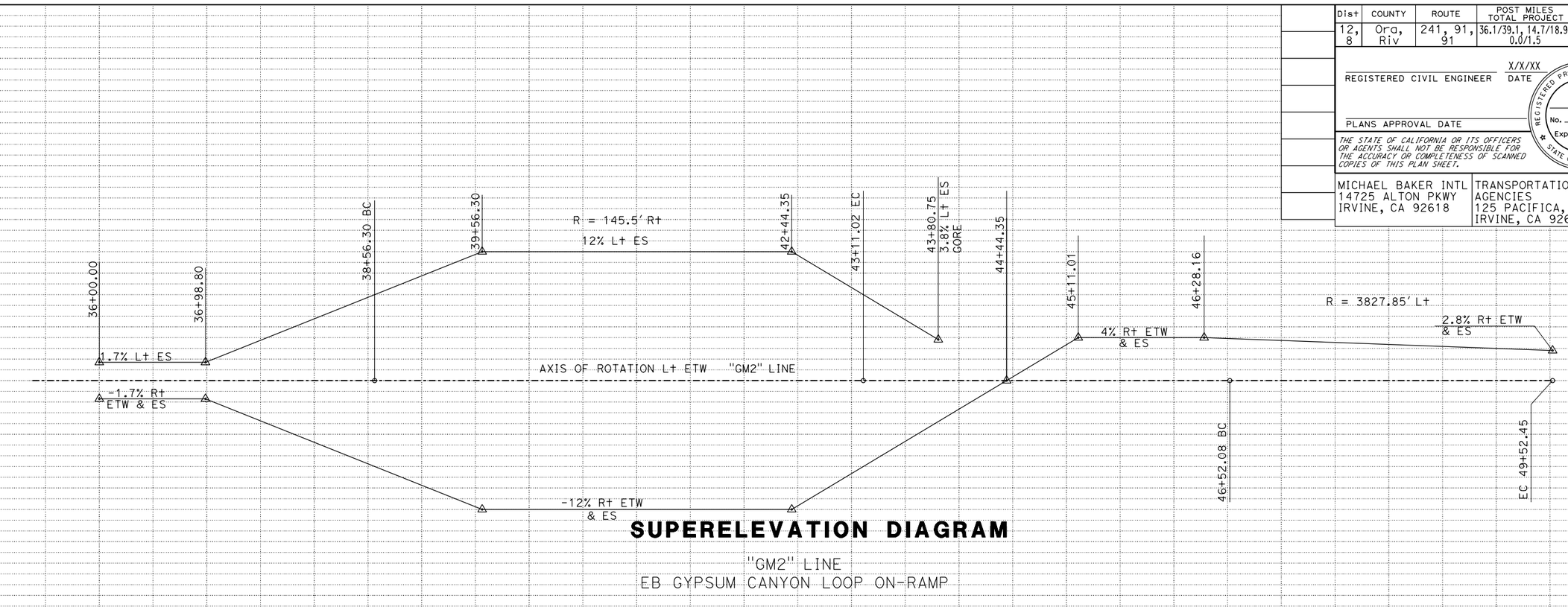
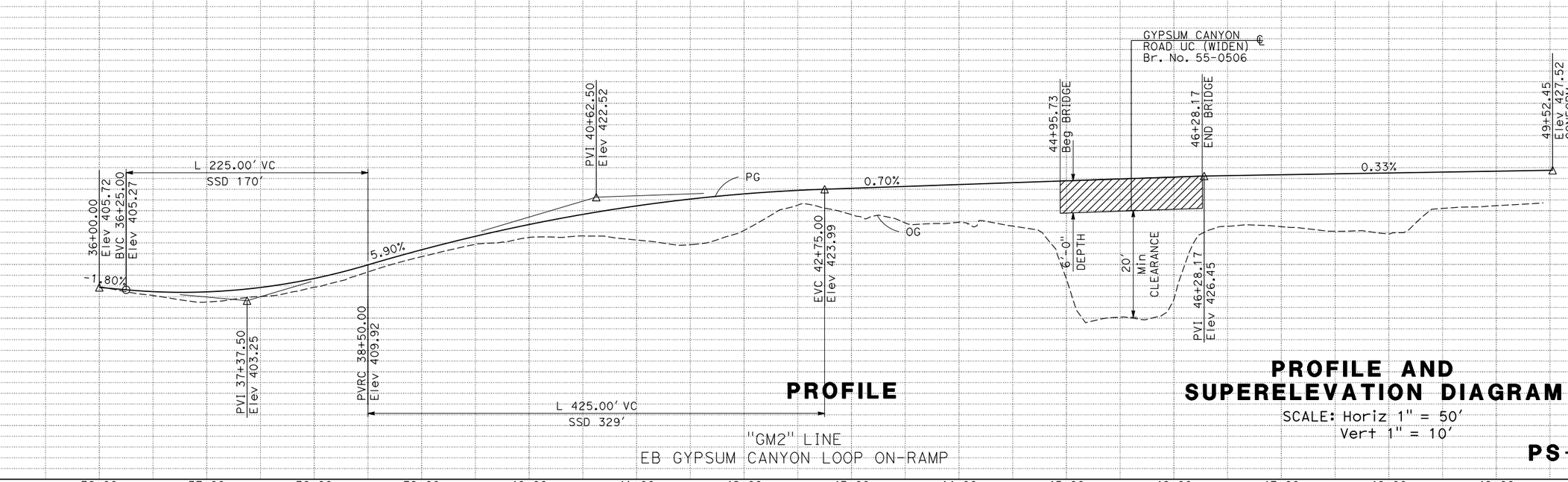
MICHAEL BAKER INTL
14725 ALTON PKWY
IRVINE, CA 92618

TRANSPORTATION CORRIDOR AGENCIES
125 PACIFICA, SUITE 100
IRVINE, CA 92618



SUPERELEVATION DIAGRAM

"GM2" LINE
EB GYPSUM CANYON LOOP ON-RAMP



PROFILE

"GM2" LINE
EB GYPSUM CANYON LOOP ON-RAMP

PROFILE AND SUPERELEVATION DIAGRAM

SCALE: Horiz 1" = 50'
Vert 1" = 10'

PS-1

LAST REVISION 06-08-10
DATE PLOTTED => 10-OCT-2016
TIME PLOTTED => 17:58

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STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans

CONSULTANT FUNCTIONAL SUPERVISOR: TIM HAILE

CALCULATED-DESIGNED BY: mohamed.ghonim 10-OCT-2016 17:58

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DATE REVISED

BORDER LAST REVISED 7/2/2010

USERNAME => mohamed.ghonim
DGN FILE => 7774-PS-01.dgn

RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3

UNIT 0000

PROJECT NUMBER & PHASE 1200020097

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12, 8	Ora, Riv	241, 91, 91	36.1/39.1, 14.7/18.9, 0.0/1.5		

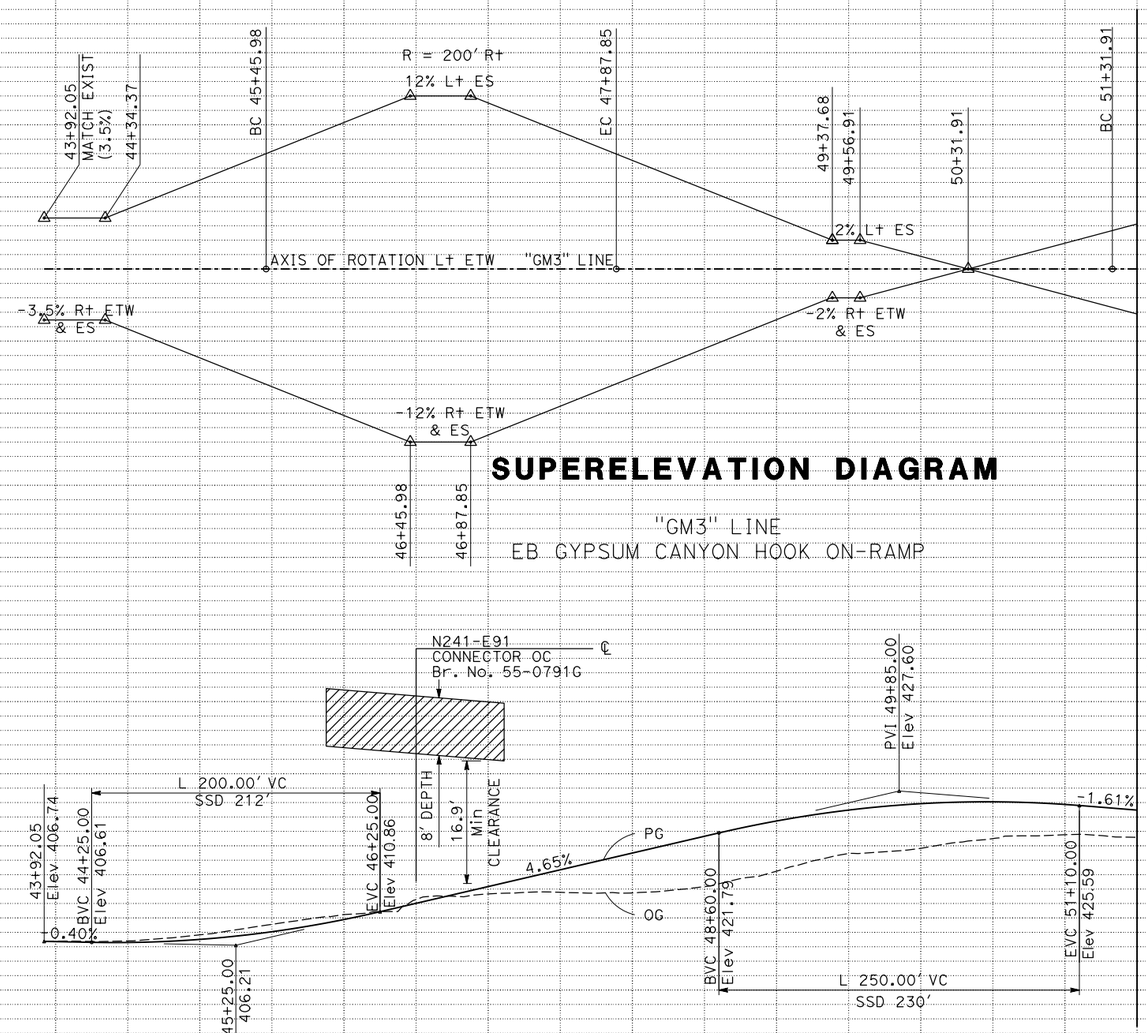
REGISTERED CIVIL ENGINEER — X/X/XX DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — No. — Exp. — CIVIL — STATE OF CALIFORNIA

MICHAEL BAKER INTL
14725 ALTON PKWY
IRVINE, CA 92618

TRANSPORTATION CORRIDOR AGENCIES
125 PACIFICA, SUITE 100
IRVINE, CA 92618



SUPERELEVATION DIAGRAM

"GM3" LINE
EB GYPSUM CANYON HOOK ON-RAMP

PROFILE

"GM3" LINE
EB GYPSUM CANYON HOOK ON-RAMP

PROFILE AND SUPERELEVATION DIAGRAM

SCALE: Horiz 1" = 50'
Vert 1" = 10'

PS-2

STATION	43+00	44+00	45+00	46+00	47+00	48+00	49+00	50+00	51+00	52+00	TOTAL
CY Exc											
CY Emb											

10% 5% 0% -5% -10%

460 450 440 430 420 410 400 390

REVISED BY | DATE REVISED

CALCULATED-DESIGNED BY | CHECKED BY

CONSULTANT FUNCTIONAL SUPERVISOR: TIM HAILE

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

Caltrans

LAST REVISION 06-08-10 | DATE PLOTTED => 11-OCT-2016 | TIME PLOTTED => 18:16

H:\pdata\10107774\CADD\TransPW\Div\Profile\7774-PS-02.dgn | mohamed.ghonim 11-OCT-2016 18:16

BORDER LAST REVISED 7/2/2010 | USERNAME => mohamed.ghonim | DGN FILE => 7774-PS-02.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 0000 | PROJECT NUMBER & PHASE 1200020097

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12, 8	Ora, Riv	241, 91, 91	36.1/39.1, 14.7/18.9, 0.0/1.5		

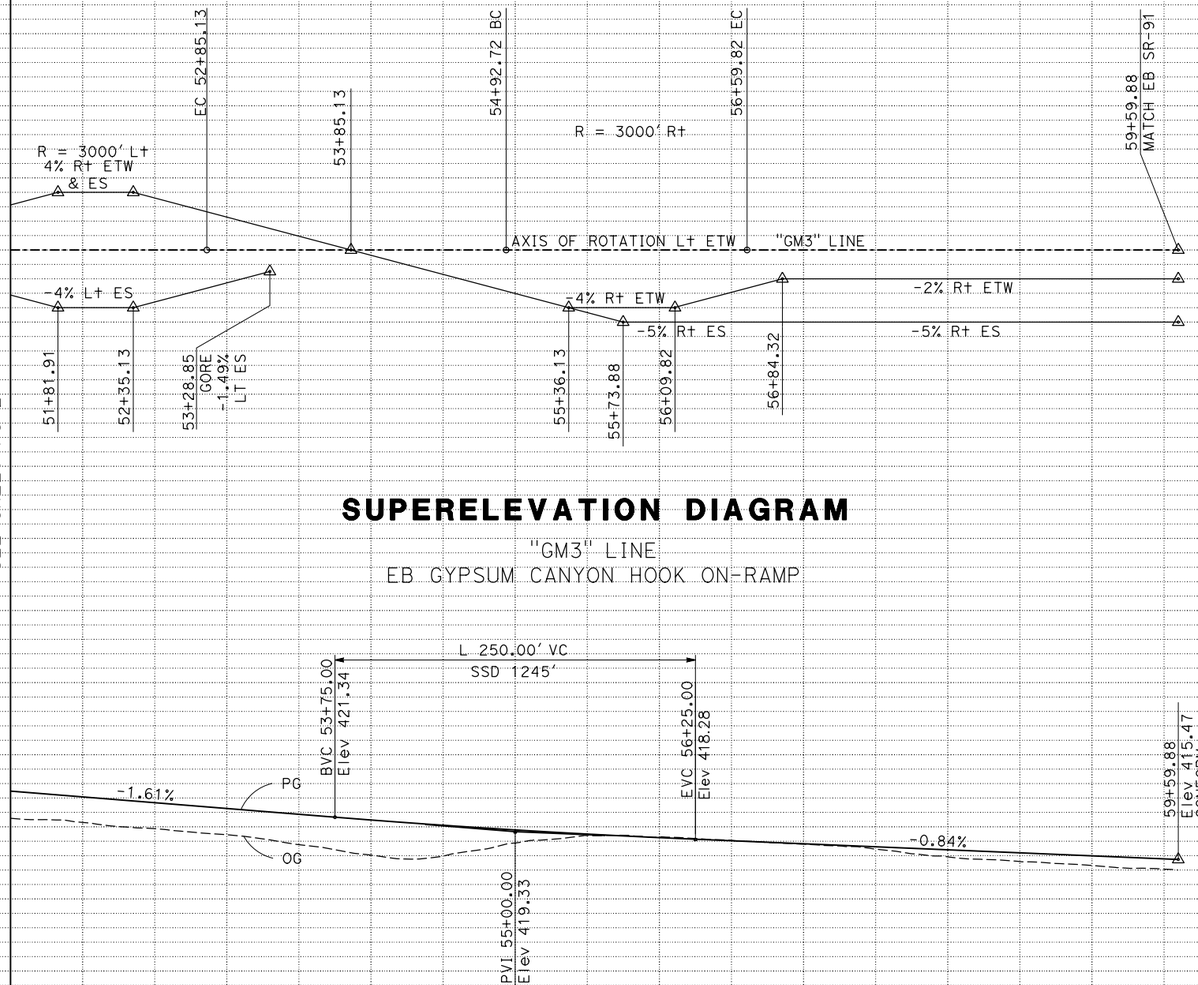
REGISTERED CIVIL ENGINEER — X/X/XX DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — No. — Exp. — CIVIL — STATE OF CALIFORNIA

MICHAEL BAKER INTL
14725 ALTON PKWY
IRVINE, CA 92618

TRANSPORTATION CORRIDOR AGENCIES
125 PACIFICA, SUITE 100
IRVINE, CA 92618



SUPERELEVATION DIAGRAM

"GM3" LINE
EB GYPSUM CANYON HOOK ON-RAMP

PROFILE

"GM3" LINE
EB GYPSUM CANYON HOOK ON-RAMP

STATION	51+00	52+00	53+00	54+00	55+00	56+00	57+00	58+00	59+00	60+00	TOTAL
CY Exc											
CY Emb											

PROFILE AND SUPERELEVATION DIAGRAM

SCALE: Horiz 1" = 50'
Vert 1" = 10'

PS-3

DATE PLOTTED => 10-OCT-2016
TIME PLOTTED => 17:58
LAST REVISION 06-08-10

H:\pdata\10107774\CADD\TransPW\Div\Profile\7774-PS-03.dgn
mohamed.ghonim 10-OCT-2016 17:58

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans
CONSULTANT FUNCTIONAL SUPERVISOR: TIM HAILE
CALCULATED-DESIGNED BY
CHECKED BY
REVISED BY
DATE REVISED

BORDER LAST REVISED 7/2/2010
USERNAME => mohamed.ghonim
DGN FILE => 7774-PS-03.dgn
RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3
UNIT 0000
PROJECT NUMBER & PHASE 1200020097

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12, 8	Ora, Riv	241, 91, 91	36.1/39.1, 14.7/18.9, 0.0/1.5		

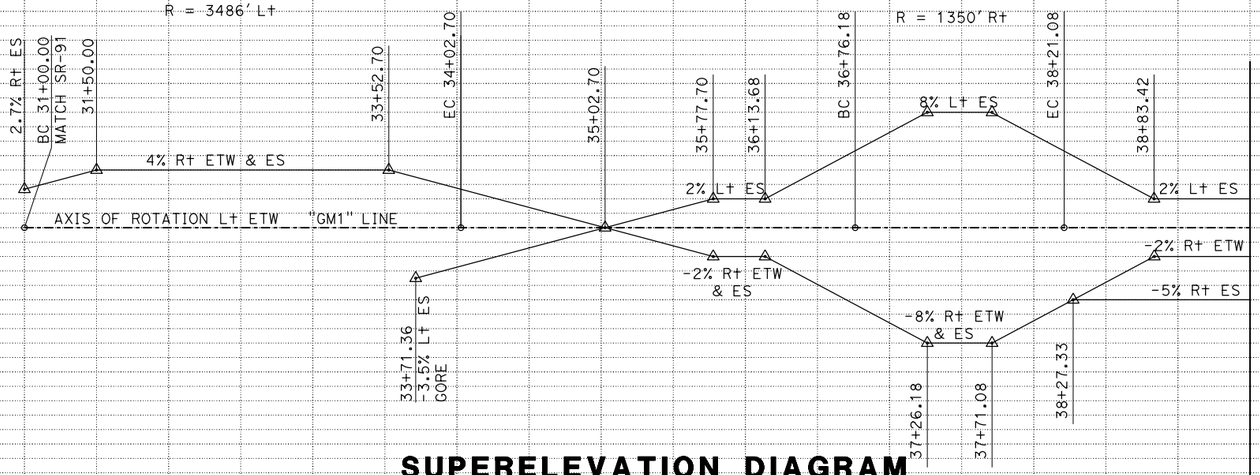
REGISTERED CIVIL ENGINEER — X/X/XX DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — No. — Exp. — CIVIL — STATE OF CALIFORNIA

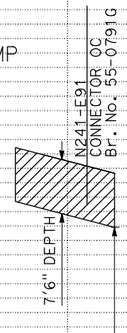
MICHAEL BAKER INTL
14725 ALTON PKWY
IRVINE, CA 92618

TRANSPORTATION CORRIDOR AGENCIES
125 PACIFICA, SUITE 100
IRVINE, CA 92618

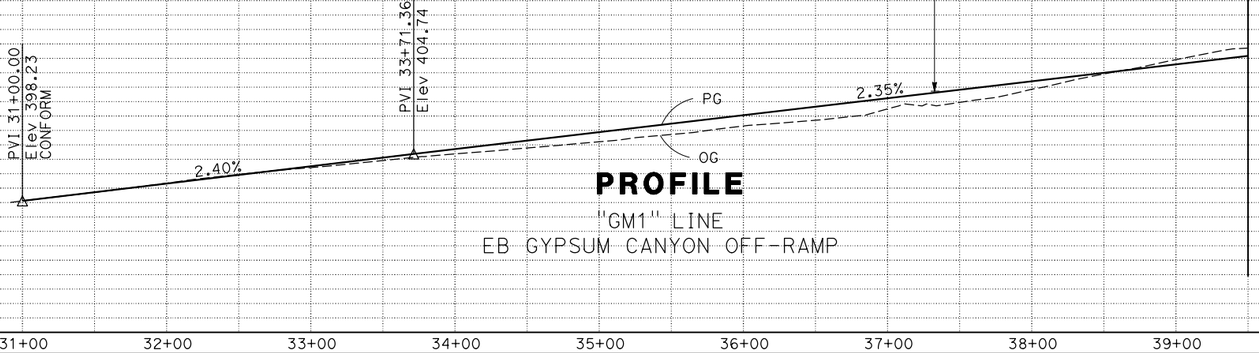


SUPERELEVATION DIAGRAM

"GM1" LINE
EB GYPSUM CANYON OFF-RAMP



MATCHLINE 39+50
SEE SHEET PS-5



PROFILE

"GM1" LINE
EB GYPSUM CANYON OFF-RAMP

PROFILE AND SUPERELEVATION DIAGRAM

SCALE: Horiz 1" = 50'
Vert 1" = 10'

PS-4

STATION	31+00	32+00	33+00	34+00	35+00	36+00	37+00	38+00	39+00	40+00	TOTAL
CY Exc											
CY Emb											

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	CALCULATED-DESIGNED BY	REVISED BY
Caltrans	TIM HAILE	CHECKED BY	DATE REVISED

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Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12, 8	Ora, Riv	241, 91, 91	36.1/39.1, 14.7/18.9, 0.0/1.5		

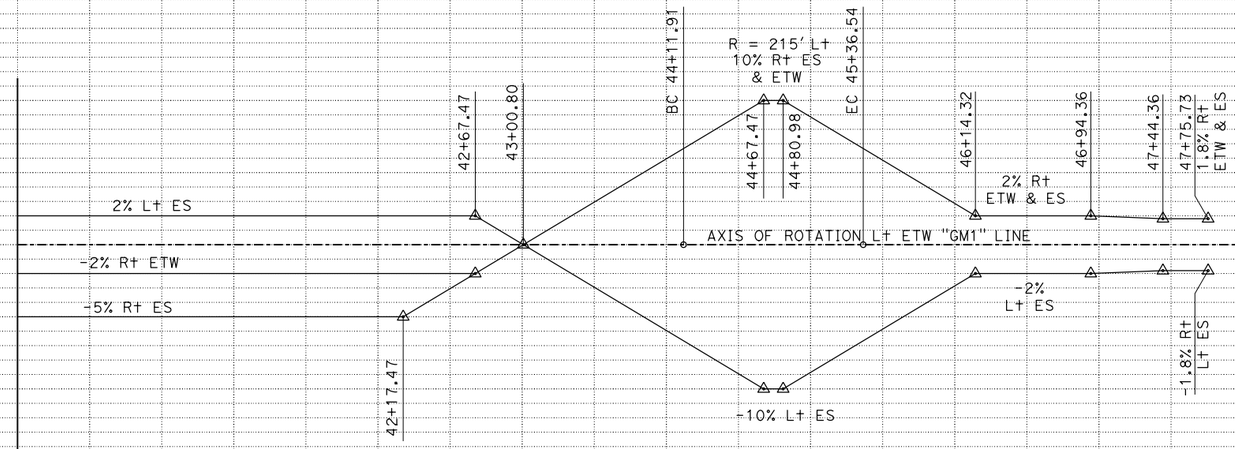
REGISTERED CIVIL ENGINEER — X/X/XX DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — No. — Exp. — CIVIL — STATE OF CALIFORNIA

MICHAEL BAKER INTL
14725 ALTON PKWY
IRVINE, CA 92618

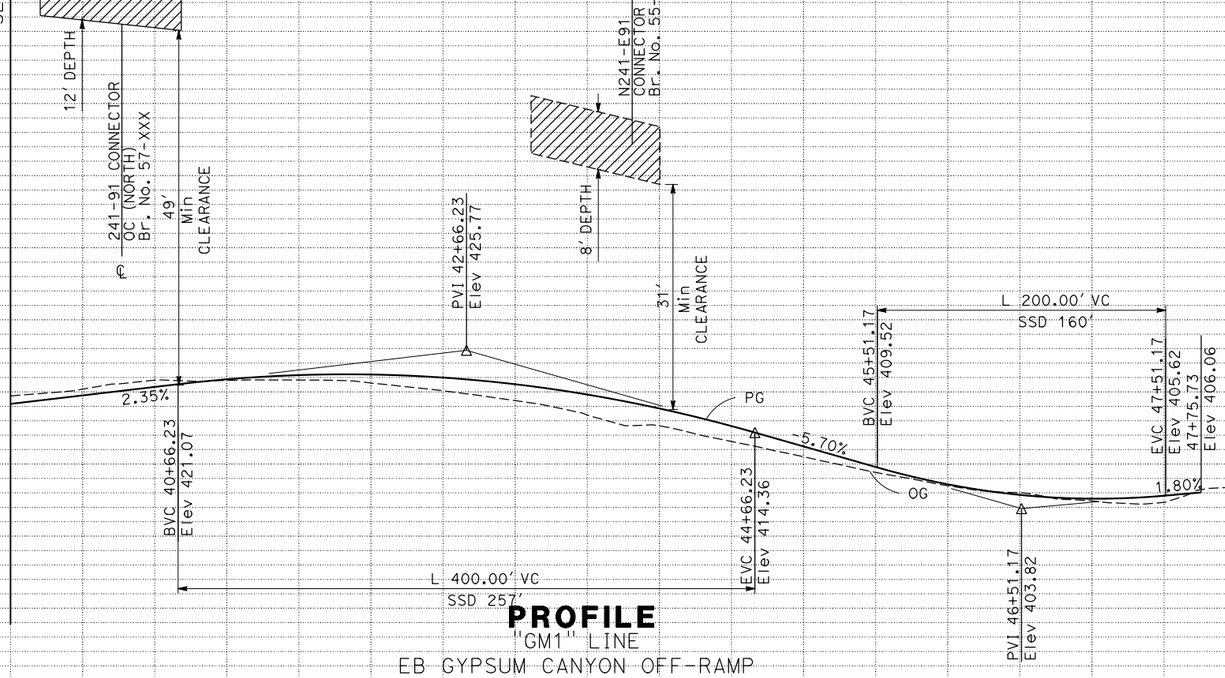
TRANSPORTATION CORRIDOR AGENCIES
125 PACIFICA, SUITE 100
IRVINE, CA 92618



SUPERELEVATION DIAGRAM

"GM1" LINE

EB GYPSUM CANYON OFF-RAMP



PROFILE

"GM1" LINE

EB GYPSUM CANYON OFF-RAMP

PROFILE AND SUPERELEVATION DIAGRAM

SCALE: Horiz 1" = 50'
Vert 1" = 10'

PS-5

STATION	39+00	40+00	41+00	42+00	43+00	44+00	45+00	46+00	47+00	48+00	TOTAL
CY Exc											
CY Emb											

CONSULTANT FUNCTIONAL SUPERVISOR	TIM HAILE
CALCULATED-DESIGNED BY	
CHECKED BY	
REVISED BY	
DATE REVISED	
LAST REVISION	06-08-10
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DGN FILE => 7774-PS-05.dgn

RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3

UNIT 0000

PROJECT NUMBER & PHASE 1200020097

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12, 8	Ora, Riv	241, 91, 91	36.1/39.1, 14.7/18.9, 0.0/1.5		

REGISTERED CIVIL ENGINEER — X/X/XX DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — No. — Exp. — CIVIL — STATE OF CALIFORNIA

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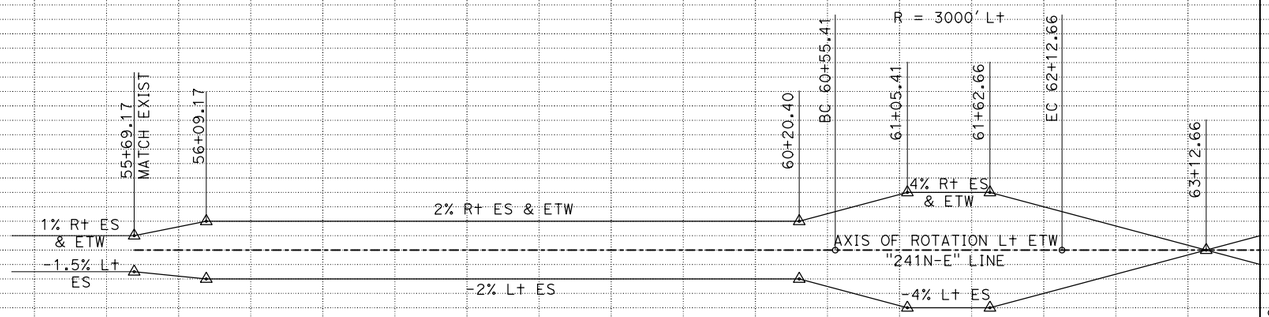
MICHAEL BAKER INTL
14725 ALTON PKWY
IRVINE, CA 92618

