

## Application for Federal Assistance SF-424

**\* 1. Type of Submission:**

- ☐ Preapplication  
☒ Application  
☐ Changed/Corrected Application

**\* 2. Type of Application:**

- ☒ New  
☐ Continuation  
☐ Revision

**\* If Revision, select appropriate letter(s):**

**\* Other (Specify):**

**\* 3. Date Received:**

06/08/2026

**4. Applicant Identifier:**

**5a. Federal Entity Identifier:**

**5b. Federal Award Identifier:**

**State Use Only:**

**6. Date Received by State:**

**7. State Application Identifier:**

**8. APPLICANT INFORMATION:**

**\* a. Legal Name:**

San Bernardino County

**\* b. Employer/Taxpayer Identification Number (EIN/TIN):**

956002748

**\* c. UEI:**

CFXEZ75TPJ84

**d. Address:**

**\* Street1:**

825 E 3rd St

**Street2:**

**\* City:**

San Bernardino

**County/Parish:**

**\* State:**

CA: California

**Province:**

**\* Country:**

USA: UNITED STATES

**\* Zip / Postal Code:**

92415-0000

**e. Organizational Unit:**

**Department Name:**

**Division Name:**

**f. Name and contact information of person to be contacted on matters involving this application:**

**Prefix:**

**\* First Name:**

Jeremy

**Middle Name:**

**\* Last Name:**

Johnson

**Suffix:**

**Title:** Engineering Manager

**Organizational Affiliation:**

San Bernardino County

**\* Telephone Number:**

9093878165

**Fax Number:**

9093878072

**\* Email:**

JEREMY.JOHNSON@DPW.SBCOUNTY.GOV

## Application for Federal Assistance SF-424

### \* 9. Type of Applicant 1: Select Applicant Type:

B: County Government

Type of Applicant 2: Select Applicant Type:

Type of Applicant 3: Select Applicant Type:

\* Other (specify):

### \* 10. Name of Federal Agency:

DOT - Federal Railroad Administration

### 11. Assistance Listing Number:

20.337

Assistance Listing Title:

### \* 12. Funding Opportunity Number:

FR-CRS-26-001

\* Title:

20.337 Consolidated Rail Infrastructure and Safety Improvements

### 13. Competition Identification Number:

Title:

### 14. Areas Affected by Project (Cities, Counties, States, etc.):

CRISI 2026 MAP.pdf

Add Attachment

Delete Attachment

View Attachment

### \* 15. Descriptive Title of Applicant's Project:

Vista Road Crossing Closure and Grade Separation Project

Attach supporting documents as specified in agency instructions.

Add Attachments

Delete Attachments

View Attachments

**Application for Federal Assistance SF-424****16. Congressional Districts Of:**\* a. Applicant \* b. Program/Project 

Attach an additional list of Program/Project Congressional Districts if needed.

Add Attachment

Delete Attachment

View Attachment

**17. Proposed Project:**\* a. Start Date: \* b. End Date: **18. Estimated Funding (\$):**

|                     |                                            |
|---------------------|--------------------------------------------|
| * a. Federal        | <input type="text" value="37,496,000.00"/> |
| * b. Applicant      | <input type="text" value="0.00"/>          |
| * c. State          | <input type="text" value="0.00"/>          |
| * d. Local          | <input type="text" value="0.00"/>          |
| * e. Other          | <input type="text" value="9,374,000.00"/>  |
| * f. Program Income | <input type="text" value="0.00"/>          |
| * g. TOTAL          | <input type="text" value="46,870,000.00"/> |

**\* 19. Is Application Subject to Review By State Under Executive Order 12372 Process?**

- ☐ a. This application was made available to the State under the Executive Order 12372 Process for review on .
- ☐ b. Program is subject to E.O. 12372 but has not been selected by the State for review.
- ☒ c. Program is not covered by E.O. 12372.

**\* 20. Is the Applicant Delinquent On Any Federal Debt? (If "Yes," provide explanation in attachment.)**☐ Yes ☒ No

If "Yes", provide explanation and attach

Add Attachment

Delete Attachment

View Attachment

**21. \*By signing this application, I certify (1) to the statements contained in the list of certifications\*\* and (2) that the statements herein are true, complete and accurate to the best of my knowledge. I also provide the required assurances\*\* and agree to comply with any resulting terms if I accept an award. I am aware that any false, fictitious, or fraudulent statements or claims may subject me to criminal, civil, or administrative penalties. (U.S. Code, Title 18, Section 1001)**

☒ \*\* I AGREE

\*\* The list of certifications and assurances, or an internet site where you may obtain this list, is contained in the announcement or agency specific instructions.