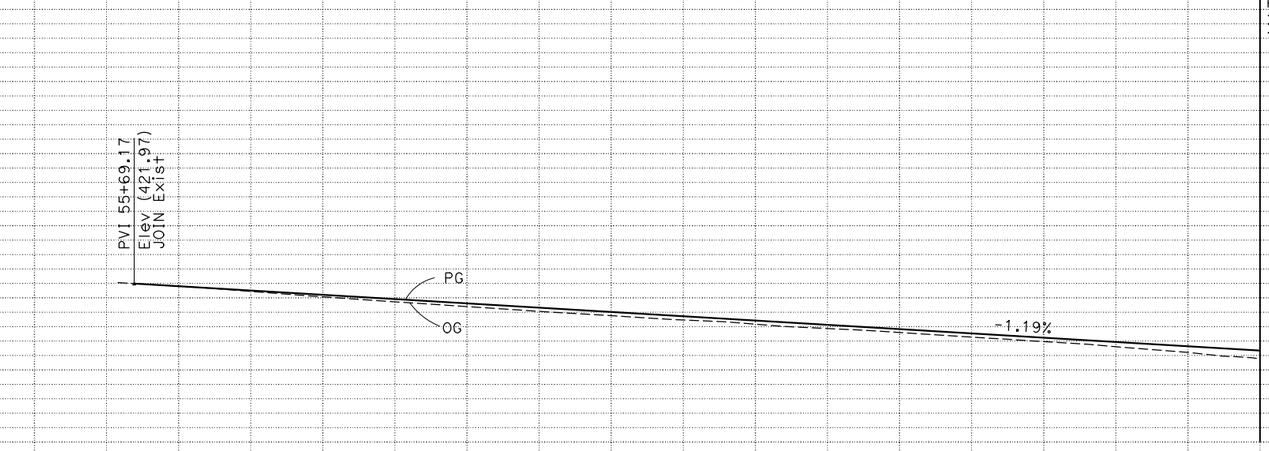
TRANSPORTATION CORRIDOR AGENCIES
125 PACIFICA, SUITE 100
IRVINE, CA 92618



SUPERELEVATION DIAGRAM

"241N-E" LINE
SR-241/SR-91 N-E CONNECTOR

MATCHLINE 63+50
SEE SHEET PS-7



PROFILE

"241N-E" LINE
SR-241/SR-91 N-E CONNECTOR

PROFILE AND SUPERELEVATION DIAGRAM

SCALE: Horiz 1" = 50'
Vert 1" = 10'

PS-6

10% 5% 0% -5% -10%

440 430 420 410 400 390 380

STATION: 55+00 56+00 57+00 58+00 59+00 60+00 61+00 62+00 63+00 64+00 TOTAL

CY Exc
CY Emb

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans

CONSULTANT FUNCTIONAL SUPERVISOR: TIM HAILE

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REVISED BY

DATE REVISED

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DGN FILE => 7774-PS-06.dgn

RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3

UNIT 0000

PROJECT NUMBER & PHASE 1200020097

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12, 8	Ora, Riv	241, 91, 91	36.1/39.1, 14.7/18.9, 0.0/1.5		

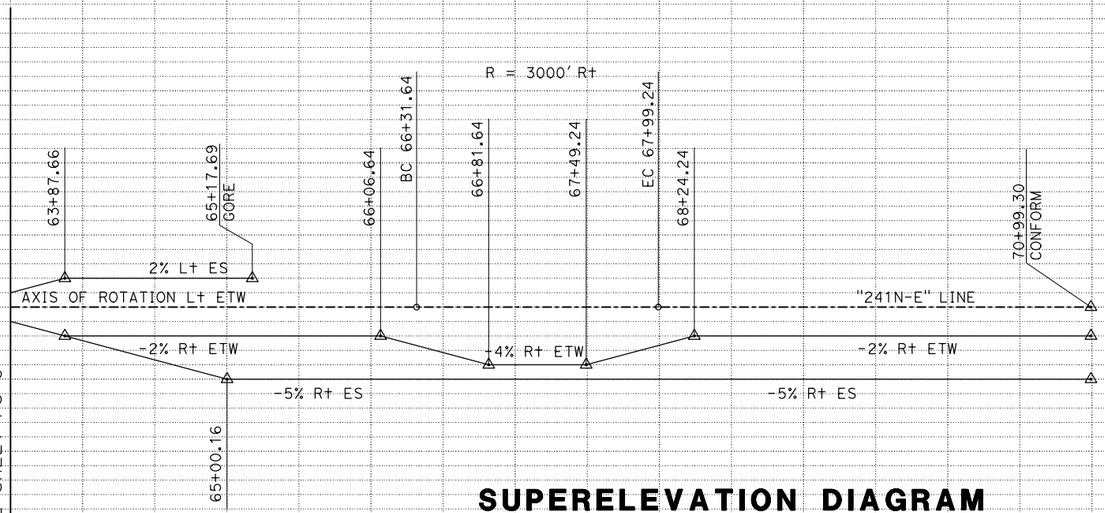
REGISTERED CIVIL ENGINEER — X/X/XX DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — No. — Exp. — CIVIL — STATE OF CALIFORNIA

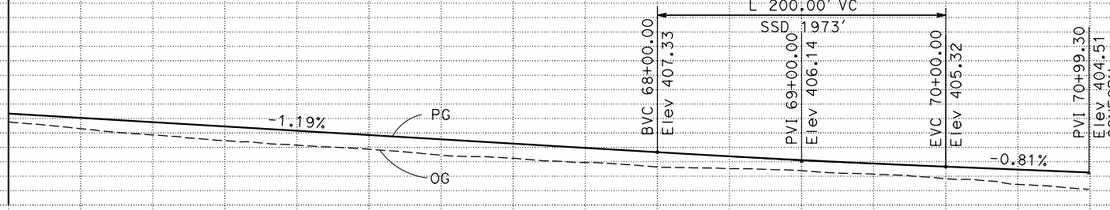
MICHAEL BAKER INTL
14725 ALTON PKWY
IRVINE, CA 92618

TRANSPORTATION CORRIDOR AGENCIES
125 PACIFICA, SUITE 100
IRVINE, CA 92618



SUPERELEVATION DIAGRAM

"241N-E" LINE
SR-241/SR-91 N-E CONNECTOR



PROFILE

"241N-E" LINE
SR-241/SR-91 N-E CONNECTOR

STATION: 63+00 64+00 65+00 66+00 67+00 68+00 69+00 70+00 71+00 TOTAL

CY Exc
CY Emb

PROFILE AND SUPERELEVATION DIAGRAM

SCALE: Horiz 1" = 50'
Vert 1" = 10'

PS-7

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION — Caltrans

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Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12, 8	Ora, Riv	241, 91, 91	36.1/39.1, 14.7/18.9, 0.0/1.5		

REGISTERED CIVIL ENGINEER — X/X/XX DATE

PLANS APPROVAL DATE

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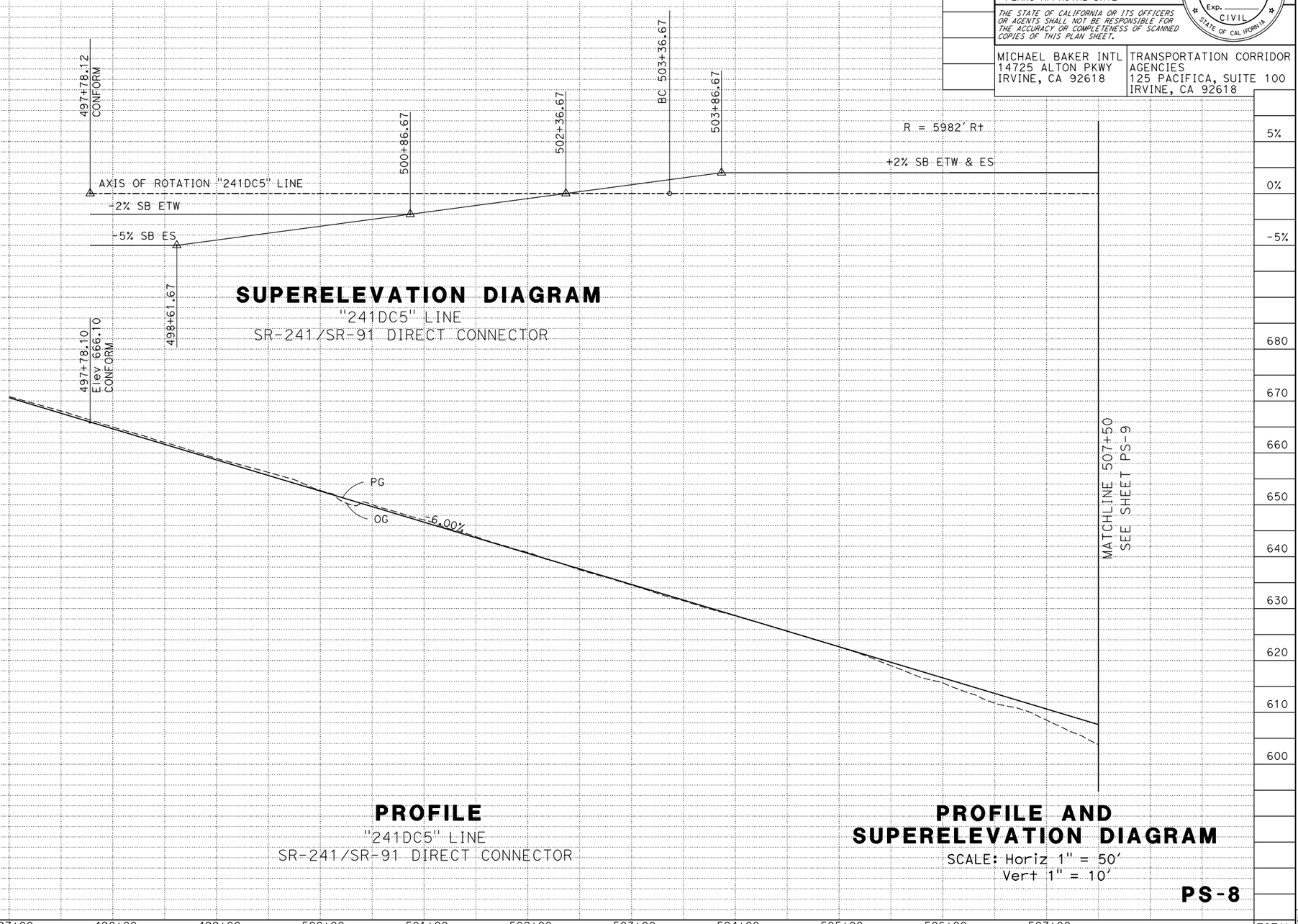
MICHAEL BAKER INTL
14725 ALTON PKWY
IRVINE, CA 92618

TRANSPORTATION CORRIDOR AGENCIES
125 PACIFICA, SUITE 100
IRVINE, CA 92618



SUPERELEVATION DIAGRAM

"241DC5" LINE

SR-241/SR-91 DIRECT CONNECTOR

PROFILE

"241DC5" LINE

SR-241/SR-91 DIRECT CONNECTOR

PROFILE AND SUPERELEVATION DIAGRAM

SCALE: Horiz 1" = 50'
Vert 1" = 10'

PS-8

STATION	495+00	496+00	497+00	498+00	499+00	500+00	501+00	502+00	503+00	504+00	505+00	506+00	507+00	TOTAL
CY Exc														
CY Emb														

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SUPERVISOR:
CONSULTANT FUNCTIONAL SUPERVISOR: TIM HAILE

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DGN FILE => 7774-PS-08.dgn

RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3

UNIT 0000

PROJECT NUMBER & PHASE 1200020097

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12, 8	Ora, Riv	241, 91, 91	36.1/39.1, 14.7/18.9, 0.0/1.5		

REGISTERED CIVIL ENGINEER — X/X/XX DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — No. — Exp. — CIVIL — STATE OF CALIFORNIA

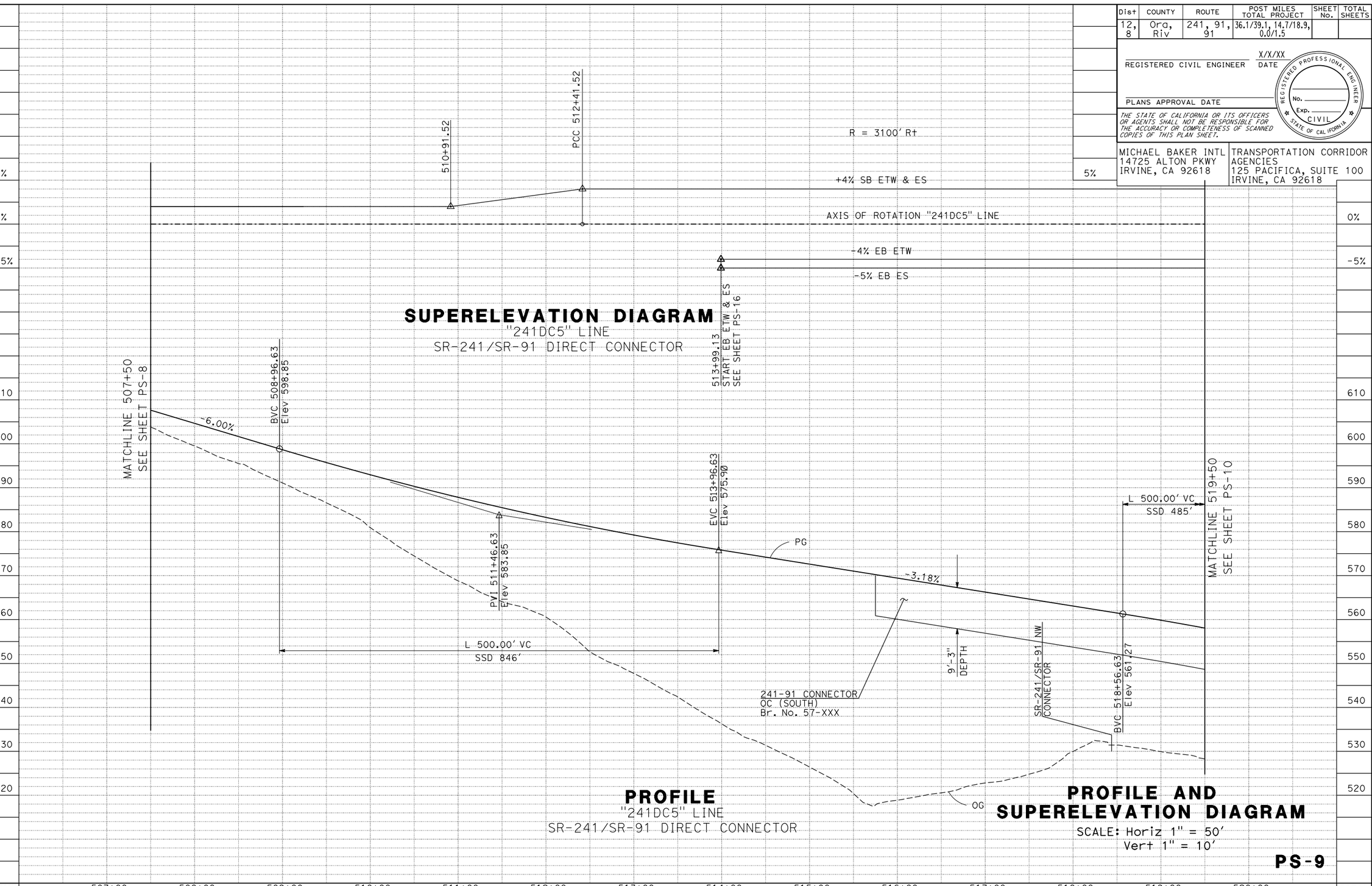
MICHAEL BAKER INTL
14725 ALTON PKWY
IRVINE, CA 92618

TRANSPORTATION CORRIDOR AGENCIES
125 PACIFICA, SUITE 100
IRVINE, CA 92618

SUPERELEVATION DIAGRAM

"241DC5" LINE

SR-241/SR-91 DIRECT CONNECTOR



PROFILE

"241DC5" LINE

SR-241/SR-91 DIRECT CONNECTOR

PROFILE AND SUPERELEVATION DIAGRAM

SCALE: Horiz 1" = 50'
Vert 1" = 10'

PS-9

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RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3

UNIT 0000

PROJECT NUMBER & PHASE 1200020097

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12, 8	Ora, Riv	241, 91, 91	36.1/39.1, 14.7/18.9, 0.0/1.5		

REGISTERED CIVIL ENGINEER — X/X/XX DATE

PLANS APPROVAL DATE

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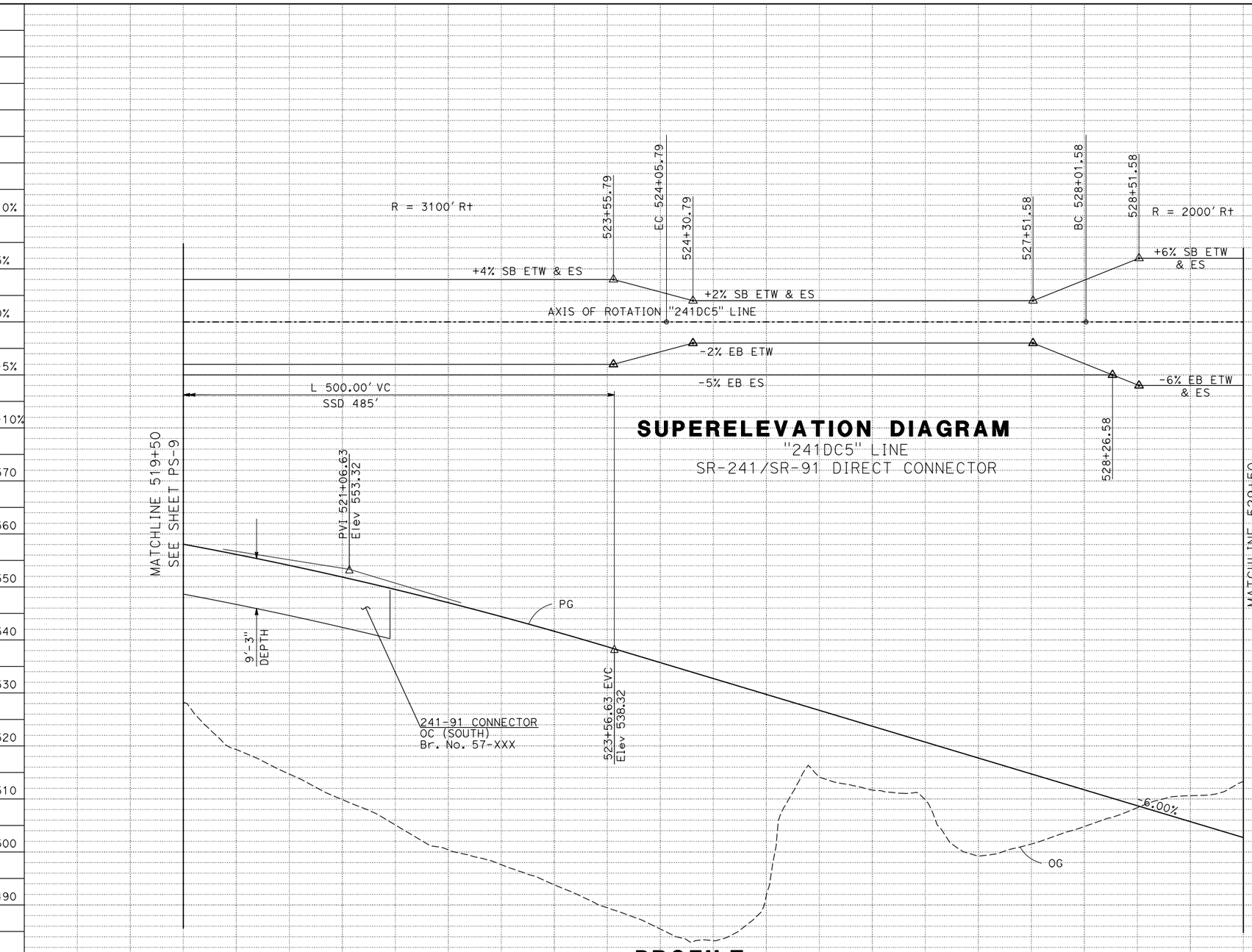
MICHAEL BAKER INTL
14725 ALTON PKWY
IRVINE, CA 92618

TRANSPORTATION CORRIDOR AGENCIES
125 PACIFICA, SUITE 100
IRVINE, CA 92618



SUPERELEVATION DIAGRAM
"241DC5" LINE
SR-241/SR-91 DIRECT CONNECTOR

PROFILE
"241DC5" LINE
SR-241/SR-91 DIRECT CONNECTOR

PROFILE AND SUPERELEVATION DIAGRAM
SCALE: Horiz 1" = 50'
Vert 1" = 10'

PS-10

STATION	519+00	520+00	521+00	522+00	523+00	524+00	525+00	526+00	527+00	528+00	529+00	530+00	TOTAL
CY Exc													
CY Emb													

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CONSULTANT FUNCTIONAL SUPERVISOR: TIM HAILE

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
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Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12, 8	Ora, Riv	241, 91, 91	36.1/39.1, 14.7/18.9, 0.0/1.5		

REGISTERED CIVIL ENGINEER — X/X/XX DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — No. — Exp. — CIVIL — STATE OF CALIFORNIA

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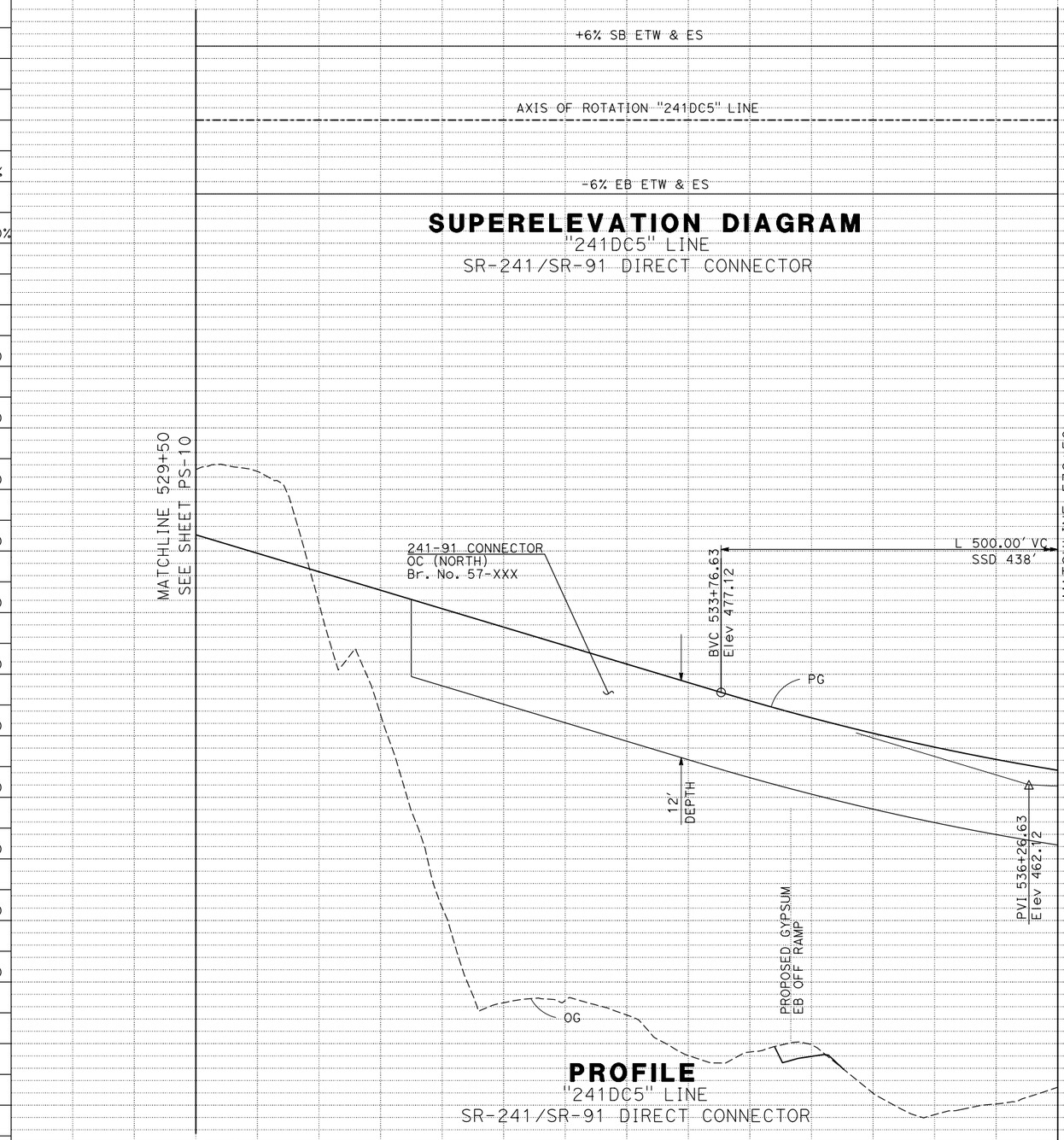
MICHAEL BAKER INTL
14725 ALTON PKWY
IRVINE, CA 92618

TRANSPORTATION CORRIDOR AGENCIES
125 PACIFICA, SUITE 100
IRVINE, CA 92618

SUPERELEVATION DIAGRAM

"241DC5" LINE

SR-241/SR-91 DIRECT CONNECTOR



PROFILE

"241DC5" LINE

SR-241/SR-91 DIRECT CONNECTOR

STATION	529+00	530+00	531+00	532+00	533+00	534+00	535+00	536+00	537+00	TOTAL
CY Exc										
CY Emb										

PROFILE AND SUPERELEVATION DIAGRAM

SCALE: Horiz 1" = 50'
Vert 1" = 10'

PS-11

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CONSULTANT FUNCTIONAL SUPERVISOR
TIM HAILE

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Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12, 8	Ora, Riv	241, 91, 91	36.1/39.1, 14.7/18.9, 0.0/1.5		

REGISTERED CIVIL ENGINEER — X/X/XX DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — No. — Exp. — CIVIL — STATE OF CALIFORNIA

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MICHAEL BAKER INTL
14725 ALTON PKWY
IRVINE, CA 92618

TRANSPORTATION CORRIDOR AGENCIES
125 PACIFICA, SUITE 100
IRVINE, CA 92618

SUPERELEVATION DIAGRAM

"241DC5" LINE
SR-241/SR-91 DIRECT CONNECTOR

R = 2000' Rt
+6% SB ETW & ES
540+22.41
EC 540+72.41
541+72.41
BC 542+85.70
R = 3530' Lt
EC 546+32.62
+2% EB ETW & ES
+3% EB ETW & ES
AXIS OF ROTATION "241DC5" LINE
-2% SB ETW & ES
-3% SB ETW & ES
-6% EB ETW & ES
542+22.41
543+35.70
545+82.62

10% 5% 0% -5% -10%

520 510 500 490 480 470 460 450 440 430 420 410

MATCHLINE 536+50
SEE SHEET PS-11

L 500.00' VC
SSD 438'

EVC 538+76.63
Elev 459.71

-0.97%

PG

BVC 541+54.35
Elev 457.02

L 600.00' VC
SSD 430'

PVI 544+54.35
Elev 454.12

MATCHLINE 546+50
SEE SHEET PS-13

OG

PROFILE

"241DC5" LINE
SR-241/SR-91 DIRECT CONNECTOR

PROFILE AND SUPERELEVATION DIAGRAM

SCALE: Horiz 1" = 50'
Vert 1" = 10'

PS-12

STATION	536+00	537+00	538+00	539+00	540+00	541+00	542+00	543+00	544+00	545+00	546+00	547+00	TOTAL
CY Exc													
CY Emb													

REVISED BY	DATE REVISED

CALCULATED-DESIGNED BY:
CHECKED BY:
CONSULTANT FUNCTIONAL SUPERVISOR: TIM HAILE

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USERNAME => mohamed.ghonim
DGN FILE => 7774-PS-12.dgn

RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3

UNIT 0000

PROJECT NUMBER & PHASE 1200020097

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12, 8	Ora, Riv	241, 91, 91	36.1/39.1, 14.7/18.9, 0.0/1.5		

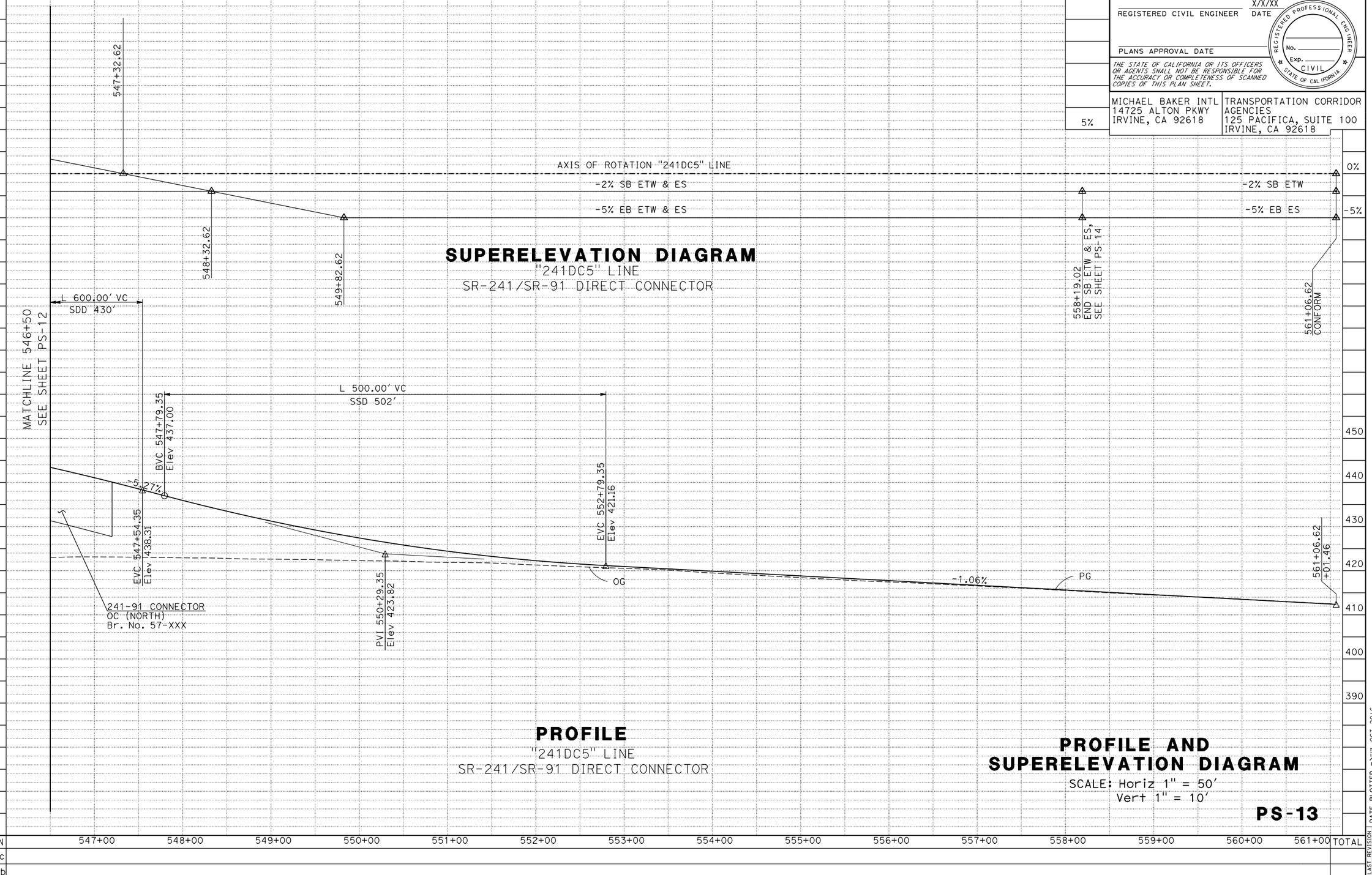
REGISTERED CIVIL ENGINEER — X/X/XX DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — No. — Exp. — CIVIL — STATE OF CALIFORNIA

MICHAEL BAKER INTL
14725 ALTON PKWY
IRVINE, CA 92618

TRANSPORTATION CORRIDOR AGENCIES
125 PACIFICA, SUITE 100
IRVINE, CA 92618



SUPERELEVATION DIAGRAM
"241DC5" LINE
SR-241/SR-91 DIRECT CONNECTOR

PROFILE
"241DC5" LINE
SR-241/SR-91 DIRECT CONNECTOR

STATION	547+00	548+00	549+00	550+00	551+00	552+00	553+00	554+00	555+00	556+00	557+00	558+00	559+00	560+00	561+00	TOTAL
CY Exc																
CY Emb																

PROFILE AND SUPERELEVATION DIAGRAM
SCALE: Horiz 1" = 50'
Vert 1" = 10'

PS-13

REVISED BY			
DATE REVISED			
CALCULATED-DESIGNED BY	mohamed.ghonim 11-OCT-2016 18:16		
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SUPERVISOR	TIM HAILE		
CONSULTANT FUNCTIONAL SUPERVISOR			
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION			
Caltrans			

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LAST REVISION	DATE PLOTTED => 11-OCT-2016
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Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12, 8	Ora, Riv	241, 91, 91	36.1/39.1, 14.7/18.9, 0.0/1.5		

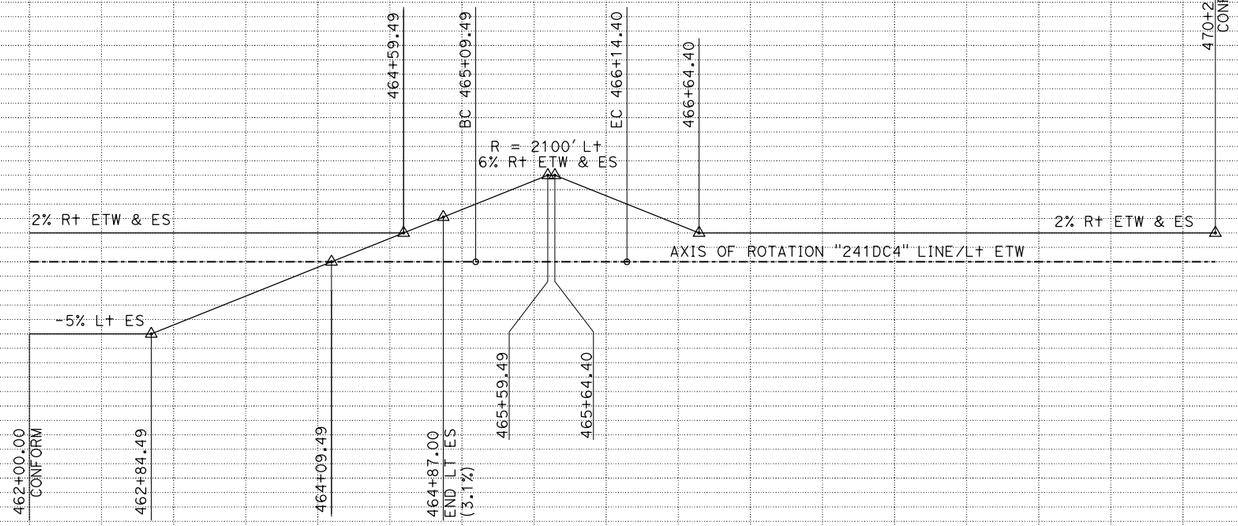
REGISTERED CIVIL ENGINEER — X/X/XX DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — No. — Exp. — CIVIL — STATE OF CALIFORNIA

MICHAEL BAKER INTL
14725 ALTON PKWY
IRVINE, CA 92618

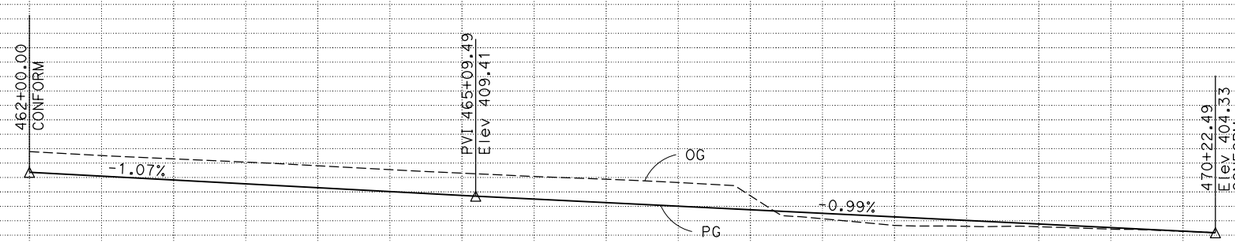
TRANSPORTATION CORRIDOR AGENCIES
125 PACIFICA, SUITE 100
IRVINE, CA 92618



SUPERELEVATION DIAGRAM

"241DC4" LINE

WB SR-91 JOIN TO DIRECT CONNECTOR



PROFILE

"241DC4" LINE

WB SR-91 JOIN TO DIRECT CONNECTOR

PROFILE AND SUPERELEVATION DIAGRAM

SCALE: Horiz 1" = 50'
Vert 1" = 10'

PS-14

REVISED BY	DATE REVISED

CALCULATED-DESIGNED BY

CHECKED BY

CONSULTANT FUNCTIONAL SUPERVISOR: TIM HAILE

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

Caltrans

LAST REVISION 06-08-10 — DATE PLOTTED => 10-OCT-2016 — TIME PLOTTED => 17:58

BORDER LAST REVISED 7/2/2010 — USERNAME => mohamed.ghonim — DGN FILE => 7774-PS-14.dgn — RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 — UNIT 0000 — PROJECT NUMBER & PHASE 1200020097

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12, 8	Ora, Riv	241, 91, 91	36.1/39.1, 14.7/18.9, 0.0/1.5		

REGISTERED CIVIL ENGINEER — X/X/XX DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — No. — Exp. — CIVIL — STATE OF CALIFORNIA

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

MICHAEL BAKER INTL
14725 ALTON PKWY
IRVINE, CA 92618

TRANSPORTATION CORRIDOR AGENCIES
125 PACIFICA, SUITE 100
IRVINE, CA 92618

SUPERELEVATION DIAGRAM

"241DC1" LINE
NB SR-241 JOIN TO DIRECT CONNECTOR

97+56.65
2% L+ ETW & ES
AXIS OF ROTATION "241DC1" Line/R+ ETW
-5% R+ ES
102+42.55
GORE
MATCHLINE 105+00
SEE SHEET PS-17

97+56.65
Elev 657.05
-5.75%
PVI 102+42.55
Elev 629.11
OG
PG
-6.00%
L 800.00' VC
BVC 104+52.83
Elev 616.49

PROFILE

"241DC1" LINE
NB SR-241 JOIN TO DIRECT CONNECTOR

PROFILE AND SUPERELEVATION DIAGRAM

SCALE: Horiz 1" = 50'
Vert 1" = 10'

PS-15

STATION	97+00	98+00	99+00	100+00	101+00	102+00	103+00	104+00	105+00	TOTAL
CY Exc										
CY Emb										

REVISED BY	DATE REVISED

CALCULATED-DESIGNED BY
CHECKED BY
SUPERVISOR TIM HAILE
CONSULTANT FUNCTIONAL SUPERVISOR

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans

LAST REVISION 06-08-10
DATE PLOTTED => 10-OCT-2016
TIME PLOTTED => 17:58

H:\pdata\10107774\CADD\TransPW\Div\Profile\7774-PS-15.dgn
mohamed.ghonim 10-OCT-2016 17:58

BORDER LAST REVISED 7/2/2010
USERNAME => mohamed.ghonim
DGN FILE => 7774-PS-15.dgn
RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3
UNIT 0000
PROJECT NUMBER & PHASE 1200020097

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12, 8	Ora, Riv	241, 91, 91	36.1/39.1, 14.7/18.9, 0.0/1.5		

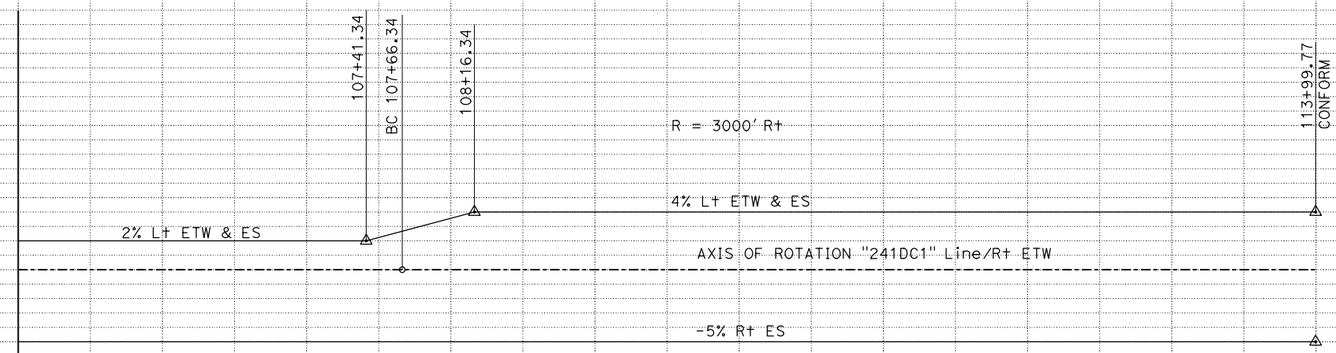
REGISTERED CIVIL ENGINEER — X/X/XX DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — No. — Exp. — CIVIL — STATE OF CALIFORNIA

MICHAEL BAKER INTL
14725 ALTON PKWY
IRVINE, CA 92618

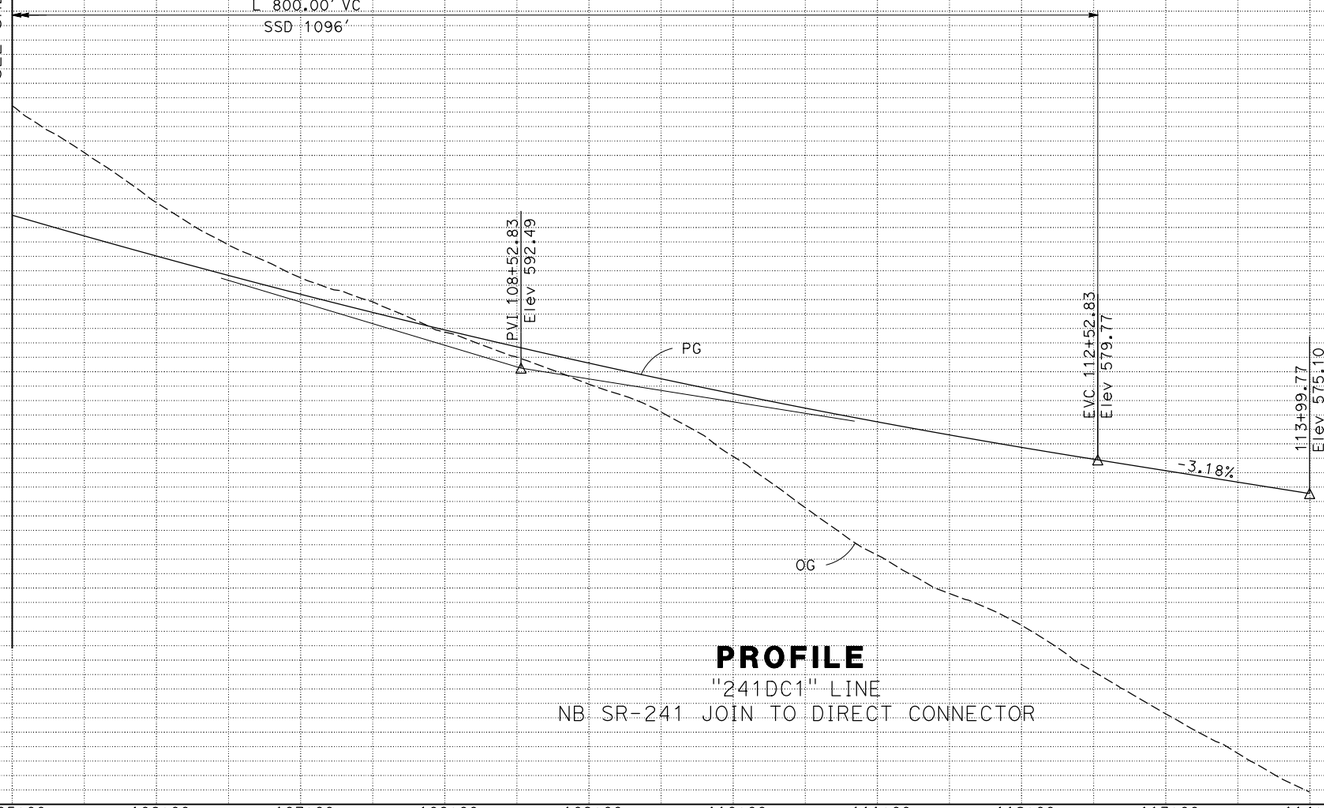
TRANSPORTATION CORRIDOR AGENCIES
125 PACIFICA, SUITE 100
IRVINE, CA 92618



SUPERELEVATION DIAGRAM

"241DC1" LINE

NB SR-241 JOIN TO DIRECT CONNECTOR



PROFILE

"241DC1" LINE

NB SR-241 JOIN TO DIRECT CONNECTOR

STATION	105+00	106+00	107+00	108+00	109+00	110+00	111+00	112+00	113+00	114+00	TOTAL
CY Exc											
CY Emb											

PROFILE AND SUPERELEVATION DIAGRAM

SCALE: Horiz 1" = 50'
Vert 1" = 10'

PS-16

DATE PLOTTED => 10-OCT-2016
TIME PLOTTED => 17:58
LAST REVISION 06-08-10

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION — Caltrans

CONSULTANT FUNCTIONAL SUPERVISOR: TIM HAILE

CALCULATED-DESIGNED BY

CHECKED BY

REVISED BY	DATE REVISED

H:\pdata\10107774\CADD\TransPW\Div\Profile\7774-PS-16.dgn
mohamed.ghonim 10-OCT-2016 17:58

BORDER LAST REVISED 7/2/2010

USERNAME => mohamed.ghonim
DGN FILE => 7774-PS-16.dgn

RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3

UNIT 0000

PROJECT NUMBER & PHASE 1200020097

12-Ora-241 PM 36.1/39.1
12-Ora-91 PM 14.7/18.9
08-Riv-91 PM 0.0/1.5

Attachment H

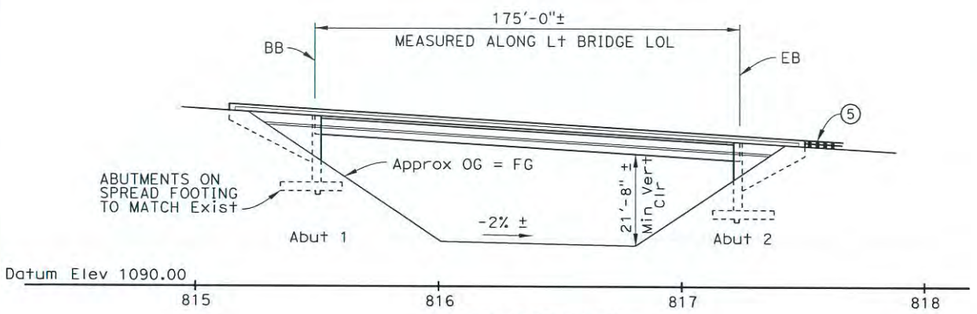
Advance Planning Studies (APS)

PREPARED FOR THE STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

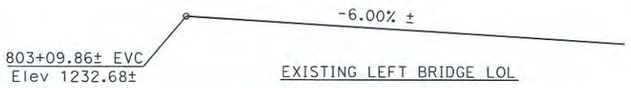
DIST.	COUNTY	ROUTE	POST MILES TOTAL PROJECT
12	Ora	241	

TRANSPORTATION CORRIDOR AGENCIES
125 PACIFICA, SUITE 120
IRVINE, CA 92618

CH2M HILL
6 HUTTON CENTRE DR. SUITE 700
SANTA ANA, CA 92707

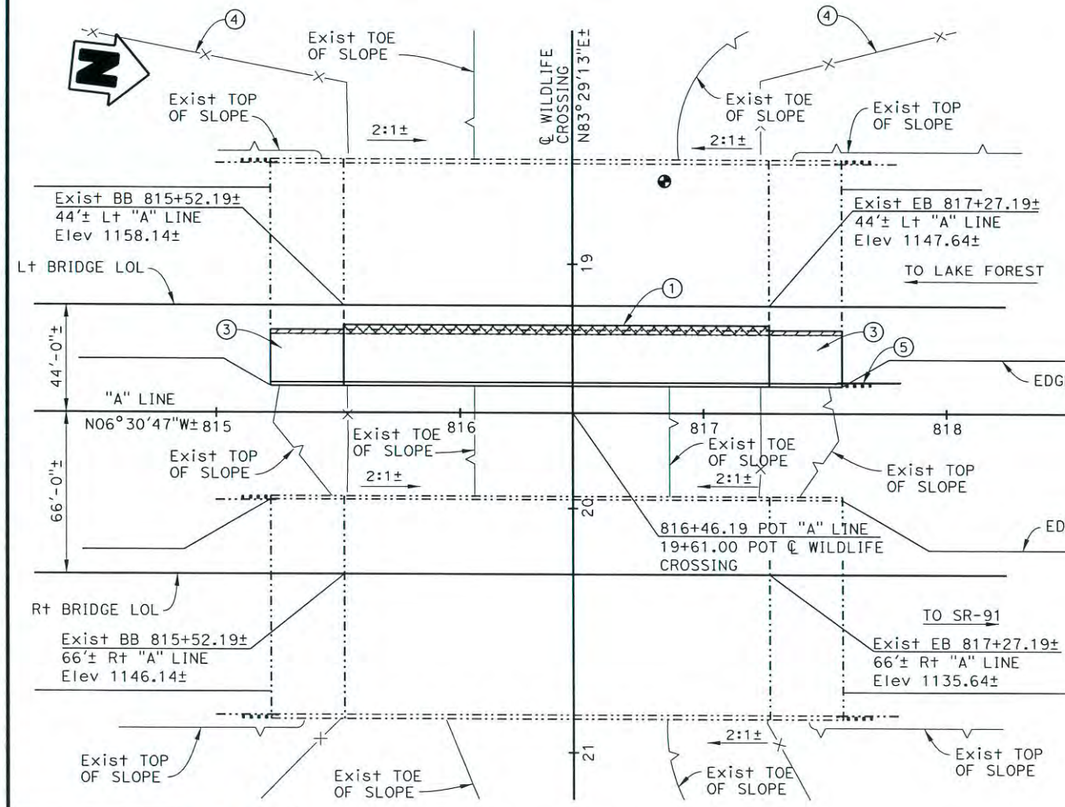


ELEVATION
1" = 30'

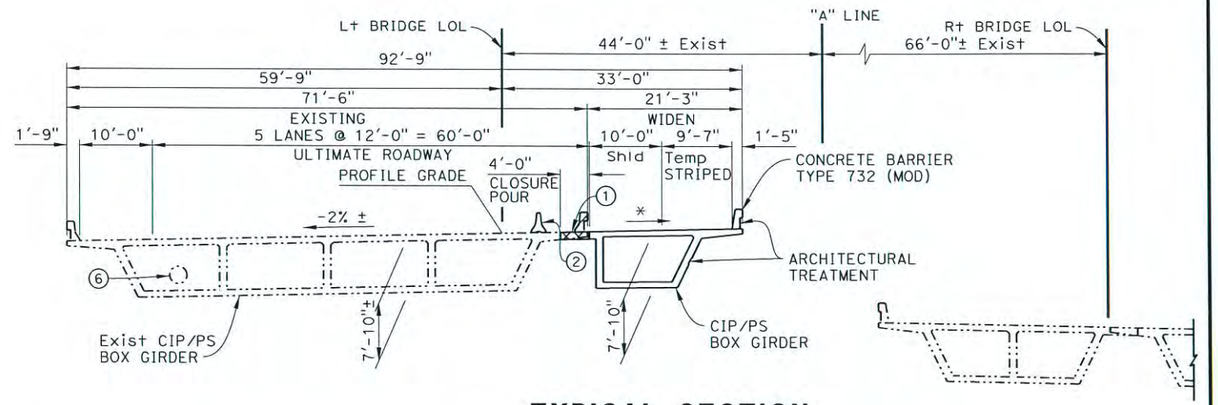


PROFILE GRADE
NO SCALE

NOTE:
Profile Grade of Widening to match Exist Bridge



PLAN
1" = 30'



TYPICAL SECTION
1" = 10'

LEGEND:

- Bridge Removal (Portion)
- Closure Pour
- Indicates Existing Structure
- Indicates New Structure
- Point of Min Vert Clr
- * Match Exist grade and cross slope
- (1) Remove Exist Conc Barrier (Type 25 (Mod)) & Bridge overhang (Portion)
- (2) Temp Railing (Type K)
- (3) Structure Approach Type N (30S)
- (4) Exist ℄ Fence, Protect in Place & reconstruct as required.
- (5) MGS, See Road Plans
- (6) Exist Opening for future Highway Operation Facility

NOTE:
Traffic will pass through construction site.

DATE OF ESTIMATE		NOVEMBER 2015
BRIDGE REMOVAL	=	$20,000
STRUCTURE DEPTH	=	7'-10"
LENGTH	=	175'-0"
WIDTH	=	21'-3"
AREA	=	3719 SQFT
COST/ FT2 INCLUDING 10% MOBILIZATION & 25% CONTINGENCY	=	$377 **
TOTAL COST	=	1,423,000

** Does not include Bridge Removal Costs

IMAD ABU-MARKIEH
DESIGN OVERSIGHT
10/2/16
SIGN OFF DATE

DESIGNED BY	ERIN COATES	DATE	Nov 2015
DRAWN BY	PATRICK WALKER	DATE	Nov 2015
CHECKED BY	MARK BRADY	DATE	Nov 2015
APPROVED	TOM IONTA	DATE	Nov 2015

MARK BRADY
PROJECT ENGINEER

PLANNING STUDY

WINDY RIDGE WILDLIFE UC (WIDEN)

BRIDGE NO. 55-0724 L	CU 12-240
SCALE: AS NOTED	EA 0K9700

ADVANCE PLANNING STUDY SHEET (ENGLISH) (REV. 2/25/05)

FILE => 55-0724L-A-GP01.dgn

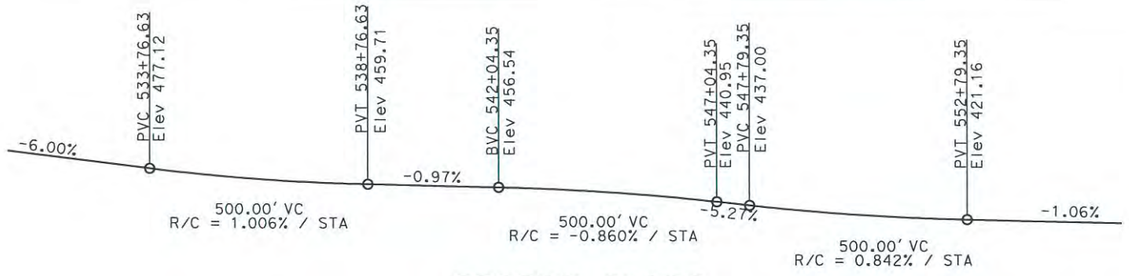
USERNAME => pwalker DATE PLOTTED => 05-NOV-2015 TIME PLOTTED => 14:27

PREPARED FOR THE STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

DIST.	COUNTY	ROUTE	POST MILES TOTAL PROJECT
12	Ora	241/91	

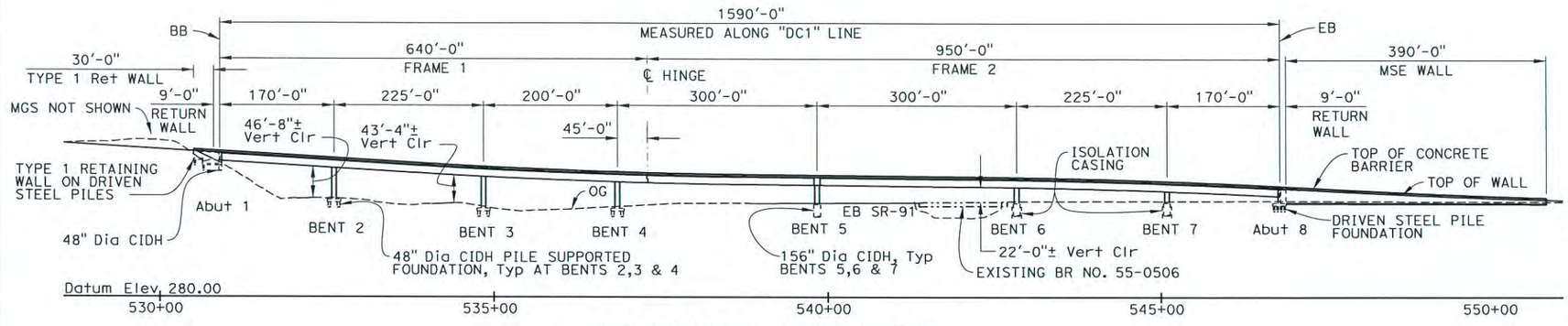
TRANSPORTATION CORRIDOR AGENCIES
125 PACIFICA, SUITE 120
IRVINE, CA 92618

CH2M HILL
6 HUTTON CENTRE DR, SUITE 700
SANTA ANA, CA 92707



PROFILE GRADE
NOT TO SCALE

Legend:
- Indicates Existing Structure
- Indicates New Construction
- (1) Paint "241-91 CONNECTOR OC (NORTH)"
- (2) Paint Bridge Number & Year Constructed
- (3) Structure Approach Type N(30S)
- (4) MGS, see Road Plans
- Denotes Point of Miniumum Vertical Clearance
- Denotes Point of Measured Vertical Clearance

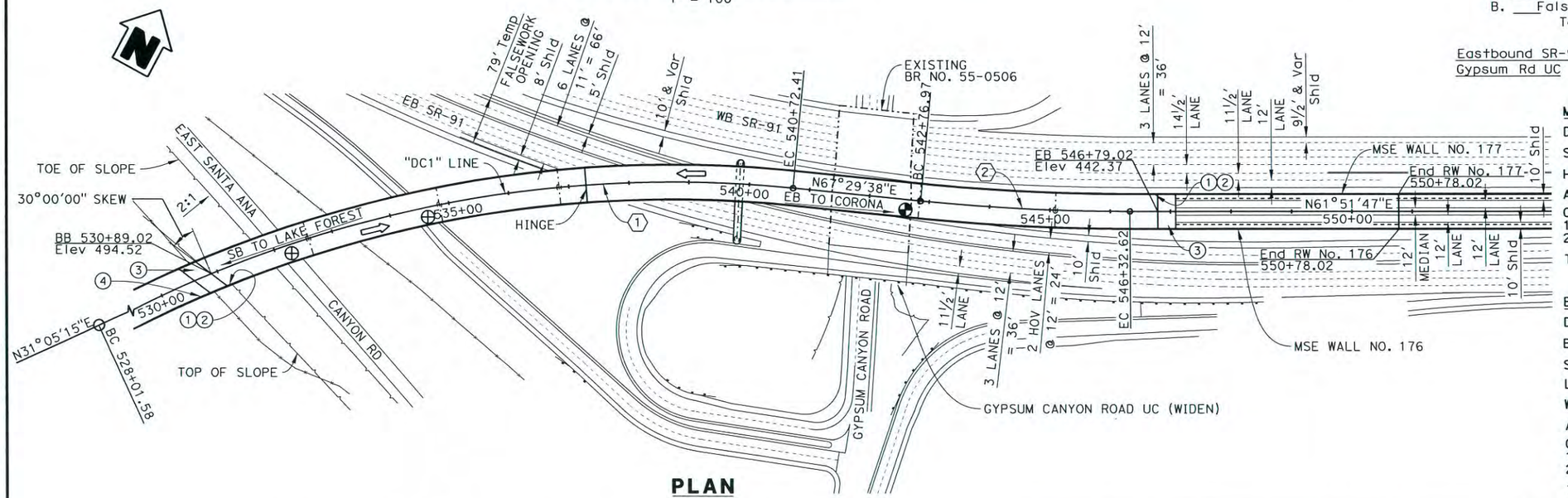


DEVELOPED ELEVATION
1" = 100'

Vehicular Traffic

1. ___ New alignment. No traffic at the site.
2. ___ Traffic will be detoured away from the site.
3. ___ Traffic will be carried on the structure.
   Stage construction will/will not be required.
4. X Traffic will pass under the structure on
   SR-91 & GYPSUM CANYON Rd
   A. ___ No falsework allowed over traffic.
   B. ___ Falsework opening(s) required:

	Temporary Vertical Clearance	Width of Traffic Opening
Eastbound SR-91	15'	79'
Gypsum Rd UC	15'	135'



PLAN
1" = 100'

MSE WALL NO. 176 & NO. 177 ESTIMATE

DATE OF ESTIMATE	DECEMBER 2015
STRUCTURE LENGTH	780'-0" (TOTAL)
HEIGHT	21'-0" Max
AREA	9,600 SQ FT (TOTAL)
COST/FT² INCLUDING 10% MOBILIZATION & 25% CONTINGENCY	= $ 115
TOTAL WALL COST	= $ 1,100,000

BRIDGE ESTIMATE

DATE OF ESTIMATE	DECEMBER 2015
BRIDGE REMOVAL	= NONE
STRUCTURE DEPTH	= 12'-0"
LENGTH	= 1590'-0"
WIDTH	= 58'-10"
AREA	= 93,545 SF
COST/FT² INCLUDING 10% MOBILIZATION & 25% CONTINGENCY	= $279
TOTAL BRIDGE COST	= $26,100,000

(1) CURVE DATA
Δ = 36°24'24"
R = 2000'
L = 1270.83'
T = 657.70'

(2) CURVE DATA
Δ = 05°37'51"
R = 3530'
L = 346.92'
T = 173.60'

IMAD ABU-MARKHIEH
DESIGN OVERSIGHT
10/3/16
SIGN OFF DATE

DESIGNED BY	ALEX HARRISON	DATE	Sept 2016
DRAWN BY	PATRICK WALKER	DATE	Sept 2016
CHECKED BY	MARK BRADY	DATE	Sept 2016
APPROVED	TOM IONTA	DATE	Sept 2016

MARK BRADY
PROJECT ENGINEER

PLANNING STUDY
241-91 CONNECTOR OC (NORTH)

BRIDGE NO.	CU 12-240
SCALE: AS NOTED	EA 0K9700

ADVANCE PLANNING STUDY SHEET (ENGLISH) (REV. 2/25/05)

FILE => HOV91-241Conn-A-GP01.dgn

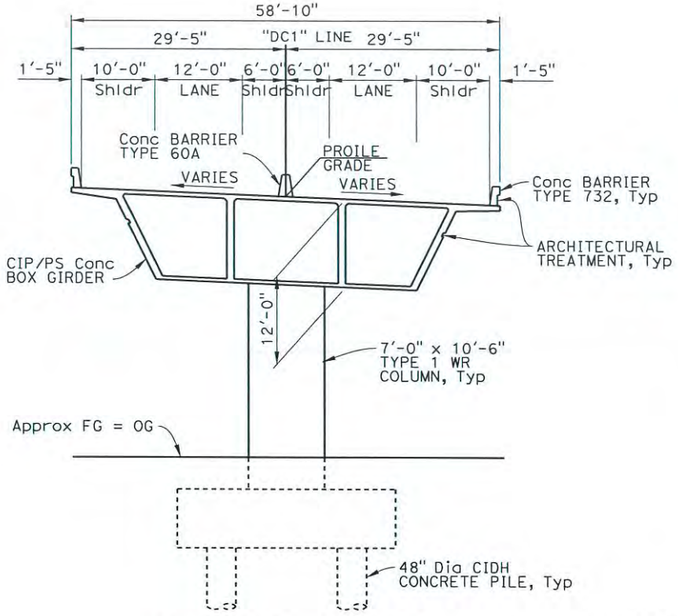
USERNAME => emoechle DATE PLOTTED => 30-SEP-2016 TIME PLOTTED => 13:06

PREPARED FOR THE STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

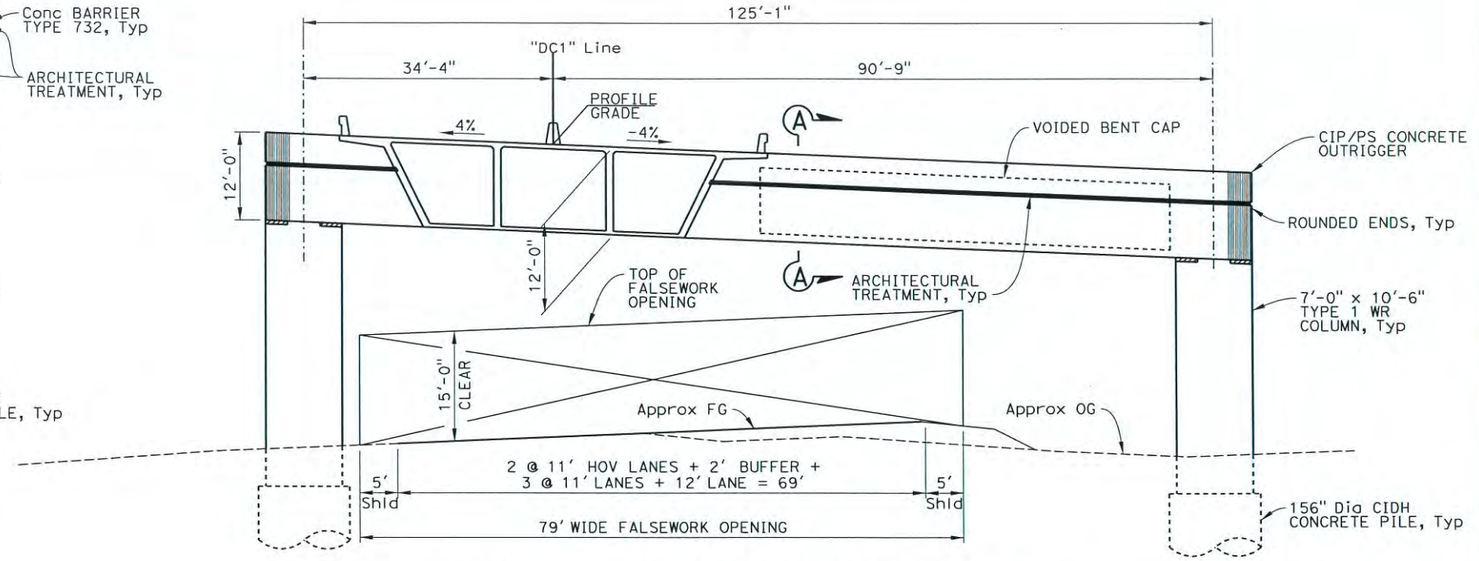
DIST.	COUNTY	ROUTE	POST MILES TOTAL PROJECT
12	Ora	241/91	

TRANSPORTATION CORRIDOR AGENCIES
125 PACIFICA, SUITE 120
IRVINE, CA 92618

CH2M HILL
6 HUTTON CENTRE DR. SUITE 700
SANTA ANA, CA 92707

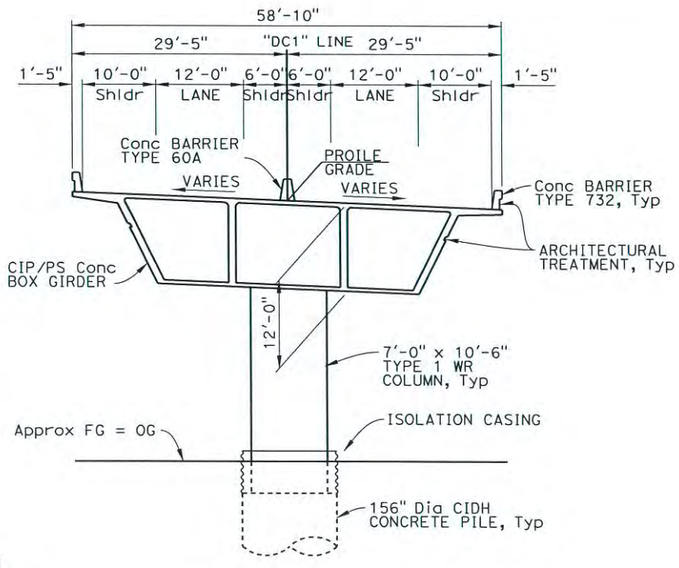


(BENTS 2, 3 & 4)
1" = 10'

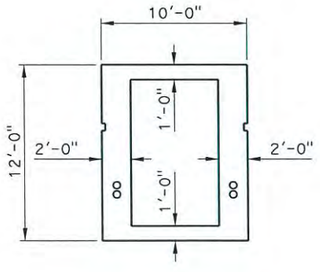


FOR DIMENSIONS AND NOTES NOT SHOWN SEE "TYPICAL SECTION"

SECTION AT OUTRIGGER - BENT 5
1" = 10'



(BENTS 6 & 7)
1" = 10'



SECTION A-A
1" = 10'

IMAD ABU-MARKHIEH
DESIGN OVERSIGHT
10/3/16
SIGN OFF DATE

DESIGNED BY	ALEX HARRISON	DATE	Sept 2016
DRAWN BY	PATRICK WALKER	DATE	Sept 2016
CHECKED BY	MARK BRADY	DATE	Sept 2016
APPROVED	TOM IONTA	DATE	Sept 2016

MARK BRADY
PROJECT ENGINEER

PLANNING STUDY

241-91 CONNECTOR OC (NORTH)

BRIDGE NO.	CU 12-240
SCALE: AS NOTED	EA 0K9700

USERNAME => emoechle DATE PLOTTED => 30-SEP-2016 TIME PLOTTED => 13:04

ADVANCE PLANNING STUDY SHEET (ENGLISH) (REV. 2/25/05)

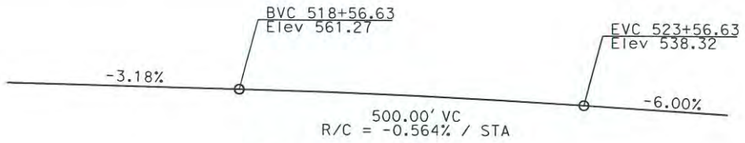
FILE => HOV91-241Conn-A-GP02.dgn

PREPARED FOR THE STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

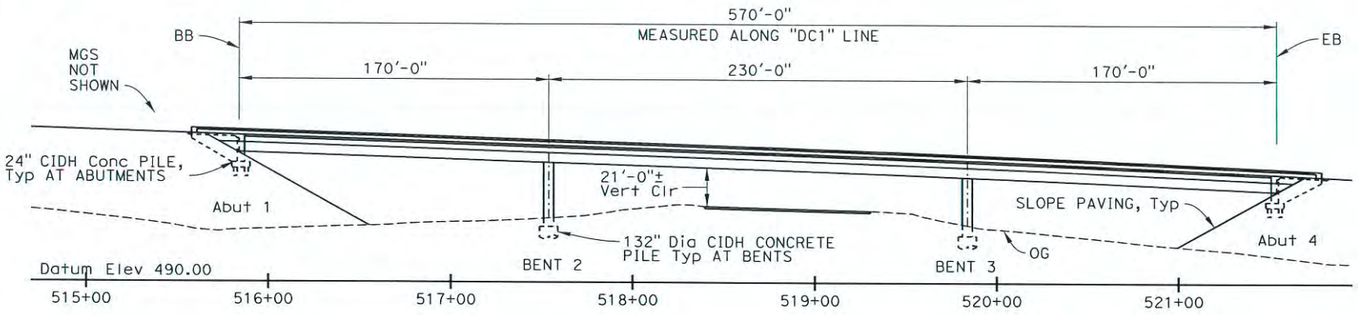
DIST.	COUNTY	ROUTE	POST MILES TOTAL PROJECT
12	Ora	241/91	

TRANSPORTATION CORRIDOR AGENCIES
125 PACIFICA, SUITE 120
IRVINE, CA 92618

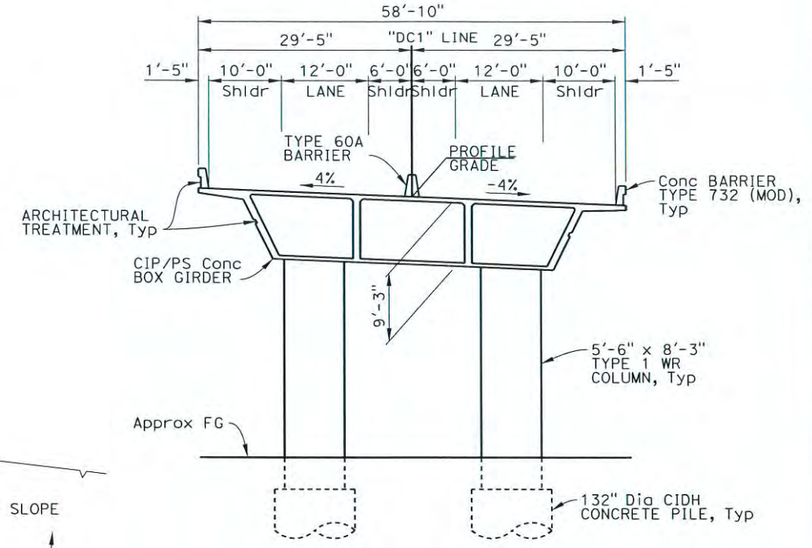
CH2M HILL
6 HUTTON CENTRE DR. SUITE 700
SANTA ANA, CA 92707



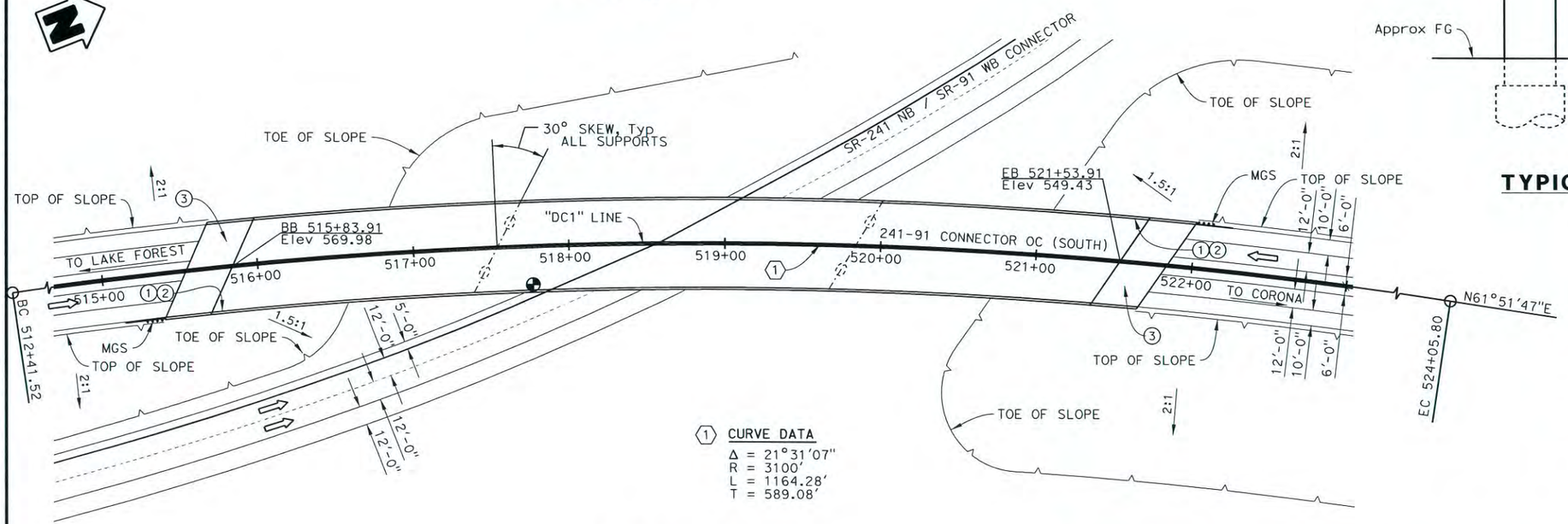
PROFILE GRADE
NOT TO SCALE



ELEVATION
1" = 40'



TYPICAL SECTION
1" = 10'



① CURVE DATA
Δ = 21°31'07"
R = 3100'
L = 1164.28'
T = 589.08'

PLAN
1" = 40'

Legend:
- —— Indicates New Construction
- ① Paint "241-91 CONNECTOR OC (SOUTH)"
- ② Paint Bridge Number & Year Constructed
- ③ Structure Approach Type N(30S)
- ◒ Denotes Point of Minimum Vertical Clearance

DATE OF ESTIMATE	NOVEMBER 2015
BRIDGE REMOVAL	= NONE
STRUCTURE DEPTH	= 9'-3"
LENGTH	= 570'-0"
WIDTH	= 58'-10"
AREA	= 33,535 SF
COST/FT^2 INCLUDING 10% MOBILIZATION & 25% CONTINGENCY	= $312
TOTAL COST	= $10,450,000

IMAD ABU-MARKHIEH
DESIGN OVERSIGHT
SIGN OFF DATE 10/3/16

DESIGNED BY	MOHAMMED ATIQULLAH	DATE	May 2014
DRAWN BY	PATRICK WALKER	DATE	Nov 2015
CHECKED BY	MARK BRADY	DATE	Nov 2015
APPROVED	TOM IONTA	DATE	Nov 2015

MARK BRADY
PROJECT ENGINEER

PLANNING STUDY
241-91 CONNECTOR OC (SOUTH)

BRIDGE NO. TBD	CU 12-240
SCALE: AS NOTED	EA 0K9700

ADVANCE PLANNING STUDY SHEET (ENGLISH) (REV. 2/25/05)

FILE => HOVoverNW-A-GP01.dgn

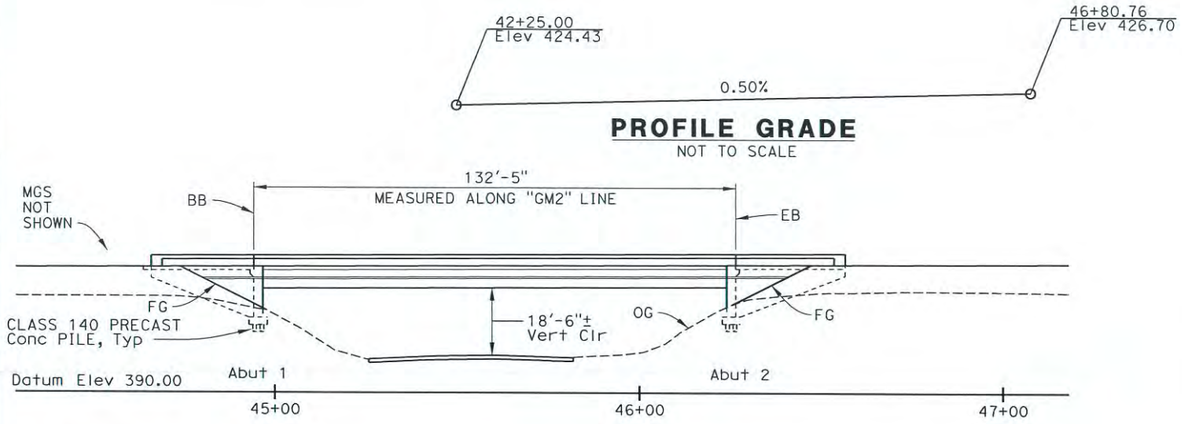
DATE PLOTTED => 13-NOV-2015 TIME PLOTTED => 16:29
USERNAME => pwalker

PREPARED FOR THE STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

DIST.	COUNTY	ROUTE	POST MILES TOTAL PROJECT
12	Ora	91	

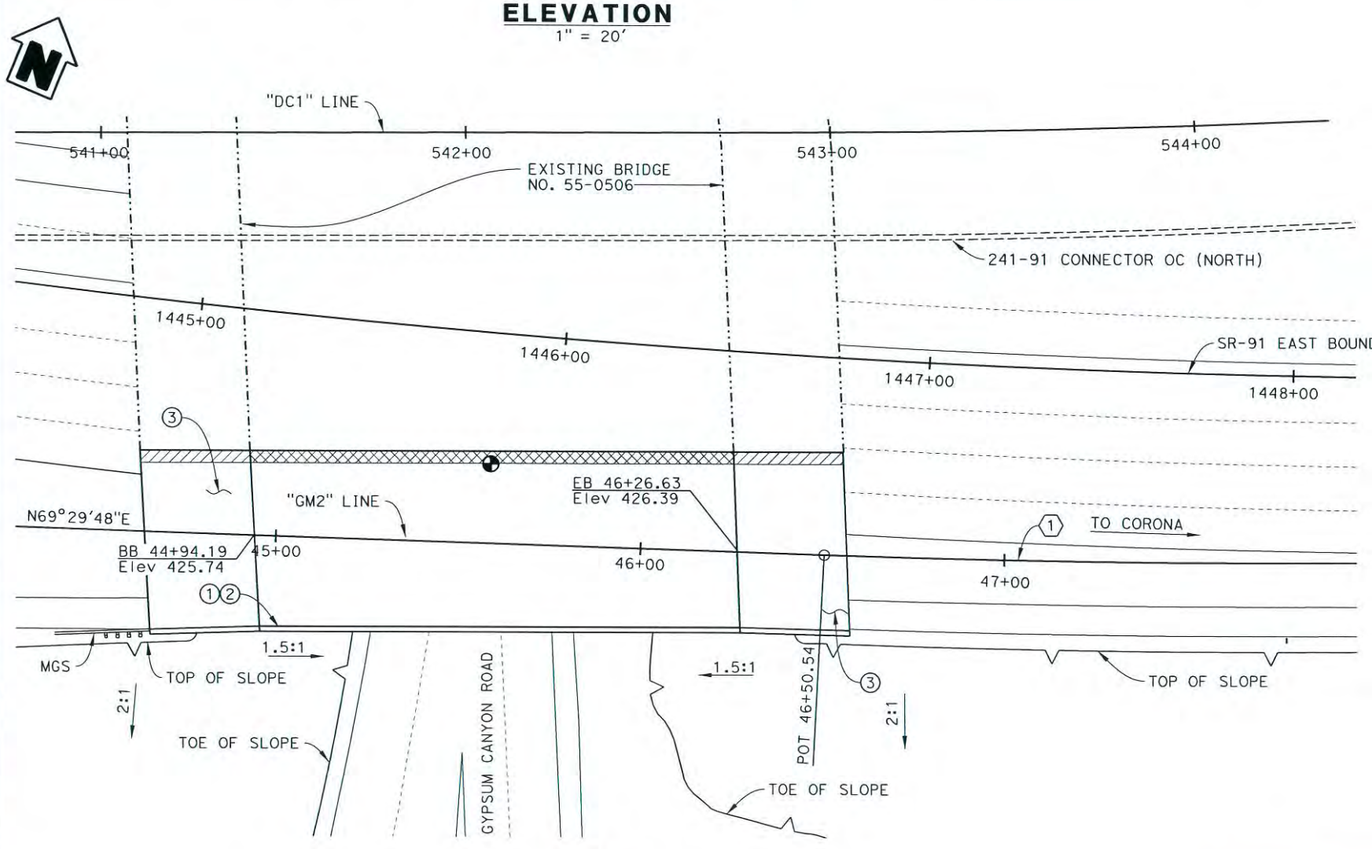
TRANSPORTATION CORRIDOR AGENCIES
125 PACIFICA, SUITE 120
IRVINE, CA 92618

CH2M HILL
6 HUTTON CENTRE DR. SUITE 700
SANTA ANA, CA 92707



PROFILE GRADE
NOT TO SCALE

ELEVATION
1" = 20'

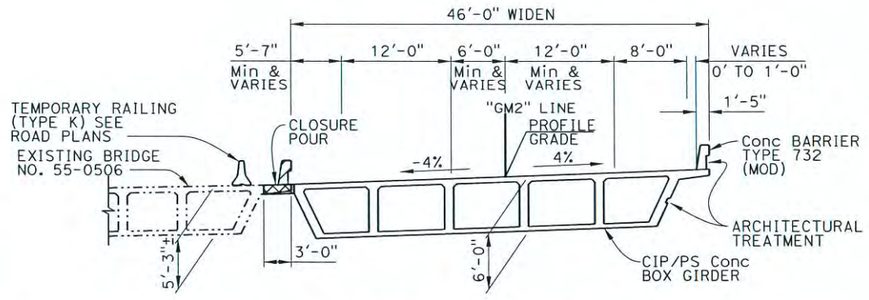


PLAN
1" = 20'

1 CURVE DATA
Δ = 04°29'45"
R = 3827.85'
L = 300.37'
T = 150.26'

LEGEND:

- Bridge Removal (Portion)
- Closure Pour
- Indicates New Construction
- Indicates Existing Structure
- (1) Paint "GYPSUM CANYON ROAD UC"
- (2) Paint Bridge Number & Year Constructed
- (3) Structure Approach Type N(30S)
- Denotes Point of Minimum Vertical Clearance



TYPICAL SECTION
1/8" = 1'-0"

DATE OF ESTIMATE	NOVEMBER 2015
BRIDGE REMOVAL	= $10,000
STRUCTURE DEPTH	= 6'-0"
LENGTH	= 132'-5"
WIDTH	= 46'-0"
AREA	= 6,091 SQ FT
COST/FT^2 INCLUDING 10% MOBILIZATION & 25% CONTINGENCY	= $ 273 **
TOTAL COST	= $ 1,695,000

** Does not include Bridge Removal Costs

IMAD ABU-MARKHIEH
DESIGN OVERSIGHT
10/3/16
SIGN OFF DATE

DESIGNED BY	ANDRE ISSA	DATE	July 2014
DRAWN BY	PATRICK WALKER	DATE	Nov 2015
CHECKED BY	MARK BRADY	DATE	Nov 2015
APPROVED	TOM IONTA	DATE	Nov 2015

MARK BRADY
PROJECT ENGINEER

PLANNING STUDY
GYPSUM CANYON ROAD UC (WIDEN)

BRIDGE NO. 55-0506	CU 12-240
SCALE: AS NOTED	EA 0K9700

USERNAME => Pwalker DATE PLOTTED => 17-NOV-2015 TIME PLOTTED => 16:03

ADVANCE PLANNING STUDY SHEET (ENGLISH) (REV. 2/25/05)

FILE => 55-506Lwiden-A-GP01.dgn

12-Ora-241 PM 36.1/39.1
12-Ora-91 PM 14.7/18.9
08-Riv-91 PM 0.0/1.5

Attachment I

Existing Utility Plans

NOTES:

1. THE EXISTENCE AND LOCATION OF ANY UNDERGROUND UTILITY PIPES OR STRUCTURES SHOWN ON THESE PLANS HAVE BEEN OBTAINED BY A SEARCH OF THE AVAILABLE RECORDS.

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

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12, 8	Ora, Riv	241, 91, 91	36.1/39.1, 14.7/18.9 0.0/1.5		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

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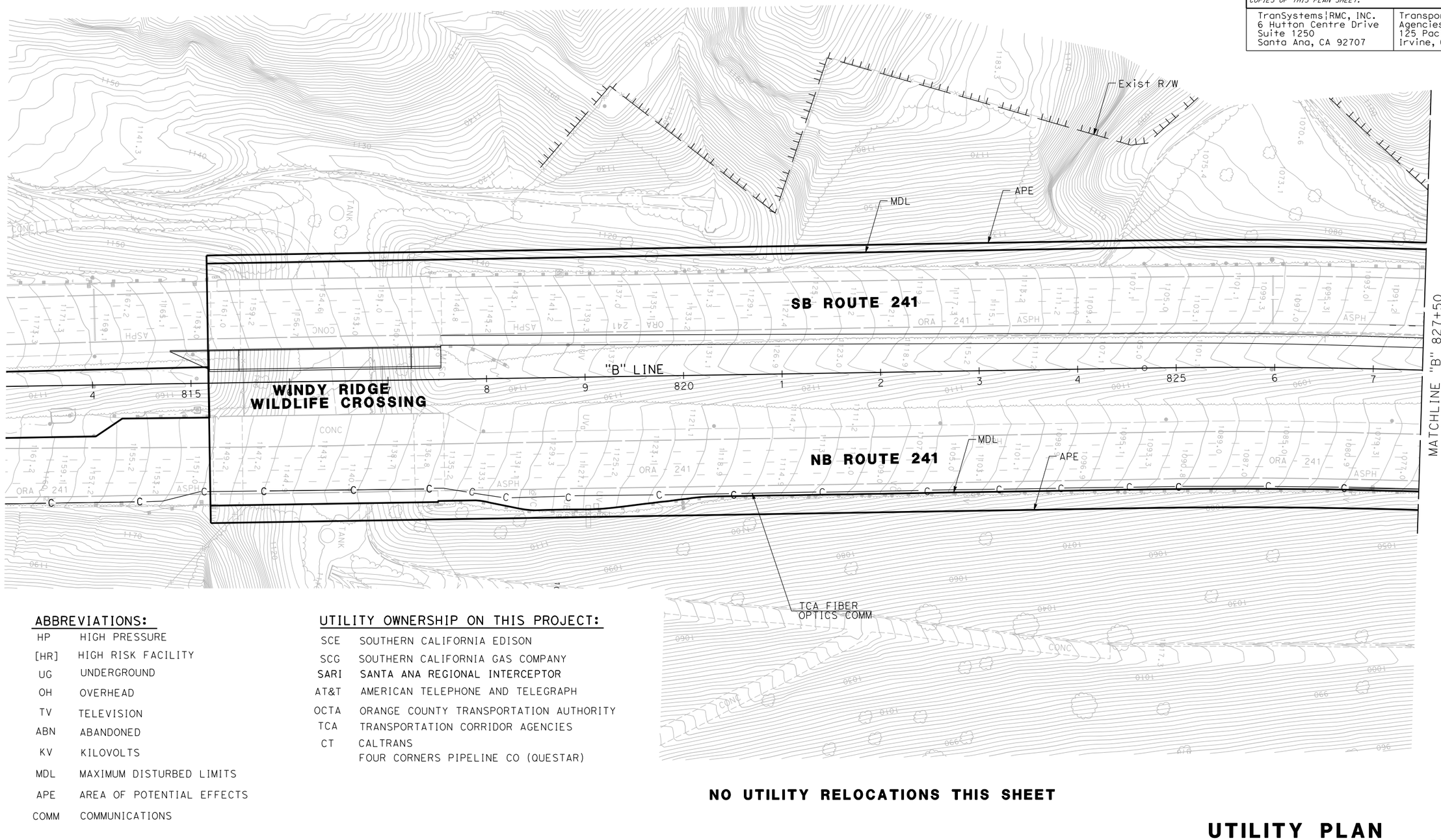

ABBREVIATIONS:

HP	HIGH PRESSURE
[HR]	HIGH RISK FACILITY
UG	UNDERGROUND
OH	OVERHEAD
TV	TELEVISION
ABN	ABANDONED
KV	KILOVOLTS
MDL	MAXIMUM DISTURBED LIMITS
APE	AREA OF POTENTIAL EFFECTS
COMM	COMMUNICATIONS

UTILITY OWNERSHIP ON THIS PROJECT:

SCE	SOUTHERN CALIFORNIA EDISON
SCG	SOUTHERN CALIFORNIA GAS COMPANY
SARI	SANTA ANA REGIONAL INTERCEPTOR
AT&T	AMERICAN TELEPHONE AND TELEGRAPH
OCTA	ORANGE COUNTY TRANSPORTATION AUTHORITY
TCA	TRANSPORTATION CORRIDOR AGENCIES
CT	CALTRANS
	FOUR CORNERS PIPELINE CO (QUESTAR)

NO UTILITY RELOCATIONS THIS SHEET

UTILITY PLAN

SCALE 1" = 50'

U-1

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Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12, 8	Ora, Riv	241, 91, 91	36.1/39.1, 14.7/18.9 0.0/1.5		

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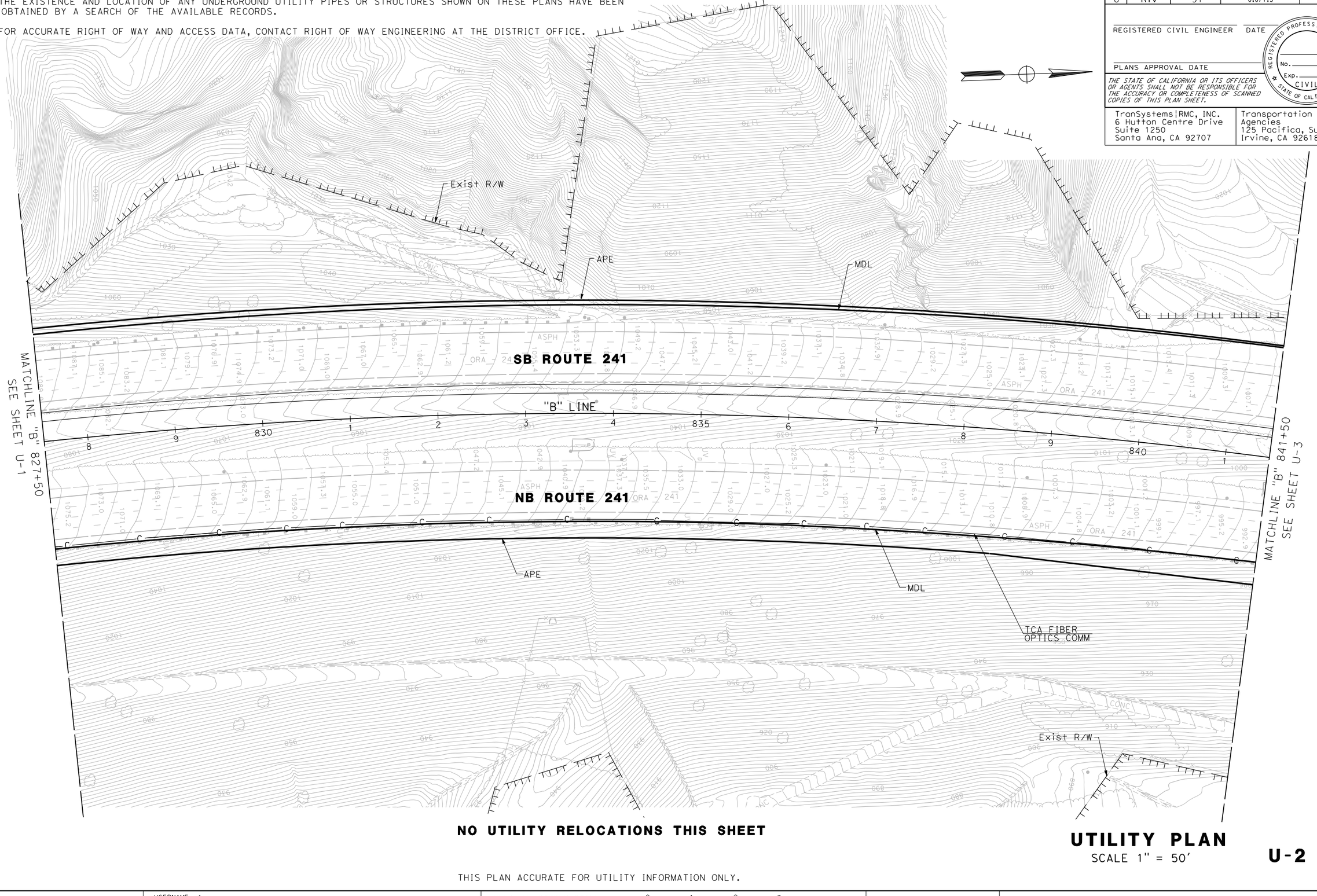

NO UTILITY RELOCATIONS THIS SHEET

UTILITY PLAN

SCALE 1" = 50'

U-2

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U-3

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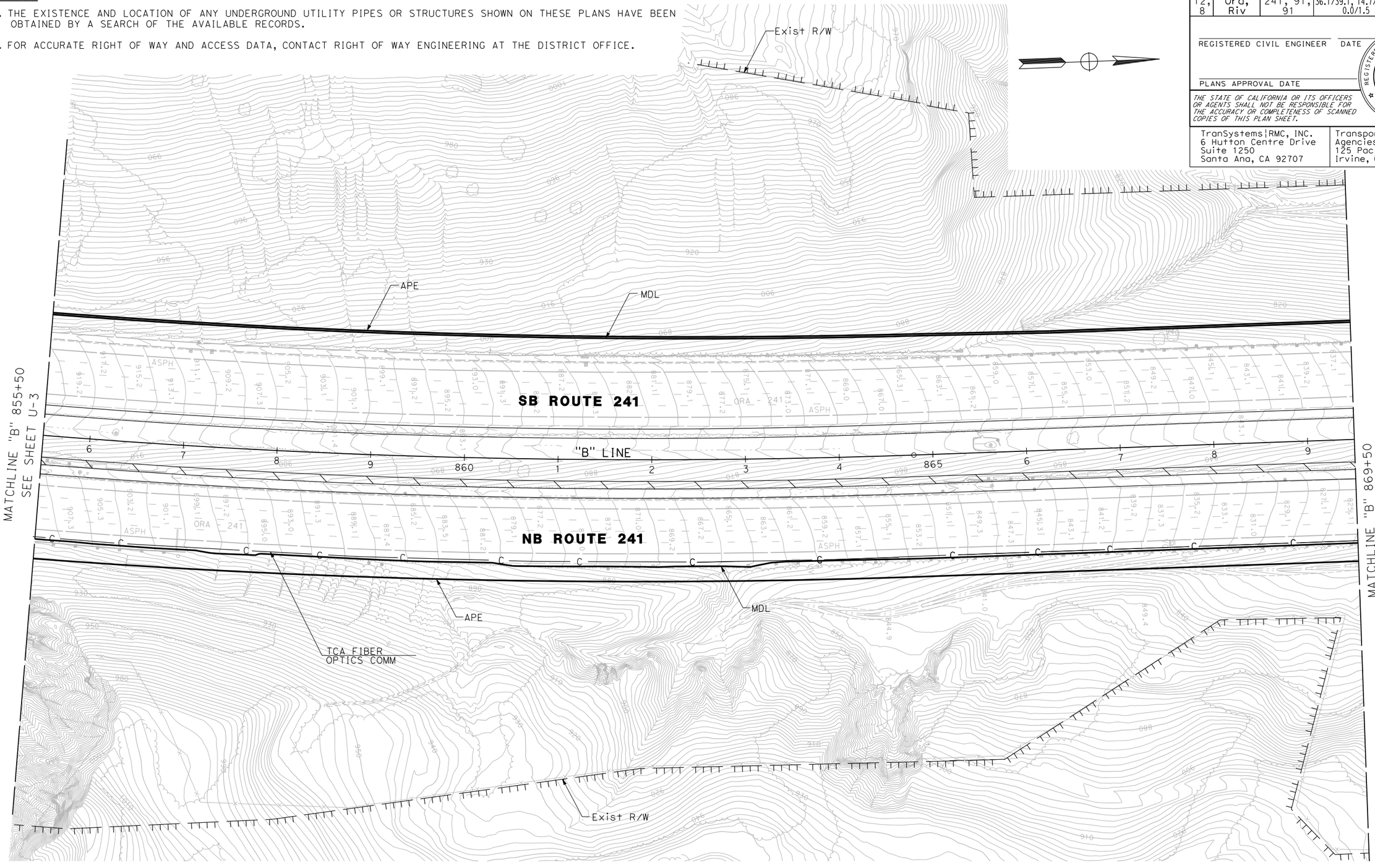

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UTILITY PLAN

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U-4

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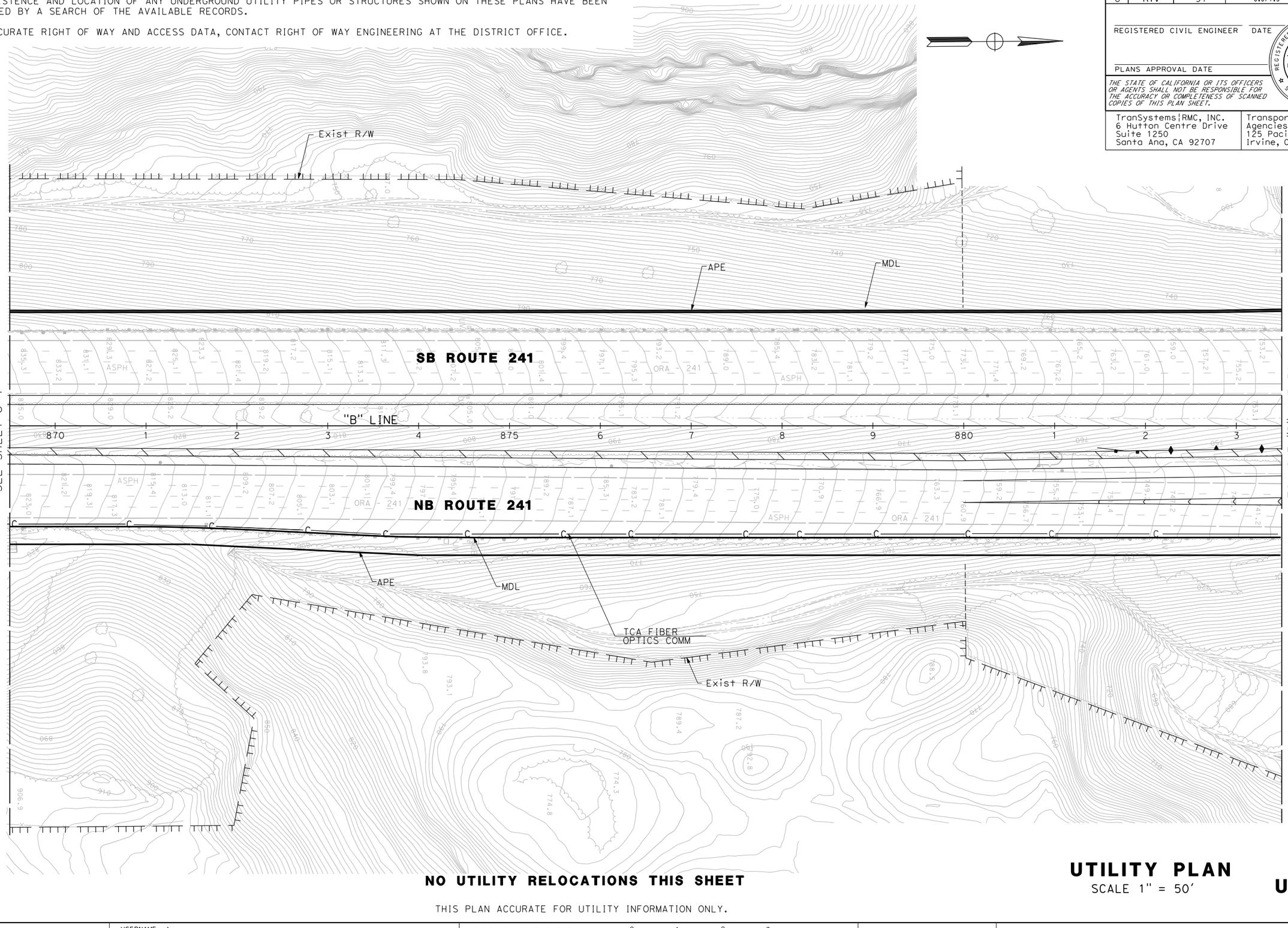

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UTILITY PLAN

SCALE 1" = 50'

U-5

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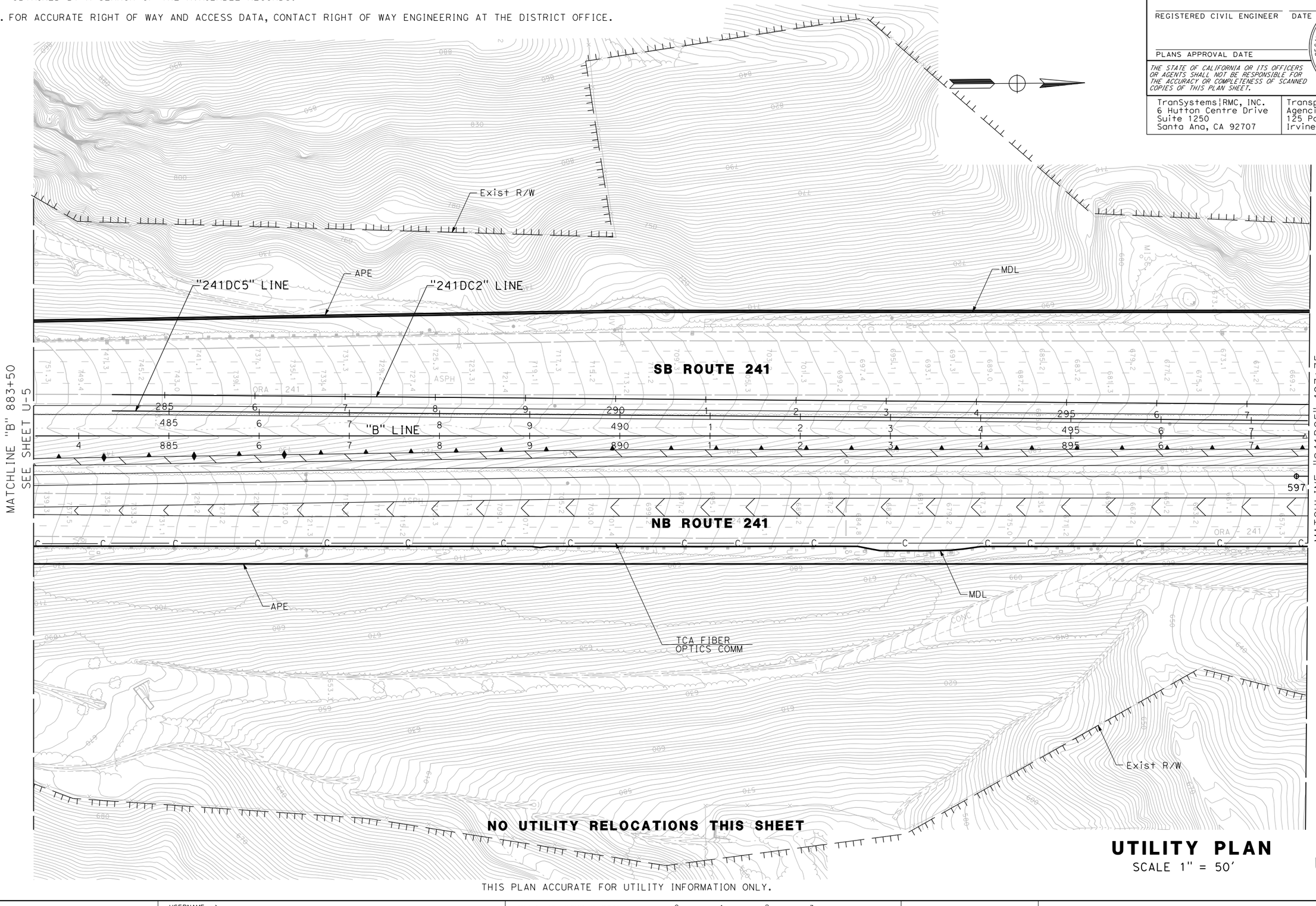

NO UTILITY RELOCATIONS THIS SHEET

UTILITY PLAN

SCALE 1" = 50'

U-6

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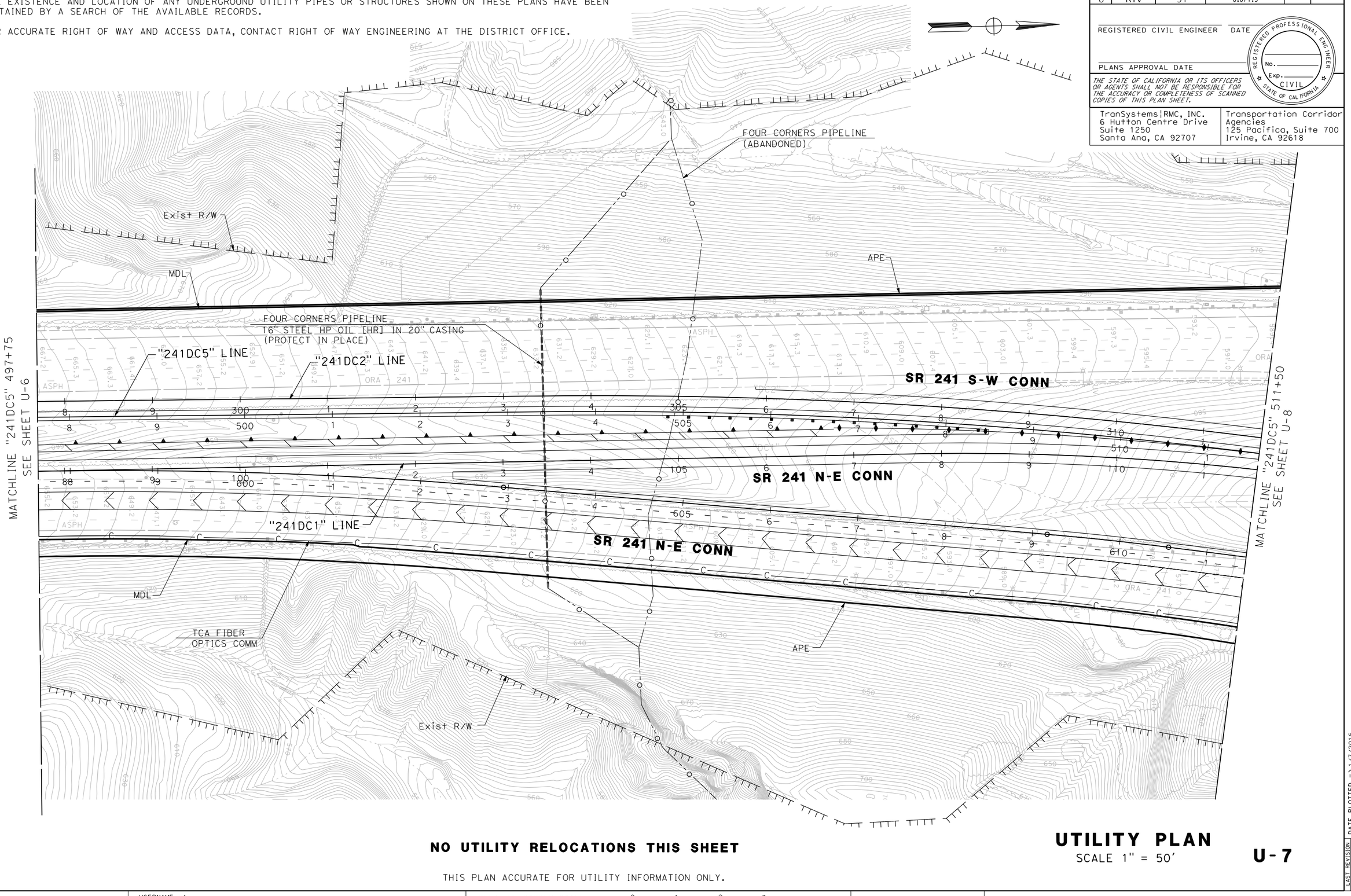

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UTILITY PLAN

SCALE 1" = 50'

U-7

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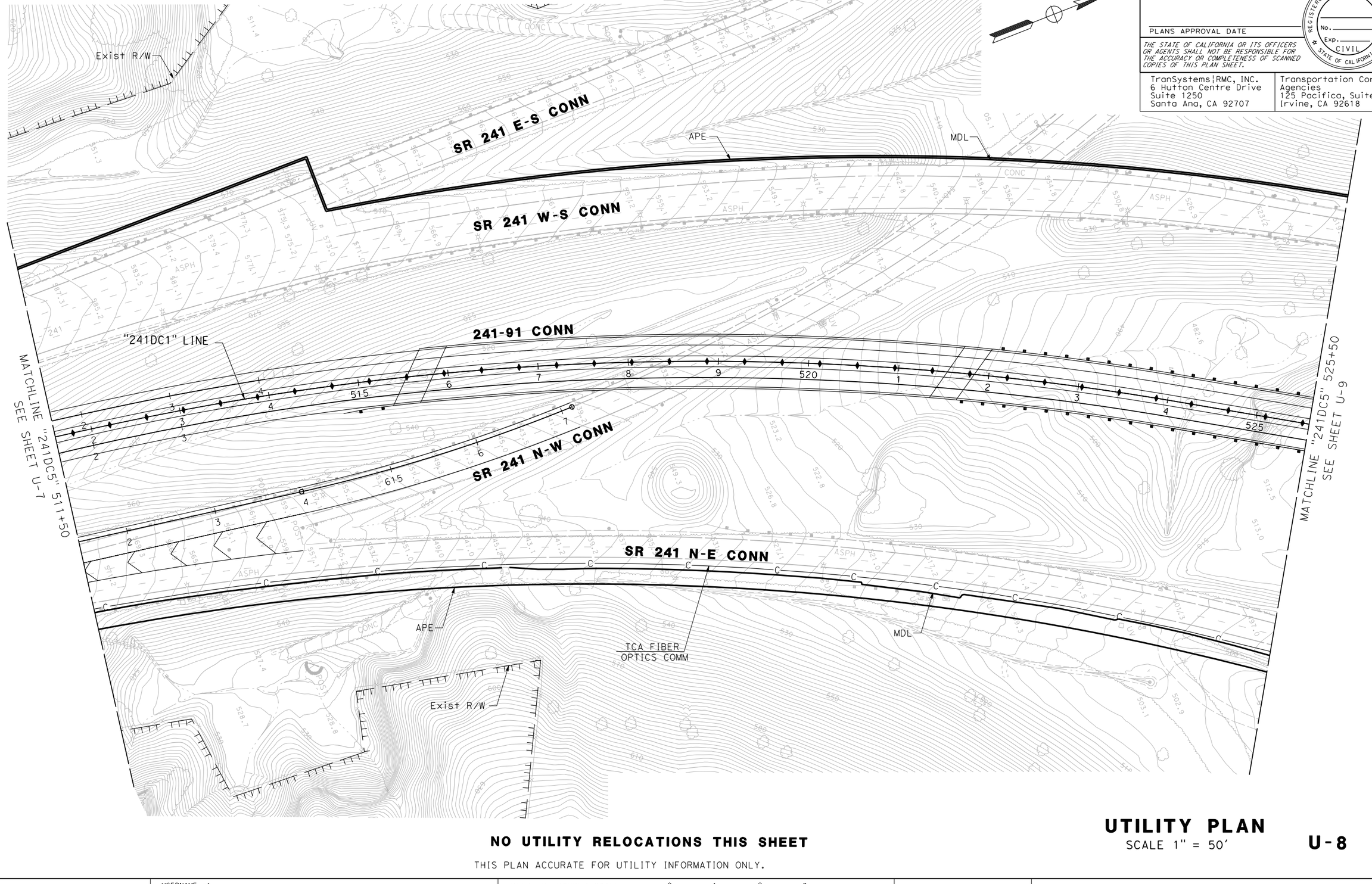

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UTILITY PLAN

SCALE 1" = 50'

U-8

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MATCHLINE "GM1" 34+50
SEE SHEET U-17

MATCHLINE "EB91" 1435+50
SEE SHEET U-17

APE

MDL

Exist R/W

NEW MH

OCTA/CT FIBER OPTICS COMM

NEW MH
CONNECT TO EXIST

STEEL CASING

REMOVE MH

RELOCATE OCTA/CT
FIBER OPTICS COMM

FROM

TO

"241DC5" LINE

241-91 CONN

WB ROUTE 91

EB ROUTE 91

"EB 91" LINE

"WB91" LINE

SCE UG

MATCHLINE "EB91" 1440+50
SEE SHEET U-10

MATCHLINE "241DC5" 525+50
SEE SHEET U-8

SANTA ANA CANYON Rd

SCE 12 KV UG
AT&T 4-4" DU UG
IN JOINT TRENCH

SR 241 N-E CONN

EB-OFF

MATCHLINE "241DC5" 536+75
SEE SHEET U-10

MATCHLINE "GM1" 42+50
SEE SHEET U-10

APE

MDL

TCA FIBER
OPTICS COMM

Exist R/W

Exist R/W

UTILITY PLAN

SCALE 1" = 50'

U-9

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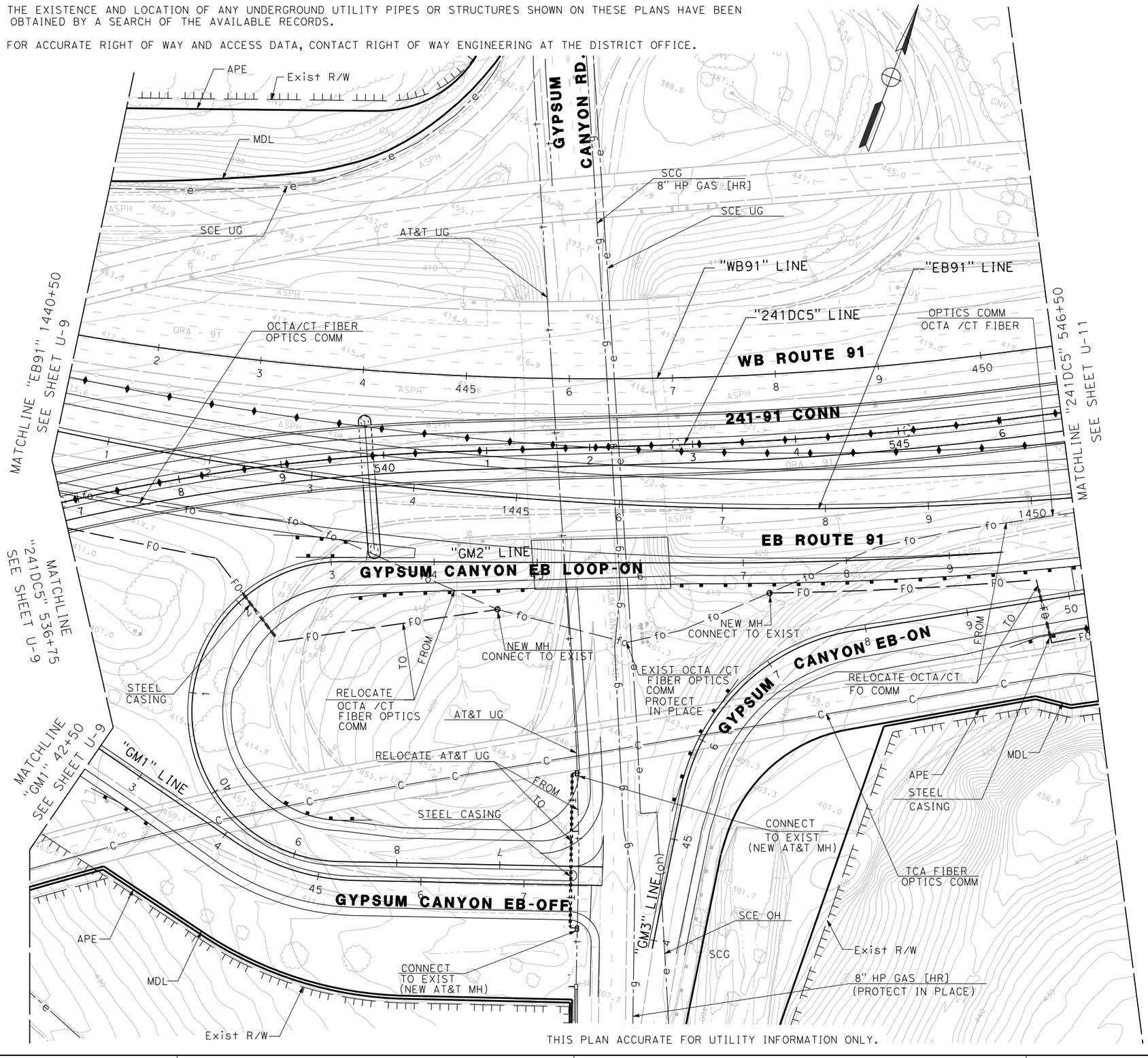

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UTILITY PLAN

SCALE 1" = 50'

U-10

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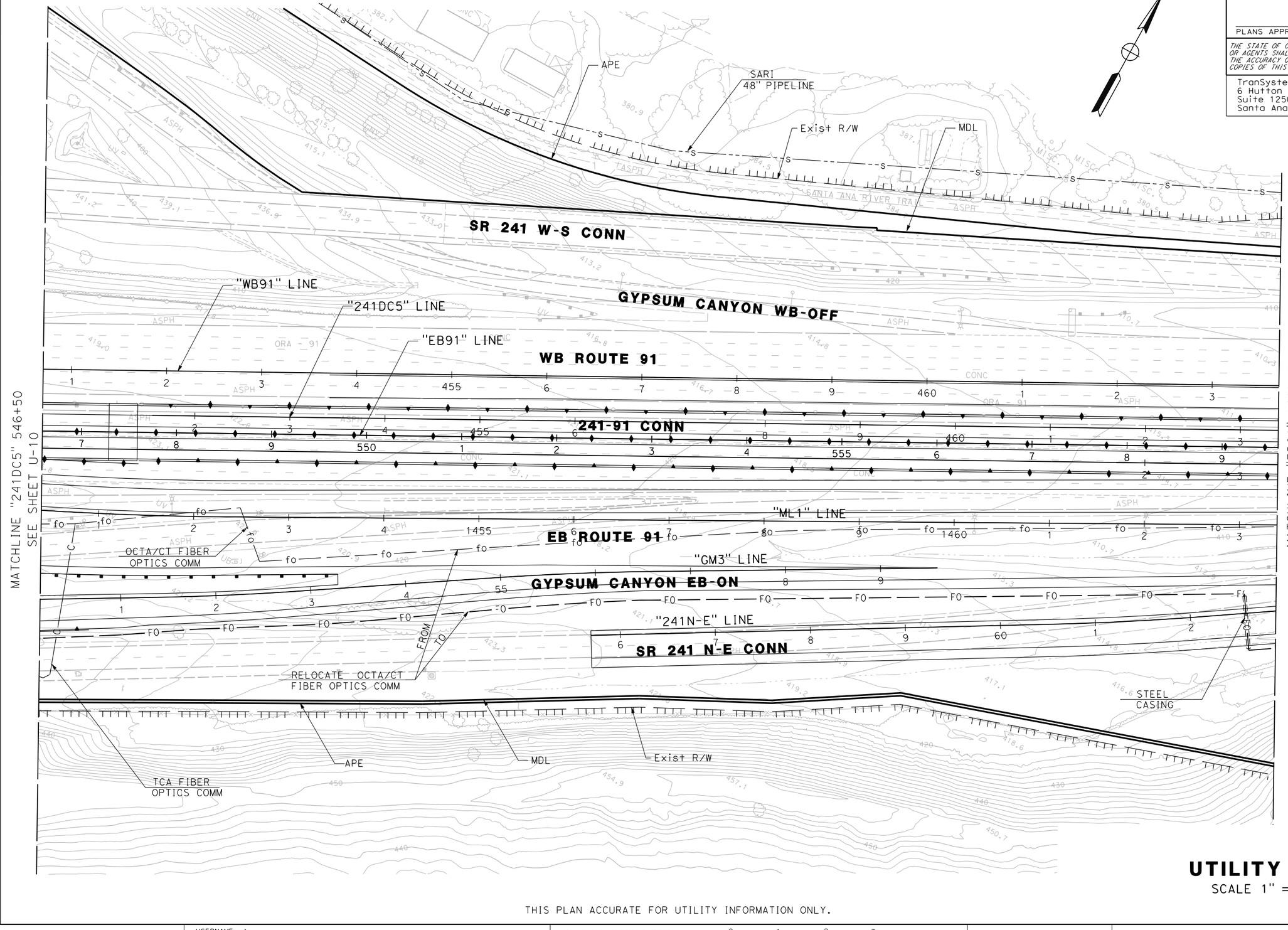

UTILITY PLAN

SCALE 1" = 50'

U-11

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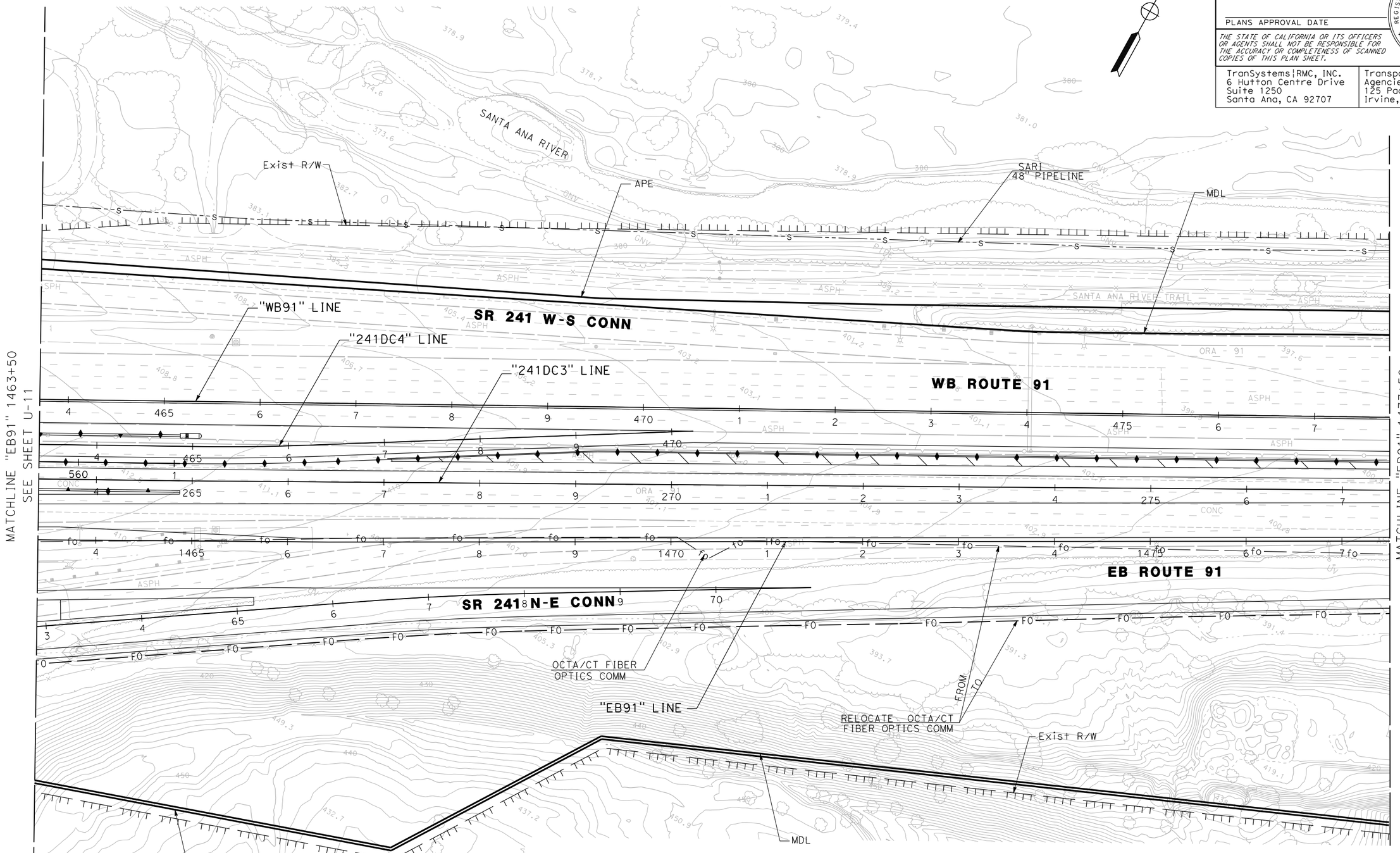

UTILITY PLAN

SCALE 1" = 50'

U-12

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

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12, 8	Ora, Riv	241, 91, 91	36.1/39.1, 14.7/18.9 0.0/1.5		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

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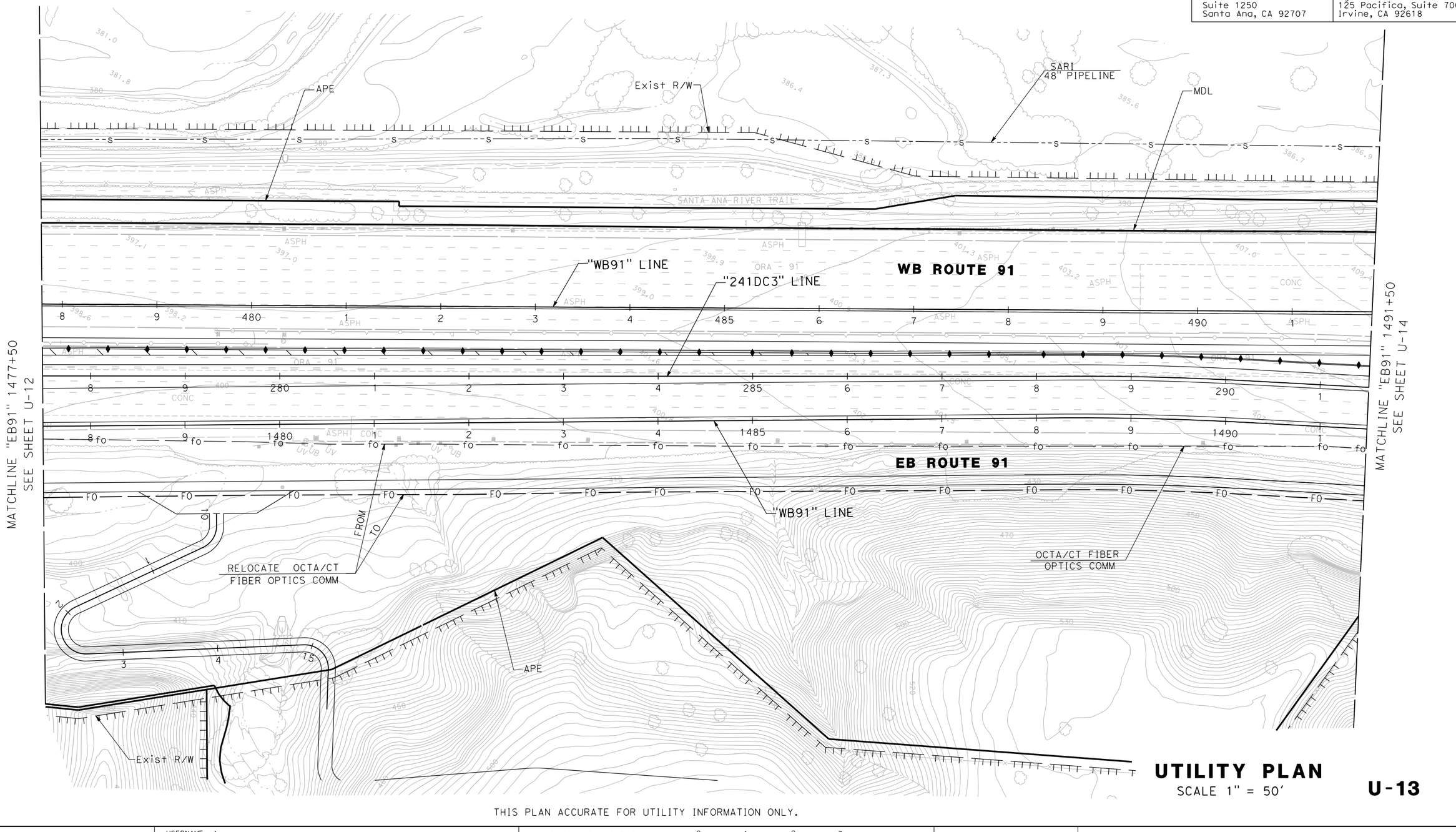

UTILITY PLAN

SCALE 1" = 50'

U-13

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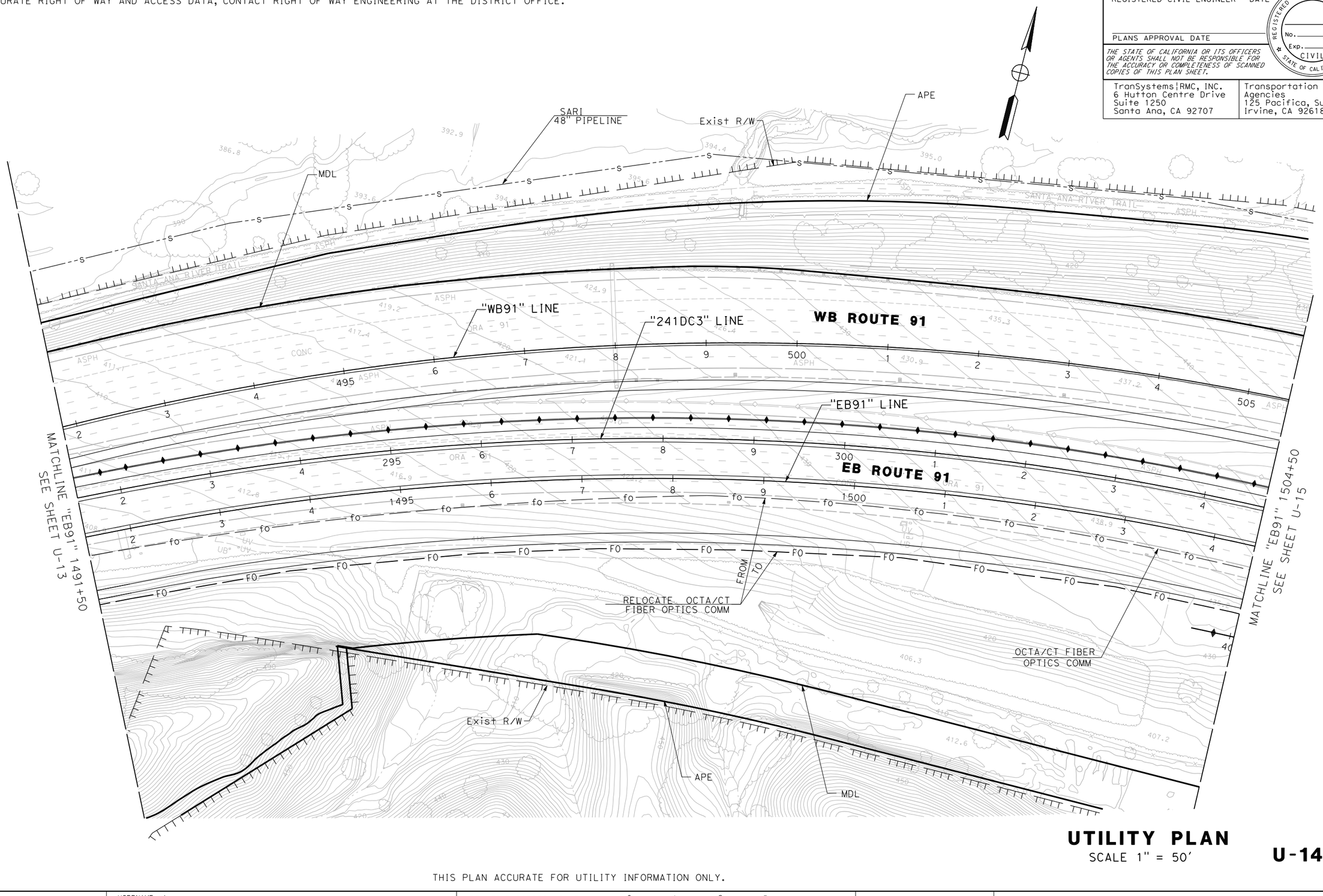

UTILITY PLAN

SCALE 1" = 50'

U-14

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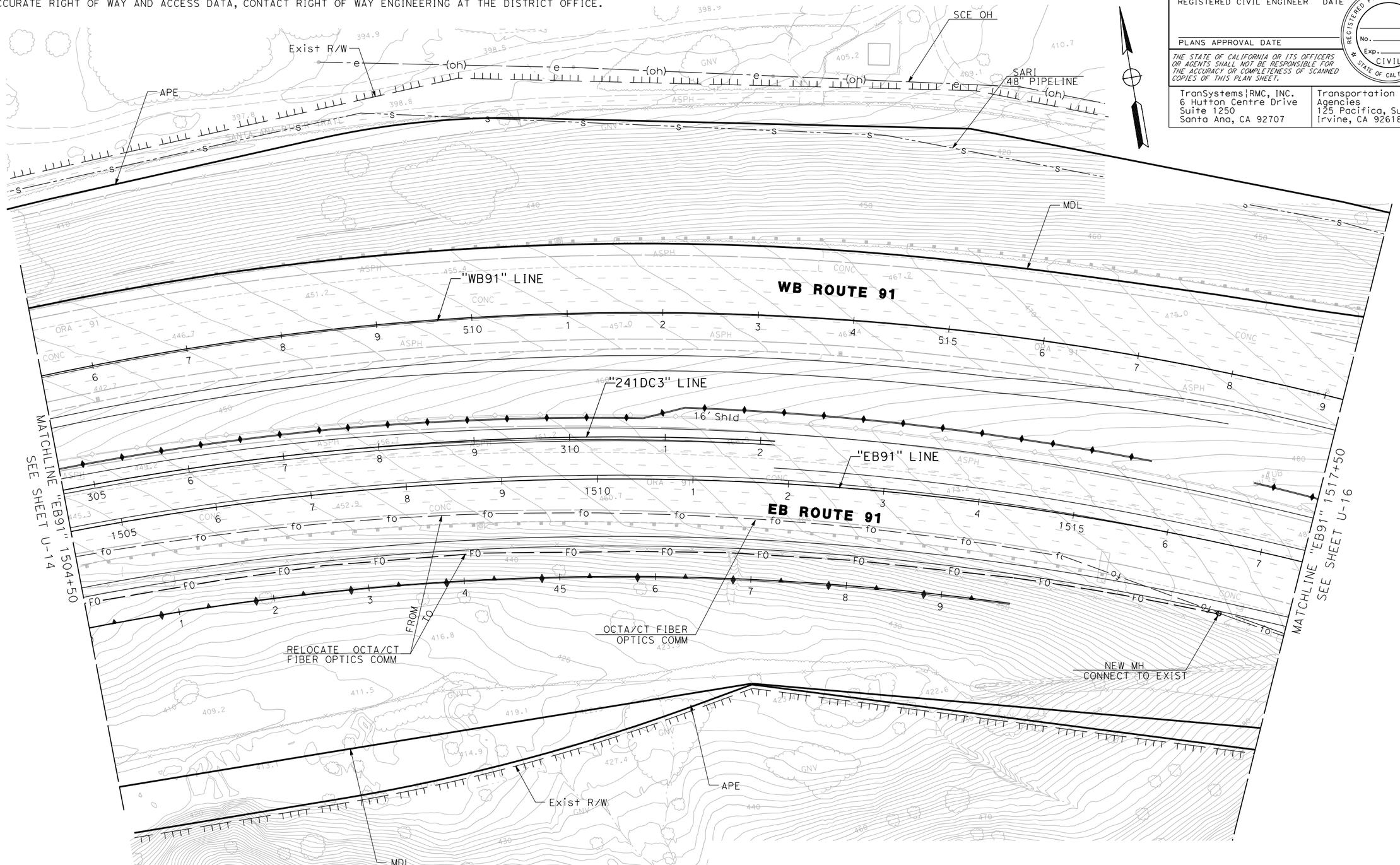

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
12, 8	Ora, Riv	241, 91, 91	36.1/39.1, 14.7/18.9 0.0/1.5		

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PLANS APPROVAL DATE

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UTILITY PLAN

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PLANS APPROVAL DATE

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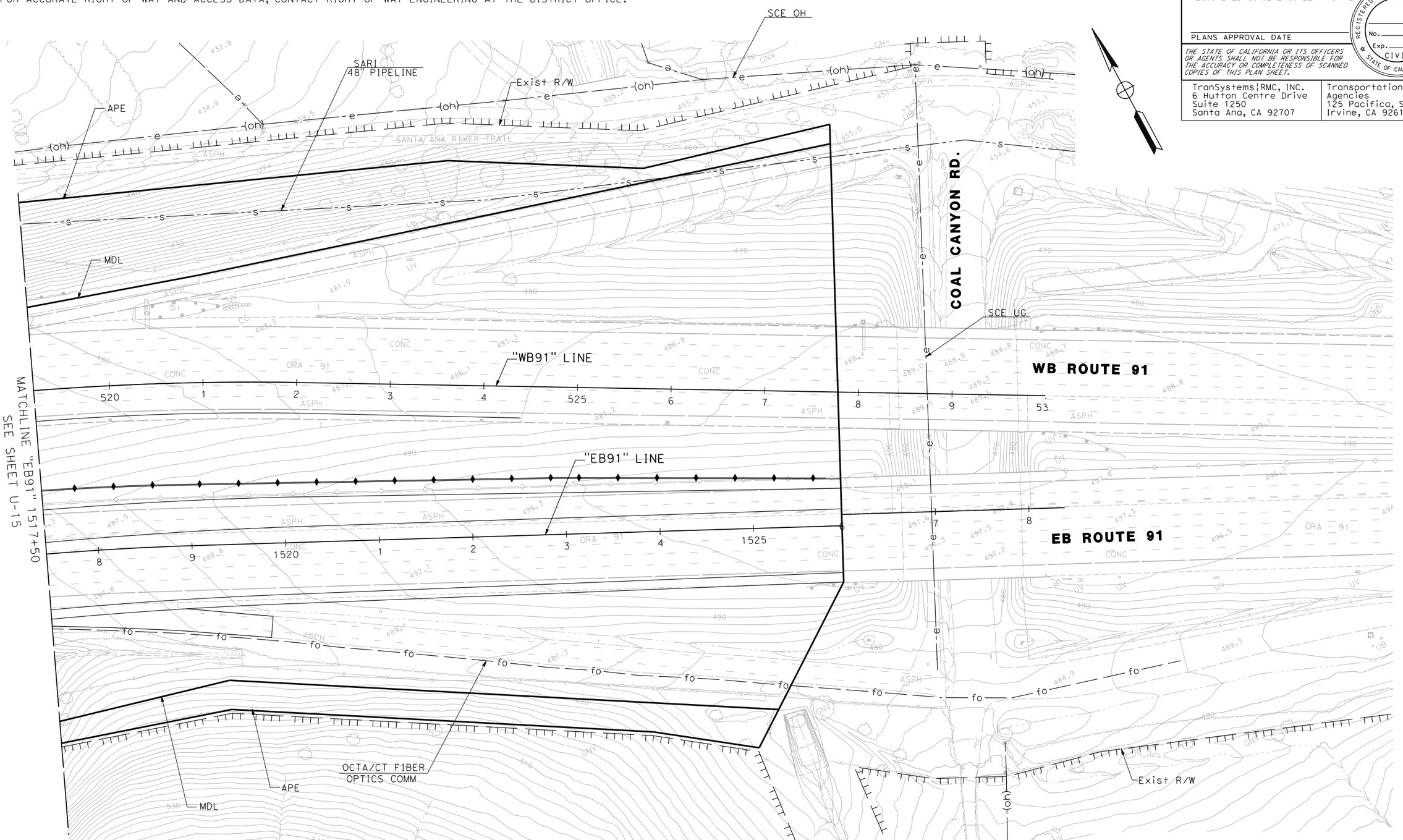

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U-16

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PROJECT NUMBER & PHASE 1200020097

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PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

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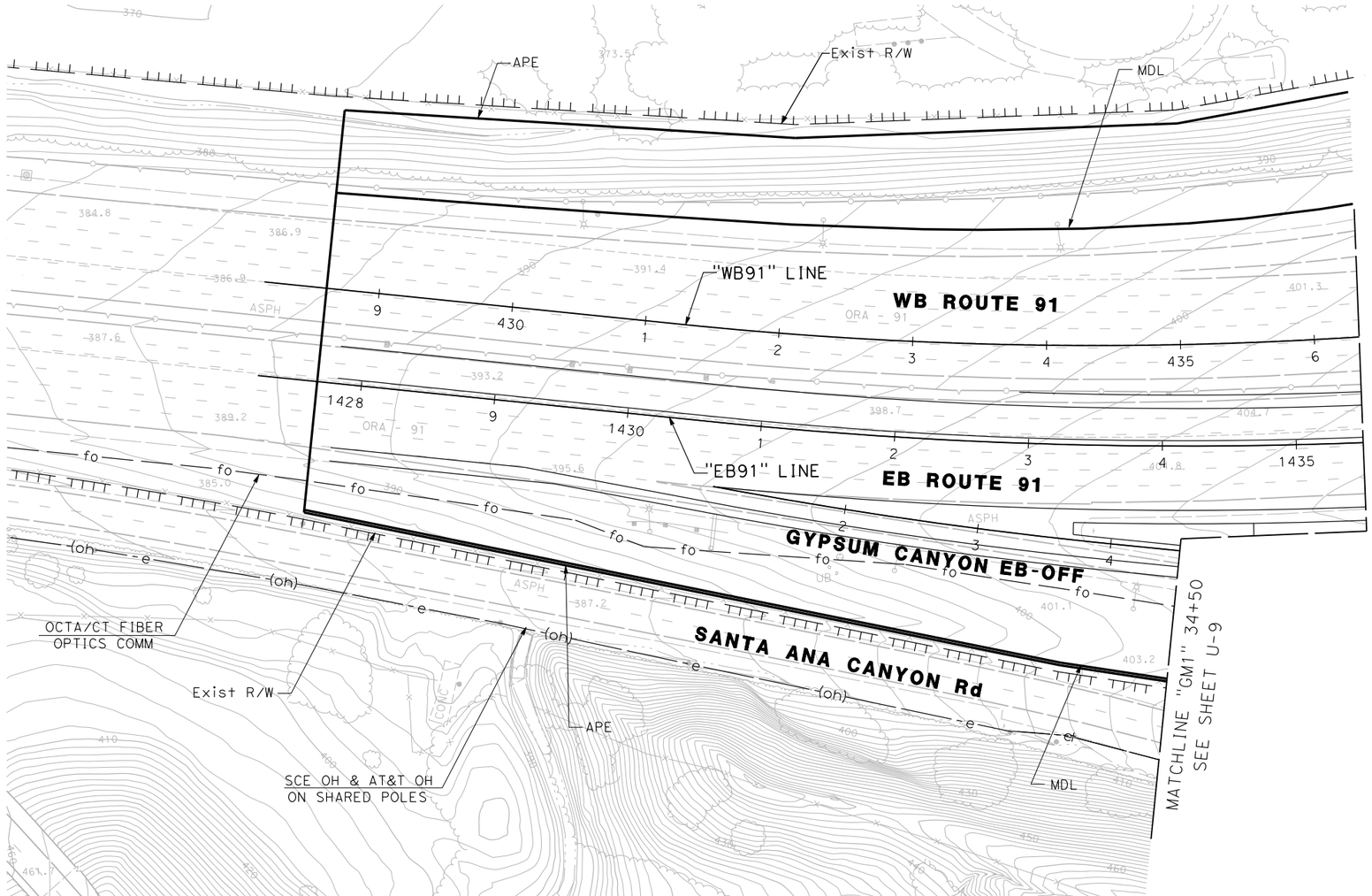

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UTILITY PLAN

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Attachment J

Risk Register

LEVEL 3 - RISK REGISTER	Project Name:	SR-241/SR-91 Express Lanes Connector Project	DIST- EA	12-0K9700	Project Manager	Leo Chen												
			Risk Assessment															
Risk Identification						Probability (%)		Cost Impact ($)				Time Impact (days)				Rationale	Risk Response			
Status	ID #	Category	Title	Risk Statement	Current status/assumptions	Low	High	Low	Most likely	High	Probable	Low	Most likely	High	Probable		Strategy	Response Actions	Risk Owner	Updated
Active	1	Construction	Buried Objects	Unanticipated buried man-made objects or paleontological resources uncovered during construction require removal and disposal resulting in additional costs.		10	40	$ 200,000		$ 400,000	$ 75,000	30		90	15		Accept	Include a Supplemental Work item to cover this risk.	Construction Manager	11/2/2015
Active	2	Construction	Asbestos	Hazardous materials encountered during construction will require an on-site storage area and potential additional costs to dispose.	The presence or absence of asbestos in the Gypsum Canyon Road Undercrossing will be confirmed during Final Design.	10	40	$ 100,000		$ 300,000	$ 50,000	30		90	15		Accept	Testing will be conducted during final design.	Project Manage/ Construction Manager	2/15/2016
Active	3	Construction	ADL	ADL materials encountered during construction will require an on-site storage area and potential additional costs to dispose.	The presence of ADL will be confirmed during Final Design.	10	20	$ 100,000		$ 200,000	$ 23,000	30		90	9		Accept	Testing will be conducted during final design.	Project Manager	2/15/2016
Active	4	Division of Engineering Services	Permits	A change to the requirements for permits may cause resubmittal of new permits or additional consultation with regulatory agencies.		10	30	$ 100,000		$ 300,000	$ 40,000	60		180	24		Accept		Project Manager	11/2/2015
Active	5	Division of Engineering Services	Aesthetic Plan	Proposed aesthetics will require additional approval by Caltrans and City.		10	30	$ 100,000		$ 300,000	$ 40,000	90		180	27		Mitigate	Closely coordinate with Caltrans	Project Manager	11/2/2015
Active	6	Design	Design Standards	New or revised design standard		20	50	$ 200,000		$ 500,000	$ 123,000	30		180	37		Accept		Design Manager/ Construction Manager	11/2/2015
Active	7	Design and Construction	Utilities	Unknown utilities may cause delay		10	30	$ 100,000		$ 300,000	$ 40,000	30		90	12		Accept		Design Manager/ Construction Manager	11/2/2015
Active	8	Design	Design Coordination	Caltrans review process outcomes may delay project		20	40	$ 200,000		$ 400,000	$ 90,000	60		180	36		Accept		Design Manager	11/2/2015
Active	9	Design	Project Coordination	Impacts from other projects may result in redesign		10	20	$ 100,000		$ 200,000	$ 23,000	30		90	9		Accept		Design Manager	11/2/2015
Active	10	Design	Value Analysis	If VA alternatives are feasible, additional technical documentation and revisions to the ED will be required, which will affect the schedule.		20	50	$ 200,000		$ 500,000	$ 123,000	90		180	47		Accept		Design Manager	11/2/2015
Active	11	Design	Design Exceptions	Approval of design exceptions for nonstandard features may cause impacts to the schedule.		10	40	$ 100,000		$ 400,000	$ 63,000	30		90	15		Mitigate	Seek Caltrans approvals	Project Manager	11/2/2015
Active	12	Design	Connector Outrigger Location	Outrigger location may result in redesign which will impact the project schedule.		10	20	$ 100,000		$ 200,000	$ 23,000	30		90	9		Accept	Coordinate with Caltrans on the future 5th lane addition	Design Manager	12/22/2015
Active	13	Design and Construction	Lack of Structure Specific Geotechnical Data	Future geotech investigation may result in increased foundation cost during design and construction	A PGR is being prepared during PA/ED.	0	20	$ -		$ 500,000	$ 25,000	10		30	2		Accept		Project Manager/ Design Manager	2/15/2016
Active	14	Environmental	Hazardous Materials	Unknown materials that might require Phase II analysis (Gypsum Canyon Bridge). The Hazardous Material Initial Site Assessment (ISA) identifies Asbestos and ADL. The level of hazardous material needs to be evaluated during PS&E and can affect the design and schedule.	Phase II analysis will be needed for Asbestos and ADL	10	20	$ 200,000		$ 400,000	$ 45,000	60		180	18		Accept	Conduct hazerdous material investigation during final design.	Project Manager	11/2/2015
Active	15	Environmental	Biological Opinion	The Section 7 consultation process could be delayed if a new Biological Opinion is required, which could affect the schedule.		10	40	$ 100,000		$ 400,000	$ 63,000	30		90	15		Accept		Project Manager	11/2/2015
Active	16	Environmental	Gypsum Canyon Preserve	County not agreeing in a timely manner to use of part of Gypsum Canyon Preserve for the project.		0	20	$ -		$ 200,000	$ 10,000	60		180	12		Accept		Project Manager	11/2/2015
Active	17	Environmental	Nesting birds	Nesting birds, protected from harassment under the Migratory Bird Treaty Act, may delay construction during the nesting season.	Field surveys have been conducted during PA/ED phase, refer to the approved NES report for mitigation measures.	0	20	$ 150,000		$ 500,000	$ 33,000	30		180	11		Mitigate	Perform pre-construction surveys	Project Manager	1/25/2016
Active	18	Environmental	Environmental	Environmental regulations change		10	30	$ 100,000		$ 300,000	$ 40,000	90		180	27		Mitigate	Revise Documentation	Project Manager	11/2/2015
Active	19	Environmental	Section 4(f)	Section 4(f) deminumus approval		10	40	$ 100,000		$ 400,000	$ 63,000	30		90	15		Mitigate	Coordination is needed between TCA and OC Parks.	Project Manager	11/2/2015
Active	20	Environmental	Hazardous Material	New ADL Variance may delay the schedule	A new ADL variance is scheduled to take effect in 2016. The current ADL variance still applies but will need updated once the new ADL variance takes effect. Phase II analysis would be conducted.	20	40	$ 200,000		$ 400,000	$ 90,000	60		180	36		Accept		Project Manager	11/2/2015
Active	21	Environmental	Environmental	Not having an acceptable mitigation package for the resource agencies.		10	30	$ 100,000		$ 300,000	$ 40,000	30		90	12		Accept		Project Manager	11/2/2015
Active	22	Environmental	Bat Nesting	Bats may be roosting prior to construction which will impact the schedule.	Bat surveys will be conducted in June.	20	50	$ 200,000		$ 500,000	$ 123,000	30		90	21		Accept		Project Manager	11/2/2015

LEVEL 3 - RISK REGISTER	Project Name:	SR-241/SR-91 Express Lanes Connector Project	DIST- EA	12-0K9700	Project Manager	Leo Chen													
			Risk Assessment																
Risk Identification						Probability (%)		Cost Impact ($)				Time Impact (days)				Rationale	Risk Response			
Status	ID #	Category	Title	Risk Statement	Current status/assumptions	Low	High	Low	Most likely	High	Probable	Low	Most likely	High	Probable		Strategy	Response Actions	Risk Owner	Updated
Active	23	Organizational	Legal	Threat of litigation		0	20	$ -		$ 200,000	$ 10,000	180		365	27		Mitigate	Conduct public outreach and awareness to public	Project Manager	11/2/2015
Active	24	PM	Project Changes	Changes to the project during design may require additional environmental analysis, which could affect the schedule.		10	40	$ 100,000		$ 400,000	$ 63,000	60		180	30		Mitigate	Minimize changes to the project and finalize during PA/ED	Project Manager	11/2/2015
Active	25	PM	Caltrans HQ Environmental	Caltrans HQ could require revisions to tech studies, which would affect the schedule.		10	40	$ 100,000		$ 400,000	$ 63,000	90		180	34		Accept		Project Manager	11/2/2015
Active	26	PM	Lack of Project Funding	Allocation of funds for the construction of the project.		10	30	$ 100,000		$ 300,000	$ 40,000	90		180	27		Accept	Rescope the project to reduce cost to meet available funds.	Project Manager	11/2/2015
Active	27	PM	Stakeholders	Stakeholders request late changes to the project		10	40	$ 100,000		$ 400,000	$ 63,000	30		90	15		Mitigate	Discuss with stakeholders	Project Manager	11/2/2015
Active	28	PM	Co-Op Agreement	Cooperative Agreement between Caltrans and TCA for tolling of operations during PS&E		10	30	$ 100,000		$ 300,000	$ 40,000	60		180	24		Mitigate	Track progress and coordinate closely with Caltrans	Project Manager	11/2/2015
Active	29	PM	Co-Op Agreement	Cooperative Agreement between TCA and OCTA for tolling of operations during PS&E		10	30	$ 100,000		$ 300,000	$ 40,000	60		180	24		Mitigate	Track progress and coordinate closely with OCTA	Project Manager	11/2/2015
Active	30	PM	FHWA	FHWA approvals of concept of operations		20	50	$ 200,000		$ 500,000	$ 123,000	60		180	42		Mitigate	Early coordination with FHWA	Project Manager	11/2/2015
Active	31	PM	Technical Memorandums	Approvals of concept of operations policy technical memorandums		20	50	$ 200,000		$ 500,000	$ 123,000	30		90	21		Mitigate	Early coordination with stakeholders	Project Manager	11/2/2015
Active	32	PM	Greenroads	Greenroads evaluation		10	40	$ 100,000		$ 400,000	$ 63,000	30		90	15		Mitigate	Incorporate any revisions during final design	Project Manager	11/2/2015
Active	33	ROW	Additional R/W	Due to the complex nature of the staging, additional right of way or construction easements may be required to complete the work as contemplated, resulting in additional cost to the project.		10	30	$ 500,000		$ 1,000,000	$ 150,000	30		180	21		Mitigate	Re-sequence the work to enable R/W Certification	Design Manager	11/2/2015
Active	34	ROW	United State Army Corps of Engineers (USACE)	Project will seek Approved Jurisdictional Delineation on some drainages from USACE, which could affect the schedule.		10	40	$ 100,000		$ 400,000	$ 63,000	60		180	30		Mitigate	Coordinate closely with USACE	Project Manager	11/2/2015

Attachment K

Design Standards Risk Assessment

Abbreviations:
A=Advisorty Design Standard
M=Mandatory Design Standard
V1=Design Variation 1
V2=Design Variation 2

Design Exception Risk Assessment					**Project Name:**		**SR-241/SR-91 Express Lanes Connector Project**				**DIST- EA:**	**0K9700**	**10/26/2016**
Design Standard Information					**Location Information**						**Assessment**		
ID#	**M/A**	**HDM Index**	**HDM Index Heading**	**Design Standard**	**Alt #**	**Facility**	**Limits**	**Standard**	**Proposed**	**Existing Condition**	**Justification**	**Probability of Approval**	**Notes**
1	M	201.1	Sight Distance General	**Table 201.1 shows the minimum standards for stopping sight distance related to a design speed for motorists.**	1 V1 V2	Mainline	"EB91" 1430+69 to 1437+58	840-ft	580-ft to 840-ft	580-ft to 840-ft	This is an existing condition. Providing standard stopping sight distance at this location would require removing the existing barrier, widening the EB SR-91 inside shoulder, installing a new concrete barrier on a retaining wall system to account for split profile, and realigning the WB SR-91. Proposed geometry will not reduce the existing nonstandard SSD. Proposed geometry will not reduce the existing nonstandard SSD.	High	Refer to page 42 in the Draft Project Report. Refer to L-9 and L-17 in Attachment G of the Draft Project Report.
2	M	301.1	Lane Width	**The minimum lane width on two-lane and multilane highways, ramps, collector-distributor roads, and other appurtenant roadways shall be 12 feet.**	1 V1 V2	Mainline	"WB91" 453+71 to 524+39	12-ft	11-ft	Yes 11-ft	This is a proposed tie-in location where the tie-in lane widths are 11-ft. This exception has been approved per the SR-91 Corridor Improvement Project (CIP) to the East. The "SR-91 CIP Orange County GAD-2 Initial Project Fact Sheet" was approved on 5/17/2012.	Low	Refer to page 43 in the Draft Project Report. Refer to L-11 through L-16 in Attachment G of the Draft Project Report.
					1 V1 V2	Mainline	"EB91" 1520+12 to 1526+00	12-ft	11-ft	Yes 11-ft	This is a proposed tie-in location where the tie-in lane widths are 11-ft. This exception has been approved per the SR-91 Corridor Improvement Project (CIP) to the East. The "SR-91 CIP Orange County GAD-2 Initial Project Fact Sheet" was approved on 5/17/2012.	Low	Refer to page 43 in the Draft Project Report. Refer to L-16 in Attachment G of the Draft Project Report.
3	M	302.1	Width	**The shoulder widths given in Table 302.1 shall be the minimum continuous usable width of paved shoulder on highways.**	1 V1 V2	Mainline	"EB91" 1427+82 to 1432+92	10-ft	6-ft to 10-ft	6-ft to 7.5-ft	This is an existing condition. In order to provide a standard 10-ft left shoulder, the roadway widening improvements along EB SR-91 would be increased. This would result in additional pavement and a larger cut slope envelope. This would also create a nonstandard diverging Gypsum Canyon EB Off-ramp. This transition ties into the existing condition approximately 570-ft west of the project limits, and extends beyond the scope of this project.	High	Refer to page 43 in the Draft Project Report. Refer to L-17 in Attachment G of the Draft Project Report.

Design Exception Risk Assessment					Project Name:		SR-241/SR-91 Express Lanes Connector Project				DIST- EA:	0K9700	10/26/2016
Design Standard Information					Location Information						Assessment		
ID#	M/A	HDM Index	HDM Index Heading	Design Standard	Alt #	Facility	Limits	Standard	Proposed	Existing Condition	Justification	Probability of Approval	Notes
4	M	202.2 (1)	Standards for Superelevation	**Based on an e_{max} selected by the designer for one of the conditions, superelevation rates from Table 202.2 shall be used within the given range of curve radii. If less than standard superelevation rates are approved (see index 82.1), Figure 202.2 shall be used to determine superelevation based on the curve radius and maximum comfortable speed.**	1 V1*	Ramp	"GM1" 44+67 to 44+81	12%	10%	N/A	The proposed superelevation meets the requirements of HDM Index Figure 202.2. Per Figure 202.2, the maximum comfortable driving speed for a 215-ft radius, with 10% superelevation is 29 miles per hour. The proposed maximum comfortable driving speed exceeds the 25 miles per hour per HDM Index 504.3(1) for ramps terminating at an intersection at which all traffic is expected to make a turning movement. Due to the nature of the proposed off ramp geometry, providing the standard maximum superelevation rate at this locations not feasible because the horizontal geometry does not allow adequate length to fit a full transition as the superelevation needs to match Gypsum Canyon Road at the ramp terminus. The off ramp alignment is constrained to the north by the Gypsum Canyon Road EB Loop On-Ramp and is constrained to the south by an existing column (Sta. 43+50 Rt.) for the NB SR-241/EB SR-91 Connector. In order to provide a standard superelevation rate, the alignment would need to be routed to the south of the existing column. This would require additional right-of-way (ROW) acquisition and a retaining wall between the proposed ramp and East Santa Ana Canyon Road.	Low	Refer to page 43 in the Draft Project Report. Refer to PS-5 in Attachment G of the Draft Project Report.
5	M (1)	504.3 (3)	Ramps (Location and Design of Ramp Intersections on the Crossroads)	**The minimum distance (curb return to curb return) between ramp intersections and local road intersections shall be 400 feet.**	1 V1 V2	Ramp	Gypsum Canyon Road Eastbound Off-Ramp to Santa Ana Canyon Road/Gypsum Canyon Road	400-ft	370-ft	370-ft	This is an existing condition. An exception is requested to maintain the nonstandard distance between the Gypsum Canyon Road EB Off-Ramp and Santa Ana Canyon Road curb returns. The existing curb return configuration is 30-ft less than standard. Providing standard distance between the ramp and intersection of Santa Ana Canyon Road would require realigning Santa Ana Canyon Road further to the south. This would require reconstructing the adjacent abutment and slope for the NB SR-241/EB SR-91 Connector and/or constructing a retaining wall on the south side of Santa Ana Canyon Road. Additional right-of-way acquisition would also be required.	Low	Refer to page 44 in the Draft Project Report. Refer to L-10 and L-10A in Attachment G of the Draft Project Report.

Design Exception Risk Assessment					Project Name:		SR-241/SR-91 Express Lanes Connector Project				DIST- EA:	0K9700	10/26/2016
Design Standard Information					Location Information						Assessment		
ID#	M/A	HDM Index	HDM Index Heading	Design Standard	Alt #	Facility	Limits	Standard	Proposed	Existing Condition	Justification	Probability of Approval	Notes
1	A	504.4 (5)	Freeway-to-Freeway Connections (Single-lane Connections)	Single lane connectors in exceed of 1,000 feet in length should be widened to two lanes to provide for passing maneuvers.	1 V1 V2	Ramp	“241 DC1” 97+56 to “EB 91” 1516+35	Two Lane Connector when >1,000-ft	Single lane Connector for 11,534-ft	N/A	Providing an additional lane in this direction of the Express Lane Connector would require 10,534-ft of additional lane (assuming an allowance of 1,000-ft for a single lane for tie-in locations along the SR-91 and SR-241 mainlines). Approximately 2,290-ft of this length would be on a bridge structure, while the remaining 8,244-ft of widening would be at grade on a wider roadway. Widening along the EB-91 adjacent to the connector would be required impacting both ramp geometry and slopes to the south. A lane addition in this direction is not precluded, as requested in the first part of Index 504.4(5). Index 504.4(6) emphasizes the need for a multilane connector when ramp volumes exceed 1500 VPH, which this tolling facility can mitigate with congestion pricing. Maintaining volumes below that threshold will manage capacity to maintain an adequate level of service and functionality along the connector.	Medium	Refer to page 44 in the Draft Project Report. Refer to L-6 through L-15 in Attachment G of the Draft Project Report.
					1 V1 V2	Ramp	“241 DC5” 484+36 to “241 DC4” 470+22	Two Lane Connector when >1,000-ft	Single lane Connector for 8,220-ft	N/A	Providing an additional lane in this direction of the Express Lane Connector would require 7,220-ft of an additional lane (assuming an allowance of 1,000-ft for a single lane for tie-in locations along the SR-91 and SR-241 mainlines). Approximately 2,290-ft of this length would be on a bridge structure, while the remaining 4,930-ft of widening would be at grade on a wider roadway. Widening along the WB-91 adjacent to the connector would be required impacting both ramp geometry and slopes to the north. A lane addition in this direction is not precluded, as requested in the first part of Index 504.4(5). Index 504.4(6) emphasizes the need for a multilane connector when ramp volumes exceed 1500 VPH, which this tolling facility can mitigate against with congestion pricing. Maintaining volumes below that threshold will manage capacity to maintain an adequate level of service and functionality along the connector.	Medium	Refer to page 45 in the Draft Project Report. Refer to L-6 through L-12 in Attachment G of the Draft Project Report.

Design Exception Risk Assessment					Project Name:	SR-241/SR-91 Express Lanes Connector Project				DIST- EA:	0K9700	10/26/2016
Design Standard Information					Location Information					Assessment		
ID#	M/A	HDM Index	HDM Index Heading	Design Standard	Alt #	Facility	Limits	Standard	Proposed	Existing Condition	Justification	Probability of Approval	Notes
2	A	202.5 (1)	Superelevation Transitions: General	A superelevation transition should be designed in accordance with the diagram and tabular data shown in Figure 202.5A to satisfy the requirements of safety, comfort and pleasing appearance.		Ramp	"GM1" 43+00 to 44+67	240-ft Runoff Length	167-ft Runoff Length	N/A	A 240-ft runoff length is not feasible because the horizontal geometry does not allow adequate length to fit a full transition. Lengthening the transition would violate the one third/two thirds requirement, "Two-thirds of the superelevation runoff should be on the tangent and one-third within the curve." (HDM Index 202.5(2), Runoff); as the superelevation needs to match Gypsum Canyon Road at the ramp terminus. The proposed transition's rate of change is 6% per 100 feet, which meets the maximum 6% per 100 feet requirement for restrictive situations. The off ramp alignment is constrained to the north by the Gypsum Canyon Road EB Loop On-Ramp and is constrained to the south by an existing column (Sta. 43+50 Rt.) for the NB SR-241/EB SR-91 Connector. In order to provide a standard transition, the alignment would need to be routed to the south of the existing column. This would require additional right-of-way (ROW) acquisition and a retaining wall between the proposed ramp and East Santa Ana Canyon Road.	Low	Refer to page 45 in the Draft Project Report. Refer to PS-5 in Attachment G of the Draft Project Report.
					1 V1*	Ramp	"GM1" 44+81 to 46+47	240-ft Runoff Length	167-ft Runoff Length	N/A	A 240-ft runoff length is not feasible because the horizontal geometry does not allow adequate length to fit a full transition. Lengthening the transition would violate the one third/two thirds requirement, "Two-thirds of the superelevation runoff should be on the tangent and one-third within the curve." (HDM Index 202.5(2), Runoff); as the superelevation needs to match Gypsum Canyon Road at the ramp terminus. The proposed transition's rate of change is 6% per 100 feet, which meets the maximum 6% per 100 feet requirement for restrictive situations. The off ramp alignment is constrained to the north by the Gypsum Canyon Road EB Loop On-Ramp and is constrained to the south by an existing column (Sta. 43+50 Rt.) for the NB SR-241/EB SR-91 Connector. In order to provide a standard transition, the alignment would need to be routed to the south of the existing column. This would require additional right-of-way (ROW) acquisition and a retaining wall between the proposed ramp and East Santa Ana Canyon Road.	Low	Refer to page 45 in the Draft Project Report. Refer to PS-5 in Attachment G of the Draft Project Report.

Design Exception Risk Assessment					Project Name:		SR-241/SR-91 Express Lanes Connector Project				DIST- EA:	0K9700	10/26/2016
Design Standard Information					Location Information						Assessment		
ID#	M/A	HDM Index	HDM Index Heading	Design Standard	Alt #	Facility	Limits	Standard	Proposed	Existing Condition	Justification	Probability of Approval	Notes
2	A	202.5 (1)	Superelevation Transitions: General	A superelevation transition should be designed in accordance with the diagram and tabular data shown in Figure 202.5A to satisfy the requirements of safety, comfort and pleasing appearance.		Ramp	"GM2" 42+44 to "GM2" 44+44	300-ft Runoff Length	200-ft Runoff Lenth	N/A	An insufficient transition length is provided at this location, because the ramp cross-slope has to transition down to match the negative 4% cross-slope of the proposed Gypsum Canyon Road UC widening. The proposed transition's rate of change is 6% per 100 feet, which meets the maximum 6% per 100 feet requirement for restrictive conditions. Also, matching the -4% cross-slope at the Gypsum Canyon Road UC introduces a negative superelevation; however, it does meet the Maximum Comfortable Driving Speed Requirements per HDM Figure 202.2. Due to the nature of the loop ramp merging into the right outside curve of the mainline, matching the existing gore superelevation rate requires this substandard design. Providing a standard superelevation transition would require a substantial lengthening of the loop ramp to the west creating the following significant impacts: extending the outrigger for the SR-241 Direct Connector south of the proposed on ramp (increasing the structure depth), realigning the Gypsum Canyon Road EB Off-Ramp, introducing two grade breaks in the proposed Gypsum Canyon Road UC widening and additional ROW acquisition.	Low	Refer to page 45 in the Draft Project Report. Refer to PS-1 in Attachment G of the Draft Project Report.
3	A	304.1	Side Slope Standards	For new construction, widening, or where slopes are otherwise being modified, embankment (fill) slopes should be 4:1 or flatter.	1 V1*	Ramp	"GM2" 42+20 to 46+20	4:1 or Flatter	2:1	Yes 3:1 or Flatter	Providing standard fill slopes would require a retaining wall between the proposed loop ramp and proposed Gypsum Canyon Road EB Direct On-Ramp. 4:1 or flatter slopes allow for drivers to maintain control of the vehicle if they drove onto the slope; guardrail will be placed along the proposed shoulder to avoid the unsafe maneuver on nonstandard slopes.	Medium	Refer to page 45 in the Draft Project Report. Refer to L-10 in Attachment G of the Draft Project Report.
						Ramp	"GM3" 45+75 to 46+50 (Left) and "GM3" 47+25 to 49+75 (Right)	4:1 or Flatter	2:1	Yes 2:1 or Flatter	The proposed 2:1 fill slopes reduce impacts to the existing columns for the NB SR-241 / EB SR-91 Connector. Providing standard fill slopes in these areas would require protecting the existing columns with retaining walls or some other feature. 4:1 or flatter slopes allow for drivers to maintain control of the vehicle if they drove onto the slope; guardrail will be placed along the proposed shoulder to avoid the unsafe maneuver on nonstandard slopes.	Medium	Refer to page 45 in the Draft Project Report. Refer to L-10 in Attachment G of the Draft Project Report.

*Design exceptions for the Gypsum Canyon Road ramps from Design Variation 2 are not being evaluated at this time. They will be studied further during the Project Report/Design phase.

ATTACHMENT C

OCTA

September 27, 2017

Mr. Mike Kraman
Chief Executive Officer
Transportation Corridor Agencies
P.O. Box 57011
Irvine, California 92619-7011

Dear Mr. Kraman,

As a follow-up to our meeting of September 13, 2017, regarding the Proposed State Route 241 (SR-241)/91 Express Lanes Direct Connector (Project), below is my understanding of the discussion and follow-up actions to ensure our upcoming meeting is responsive to the expectations of our respective Board representatives.

During the meeting the Transportation Corridor Agencies (TCA) provided an overview of the Project background, benefits, and status of project development activities. The Orange County Transportation Authority (OCTA) shared its assessments of regional benefits, State Route 91 (SR-91) corridor impacts, and operational implications.

TCA believes the Project would improve system connectivity, reduce weaving movements on the SR-91 general-purpose (GP) lanes that could enhance safety, address congestion on the northbound SR-241 to eastbound SR-91 connector, and deliver a federal air quality conformity Transportation Control Measure.

OCTA shared the fact that we have considerable reservations on the merits of the Project in meeting the Project's stated Purpose and Need. The Project Traffic Analysis Report indicates the Project provides very minimal regional benefits, and those benefits diminish over time. In addition, the Project exacerbates eastbound SR-91 GP lane congestion. The Project also consumes capacity that may otherwise be available to eastbound SR-91 GP lane commuters wanting to enter the 91 Express Lanes at the Orange County/Riverside County access point. The Project also will not resolve congestion on the northbound SR-241 to eastbound SR-91 and there is more than adequate distance to allow merging traffic to safely enter the 91 Express Lanes at the Orange County/Riverside County access point. The principal issue causing the congestion is insufficient capacity on the SR-91 and the Project does little to address the core problem.

While OCTA understands that TCA proposes using congestion pricing to balance the impacts to SR-91, the operation is far more complex and the parties need to understand the extent of demands associated with the various movements based on observed rather than modeled data. In addition, to address concerns over potential

adverse impacts to the SR-91 corridor, it was agreed that a joint agency toll governance arrangement was necessary to ensure no harm to the SR-91 corridor, including the 91 Express Lanes operated by both OCTA and the Riverside County Transportation Commission.

Based on the meeting, it was agreed that the parties would work on the following assignments for the next meeting:

- TCA will update the Project's Traffic Analysis Report and Traffic Revenue Study to reflect recent socioeconomic forecasts, update timing of assumed improvements in the corridor, and use more current traffic data for operational analysis.
- TCA and OCTA will jointly evaluate observed traffic data post-opening of the 91 Express Lanes into Riverside County, and evaluate the routing of traffic that is merging in or out of the 91 Express Lanes at the Orange County/Riverside County access point.
- TCA will provide OCTA with a draft agreement that can serve as the basis for protective bond covenants to ensure the Project will not negatively impact the 91 Express Lanes toll policies.
- TCA will evaluate the use of congestion pricing as a means to ameliorate congestion on the northbound SR-241 at Windy Ridge as an alternative to the Project.

In the interest of a timely resolution of the issues identified, the group agreed to meet again in November, prior to a final meeting in February of 2018. The November meeting has since been set for Thursday, November 16. As always, my staff stands ready to work with your team on the responses and other relevant analysis.

Sincerely,

Darrell Johnson
Chief Executive Officer

c: OCTA Board of Directors
Ed Sachs, F/ETCA Chair
Melody Carruth, SJHTCA Acting Chair
Todd Spitzer, 241/91 Ad Hoc Chair

ATTACHMENT D

Transportation Corridor Agencies™

November 13, 2017

Mr. Darrell Johnson
Chief Executive Officer
Orange County Transportation Authority
550 South Main Street
Orange, CA 92863

Subject: 241/91 Express Connector Follow-Up

Dear Mr. Johnson,

I would like to thank you for hosting the Joint OCTA/TCA Leadership meeting at your offices on September 13, 2017. The discussion between our respective Board members and staff provided valuable insight into areas that need further resolution regarding the SR 241/91 Express Connector Project. Additionally, I would like to take this opportunity to clarify some of the items identified in your letter dated September 27th based on TCA's understanding of the discussion.

As you are aware, Caltrans is the lead agency for the 241/91 Express Connector under CEQA and NEPA, with TCA as the project sponsor and funding agency. The direct connector has always been envisioned as part of the state highway system and is included in the previously approved 1994 environmental document. Like the Purpose and Need identified in the 1994 environmental document, the currently planned 241/91 Express Connector meets the project's Purpose and Need by:

- Improving traffic flow and operations between the 91 Express Lanes and the 241 Toll Road;
- Reducing weaving on the 91 freeway, which also provides additional safety for the traveling public; and
- Increasing regional throughput through the 241 and 91 corridors.

During the September 13th Joint Leadership meeting, and restated in your September 27 letter, OCTA requested clarification on the project's overall benefits. In response, TCA will update the 241/91 Express Connector Draft Project Report to more clearly present the merits of the project, including examining effects on the operation of the 91 Express Lanes and the 91 general purpose lanes.

The following points provide our understanding of the next steps based on the meeting:

- TCA agreed we would validate the data contained within the project's Traffic and Revenue Study to reflect the updated timing of corridor improvements and to verify assumptions

based on the current mixing bowl data and current socioeconomic forecasts. Based upon that validation we will assess any need to supplement the project's traffic analysis.

- TCA agreed to work with OCTA and RCTC to evaluate observed traffic data post-opening of RCTC's 91 Capital Improvement Project. TCA will take the lead on collecting this data and will share with OCTA, RCTC and Caltrans.
- TCA and OCTA to adjudicate and update the Traffic & Revenue Study by Stantec with the T&R Peer Review Report by CDM Smith.
  - Both T&R and Peer Review to reflect observed traffic data post opening of the RCTC 91 Capital Improvement Project;
  - Peer Review to reflect post opening data and T&R modeling results for scenarios;
  - T&R to include sensitivity analysis of the most recent socioeconomic forecasts;
  - T&R to reflect accelerated schedule for the SR-91/North I-15 express connector ramps;
  - T&R to include additional discussion regarding the magnitude of market share for the 241/91 Express Connector north to east peak traffic.
- TCA recommended that we continue our efforts to develop an operating agreement between RCTC, OCTA and TCA. The agreement would contain language that limits the traffic on the 241/91 Express Connector to the available capacity on the 91 Express Lanes without degrading the capacity that would otherwise be available to OCTA. At the request of OCTA, TCA also agreed to develop ideas on how to provide a "backstop" to dynamic pricing.
- At OCTA's request, TCA agreed to analyze the use of significant peak pricing at northbound Windy Ridge to spread peak demand at the NB241 to EB91 connector. However, as mentioned in the meeting, this will likely push additional traffic off the system onto already congested arterials in the area.
- As suggested by OCTA, TCA will consider the effectiveness of developing the 6th eastbound 91 general purpose lane from the 241 to the vicinity of Green River Road/SR-71 as an option. TCA will agendize this item for discussion at a joint TCA/RCTC/OCTA/Caltrans technical meeting.

After the OCTA/TCA Leadership Meeting, the TCA 241/91 Express Connector Ad Hoc Committee met and has provided the following direction regarding future meetings:

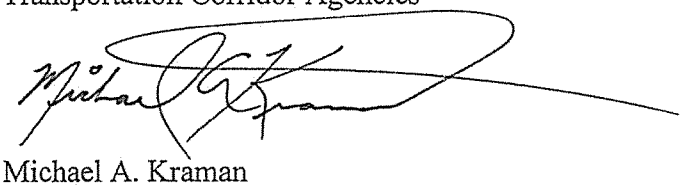
- TCA and OCTA staff should schedule technical meetings related to the 241/91 Express Connector to work through the issues and resolve differences. Multiple meetings will likely be needed to work through this process. The Ad Hoc committee suggested that all parties including RCTC and Caltrans should participate in these technical meetings.
- After this technical meeting process, staff should have a follow up meeting with directors from both TCA and OCTA. This would be an appropriate venue to discuss outcomes as well as reporting any remaining areas of disagreement. Rather than a joint "leadership" meeting they suggested a Joint TCA/OCTA Ad Hoc with membership focused on the 241/91 Express Connector. Additionally, this Ad Hoc Committee should include Caltrans (Ryan Chamberlain is a Director on both boards) as well as inviting RCTC Directors and staff as appropriate.

- As an outcome of these suggestions and given Steve Abendschein's non-availability we request that the November 16th OCTA/TCA Joint Leadership Meeting be postponed. In the meantime, we will start the process of scheduling several technical meetings to continue the process of evaluating the 241/91 Express Connector project.

Although TCA is committed to delivering this project in a timely manner, it will take time to properly move through this process and resolve issues. Therefore, to meet the September 2021 TCM obligation, TCA agrees to OCTA's offer to initiate and be responsible for the TCM substitution process. Additionally, we ask for OCTA's assistance in modifying the $7.2 Million federal earmark to insure those funds are not lost.

We look forward to the next technical meeting and the start of this issues resolution process that will assist our agencies with providing critically needed traffic relief.

Sincerely,
Transportation Corridor Agencies



Michael A. Kraman
Chief Executive Officer

CC: Ed Sachs, F/ETCA Chair
Michael Hennessey, OCTA Chair
Ryan Chamberlain, Caltrans D12 District Director
Anne Mayer, RCTC Executive Director

ATTACHMENT E

4080 Lemon Street, 3rd Floor • Riverside, CA 92501
Mailing Address: P. O. Box 12008 • Riverside, CA 92502-2208
(951) 787-7141 • Fax (951) 787-7920 • www.rctc.org

Riverside County Transportation Commission

November 28, 2017

Mr. Michael A. Kraman
Chief Executive Officer
Transportation Corridor Agencies
P.O. Box 57011
Irvine, CA 92691-7011

Subject: SR-241/SR-91 Express Lanes Connector Project

Dear Mr. Kraman:

On March 20, 2017, RCTC opened the State Route 91 Project in Riverside County. The $1.4 billion 91 Project built the RCTC 91 Express Lanes and additional general purpose lanes and reconstructed a number of interchanges along the SR-91 Corridor (Corridor). The 91 Project is a critical component of the bi-county SR-91 Implementation Plan (Plan) developed and approved annually by RCTC and OCTA. The Plan and the agency collaboration focus on improving mobility within the Corridor includes multiple transportation modes, and is vital to residents and businesses alike.

Since the 91 Project opening, actual traffic volume in the RCTC 91 Express Lanes has been higher than projected. We have been proactively managing traffic volume by making toll rate changes and implementing numerous operational improvements. There remain several hot spot areas we continue to evaluate that will likely require future reconfiguration or improvements to fully address. Overall, congestion in the Corridor remains high and often frustrating for daily commuters particularly during peak travel periods.

The SR-241/SR-91 Express Lanes Connector Project (Project) is another component of the Plan. As you know, RCTC expressed concern regarding the traffic impact of the TCA-proposed Project on the 91 Corridor and the Express Lanes. Previously we asked TCA to consider a "do no harm" approach to Project implementation and appreciate the past accommodation when TCA decided not to pursue simultaneous construction activities. We now are asking TCA to take the same approach by continuing to defer construction of the Project until the region can be assured the Project will not increase Corridor congestion. We are very concerned about the impact the Project will have on Corridor travelers who have borne construction delays as well as increasing traffic volume in the Corridor.

It remains clear we cannot build our way out of congestion on the Corridor. There is neither funding nor physical room to build the capacity needed to fully address future traffic volumes let alone existing traffic. Alternative new corridors connecting the two counties proposed in the Plan are not currently financially feasible and would have significant community and environmental impacts.

RCTC, OCTA, and Caltrans must jointly analyze, consider, and make deliberate operational and capacity enhancements within the Corridor. With the 91 Project complete, we now have and will continue to gather, significant data upon which the region can recalibrate traffic simulation models and traffic projections. We request TCA to reconsider the Project's implementation schedule until such time as a strategic, data-driven analysis determines the Project will "do no harm" to Corridor traffic operations.

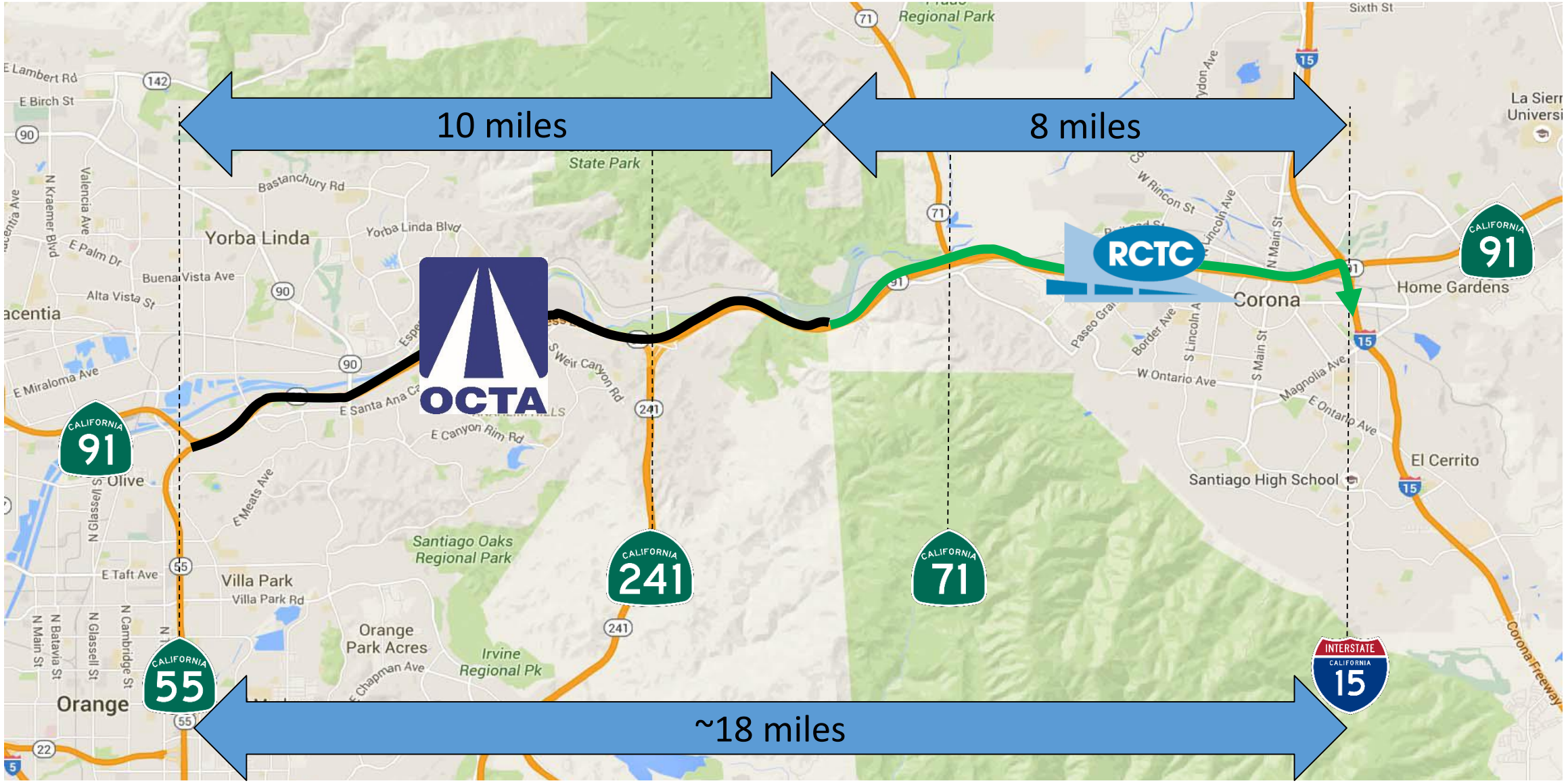
Sincerely,

Anne Mayer
Executive Director

c: John Bulinski, District 8 Director
Commissioner Berwin Hanna
Commissioner Kevin Jeffries
Darrell Johnson, Chief Executive Officer, OCTA
Commissioner Bob Magee
Commissioner Adam Rush
Commissioner Karen Spiegel
Commissioner John Tavaglione

Proposed State Route 241/91 Express Lanes Tolled Connector Update

State Route 91 (SR-91) Corridor Vicinity Map



91 Corridor Actions

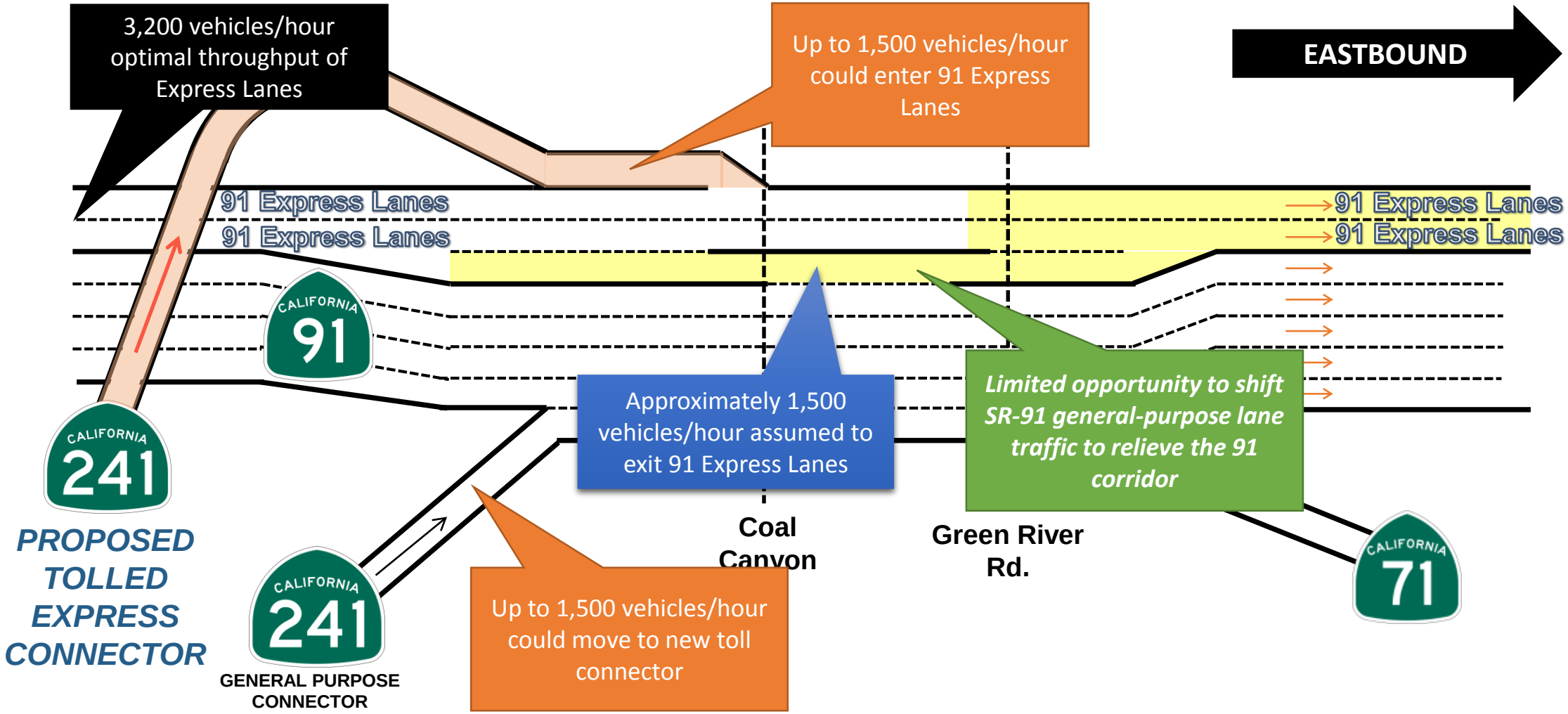
- 1991 – HOV connectors between SR-241 and SR-91 included in plans
- 1995 – 91 Express Lanes open to traffic
- 2002 – OCTA acquires 91 Express Lanes to terminate “non-compete”
- 2005 – OCTA completes 91 Corridor Major Investment Study
- 2006 – OCTA advances $1 billion congestion relief plan for SR-91 corridor
- 2011 – OCTA/TCA enter into an MOU to study 241/91 connector
- 2017 – RCTC completes SR-91 improvements between Orange County & I-15

HOV – High-occupancy vehicle / SR-241 – State Route 241 / OCTA – Orange County Transportation Authority / MOU – memorandum of understanding /

Proposed Project Scope

- Construct a tolled bidirectional single lane median-to-median connector between SR-241 and 91 Express Lanes
- Reconfigure SR-91 and 91 Express Lanes to accept entering SR-241 traffic
- Modify SR-241 lanes and striping to reduce queue cutting

SR-91 Eastbound Configuration with Proposed Tolled 241/91 Connector



Complexity of Traffic Movements

- Northbound SR-241 and Eastbound SR-91
  1. SR-91 through traffic to Corona and beyond
  2. SR-91 traffic to RCTC 91 Express Lanes (weaving in)
  3. 91 Express Lanes (OC) through traffic to RCTC 91 Express Lanes
  4. 91 Express Lanes (OC) traffic to general purpose lanes (weaving out)
  5. SR-241 to SR-91 traffic
  6. SR-241 to SR-91 to RCTC 91 Express Lanes (weaving in)
  7. SR-241 to 91 Express Lanes via proposed connector (weaving in)

The interaction of movements creates complex operational challenges

Regional Considerations

2014 OCTA review indicated:

- The proposed project provides a new connection to SR-91 corridor
- The project provides minimal relief to State Route 55 and SR-91 corridors due to redistribution of regional traffic from parallel corridors (i.e., Interstate 10, State Route 60, State Route 57)
- Initial analysis indicated higher traffic volumes on SR-241
- Toll policies and governance were deemed critical to the success of the connector as well as minimizing impacts to the SR-91 corridor and the 91 Express Lanes

SR-91 Corridor Implications

Draft 2016 Project Report:

- Morning travel times will improve, while evening travel times will be longer in the opening year on the SR-91 general-purpose lanes
  - Project attracts more traffic to SR-91 and SR-241 corridors
  - Project will reduce morning westbound peak congestion in near-term
  - Project will intensify evening eastbound peak congestion in near-term
  - Additional congestion on SR-91, and higher volumes on SR-241 results in more congestion on the north-to-east SR-241 to SR-91 general-purpose ramp
  - In the long-term, the project will provide more relief in the westbound direction compared to eastbound improvements

Performance Summary

2017	AM Westbound Peak Period		PM Eastbound Peak Period	
Metrics	No Project	With Project	No Project	With Project
Average speed (mph)	34.5	40.3	38.6	37.6
Average delay (minutes/vehicle)	6.8	4.9	5.3	5.7

2040*	AM Westbound Peak Period		PM Eastbound Peak Period	
Metrics	No Project	With Project	No Project	With Project
Average speed (mph)	34.0	37.8	45.1	46.9
Average delay (minutes/vehicle)	7.0	5.6	3.4	3.1

***2040 numbers assume completion of additional OCTA and RCTC SR-91 corridor improvements, including the addition of a sixth general-purpose lane between SR-241 and SR-71**

mph – miles per hour

Operational Considerations

- Construction of the new connector favors traffic entering the Express Lanes from SR-241 vs. SR-91 general-purpose lane traffic reducing chances of relief to SR-91 corridor
- Congestion pricing on new connector could reduce benefits to traffic on north-to-east SR-241 to SR-91 general-purpose ramp
- No progress on any form of a multi-agency 241 connector toll policy and governance structure since 2014

Other Options

- Increase the tolls on the 91 Express Lanes to create more capacity in the mixing bowl area for traffic entering from SR-241
- Consider use of congestion management pricing on SR-241 corridor to spread traffic demand to other hours
- Add more lanes to SR-91 between SR-241 and State Route 71 to enhance commute of SR-91 and SR-241 commuters

Recommended Actions

- Request TCA to defer work on 241/91 Express Lanes connector given regional mobility impacts.
- Work with RCTC to evaluate opportunities to advance 91 corridor congestion relief projects

OC Bridges Railroad Grade Separation Completion

O·C·BRIDGES

Improving safety. Removing delays.

Program Overview

Project benefits: improve mobility and safety resulting in a better quality of life

O·C·BRIDGES
Improving safety. Removing delays.

Project Timeline

Kraemer Blvd. Undercrossing
Construction Begins

Kraemer Blvd. Undercrossing
Roadway Opens

Lakeview Ave. Overcrossing
Construction Begins

Tustin/Rose Dr. Overcrossing
Construction Begins

2012 **2013** **2014** **2015**

Orangethorpe Ave. Overcrossing
Construction Begins

Placentia Ave. Undercrossing
Construction Begins

Placentia Ave. Undercrossing
Roadway Opens

O·C·BRIDGES
Improving safety. Removing delays.

Project Timeline

Raymond Ave. Undercrossing
Construction Begins

Tustin/Rose Dr. Overcrossing
Roadway Opens

Raymond Ave. Undercrossing
Roadway Opens

State College Blvd. Undercrossing
Roadway Opens

2015 **2016** **2017**

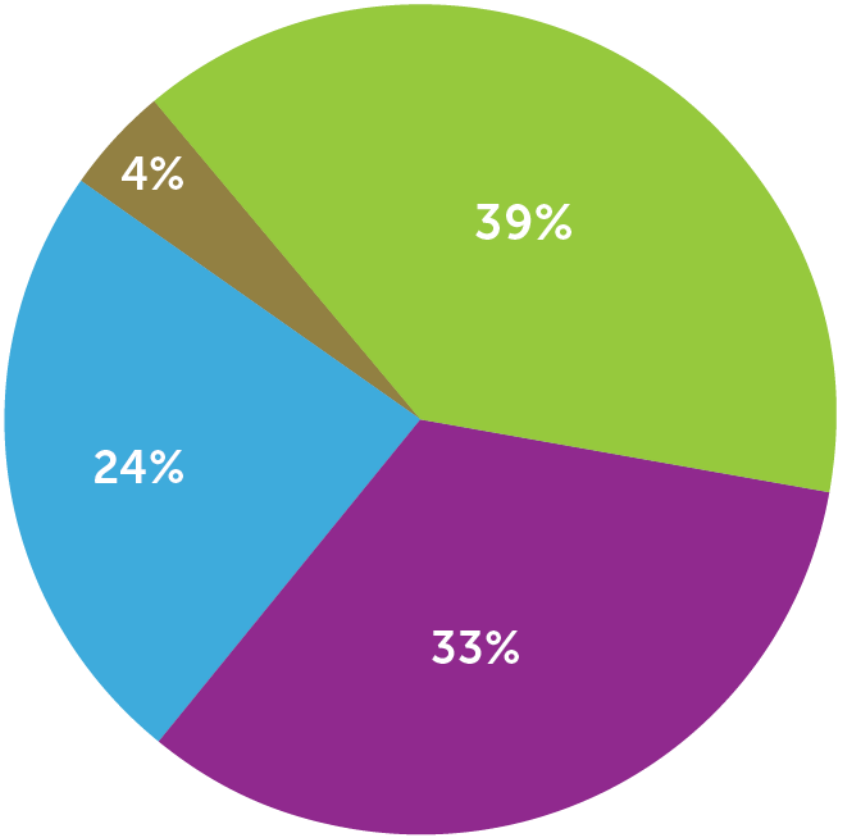
State College Blvd. Undercrossing
Construction Begins

Orangethorpe Ave Overcrossing
Roadway Opens

Lakeview Ave. Overcrossing
Roadway Opens

O·C·BRIDGES
Improving safety. Removing delays.

Funding



Total - $663.9 million

- State - *$262 million*
- Federal - *$218 million*
- Measure M2 - *$157.7 million*
- Other Local - *$26.2 million*

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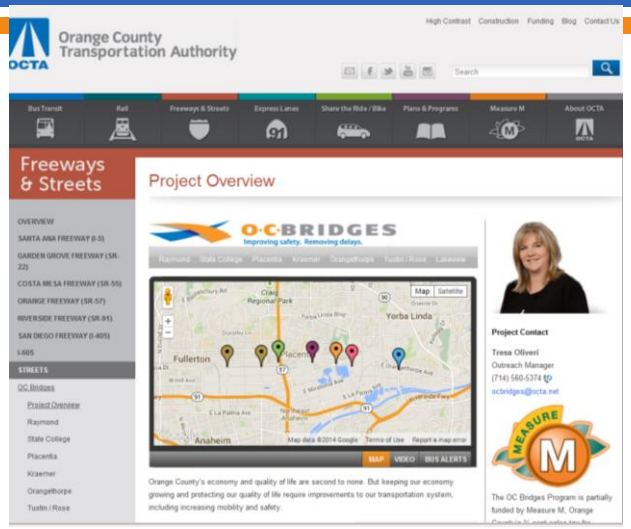
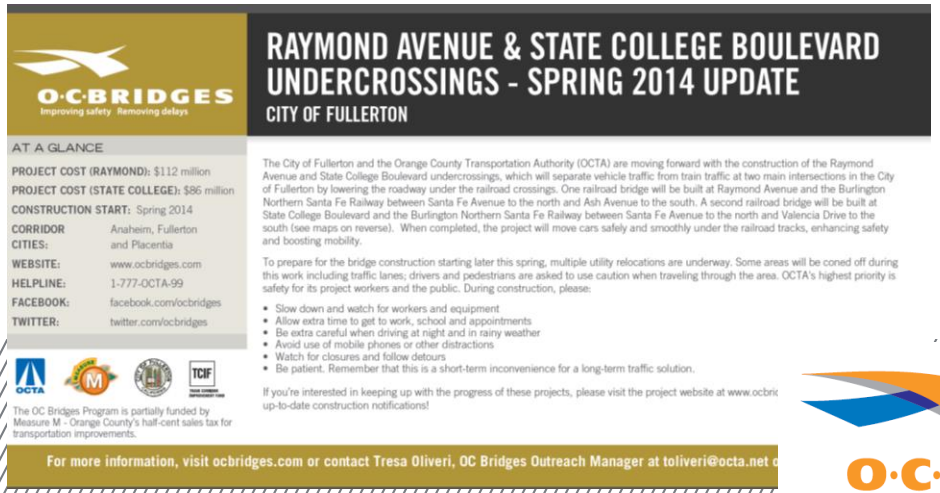
Public Outreach





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