**Authorized Representative:**

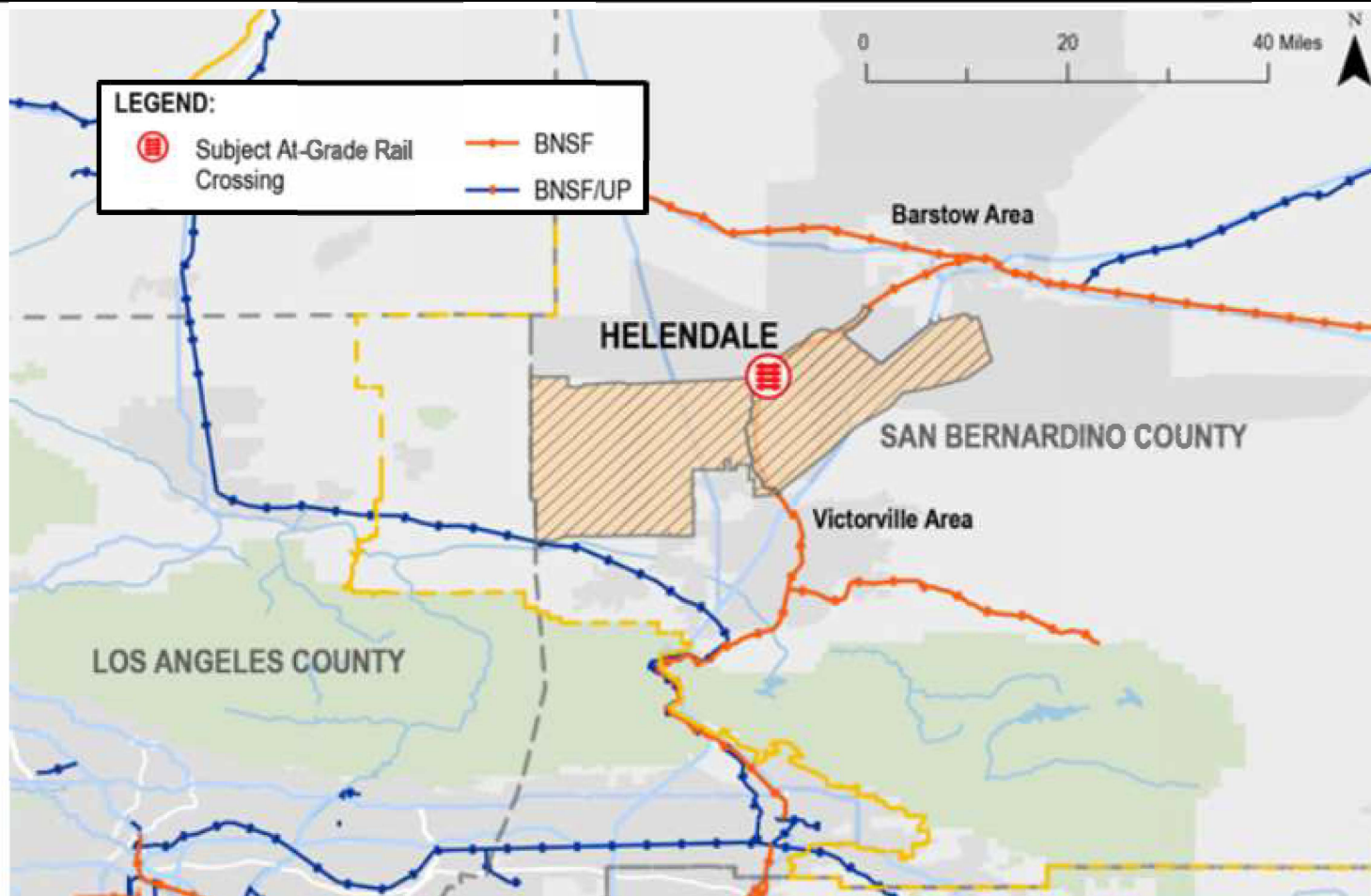
Prefix:  \* First Name:

Middle Name:

\* Last Name:

Suffix:

\* Title: \* Telephone Number:  Fax Number: \* Email: \* Signature of Authorized Representative: \* Date Signed:



**CRISI GRANT PROJECT LOCATION**

## LOCATION MAP

County Road No. 852550030  
Work Order No. TBD



SAN BERNARDINO COUNTY  
**DEPARTMENT OF PUBLIC WORKS**

2026 CRISI GRANT  
APPLICATION SUBMISSION

**U.S. Department of Transportation  
Federal Railroad Administration**

**Certifications Regarding Debarment, Suspension and Other Responsibility Matters,  
Drug-Free Workplace Requirements and Lobbying**

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**PART A: Certification Regarding Debarment, Suspension and Other Responsibility Matters – Primary Covered Transactions  
(Pursuant to 2 CFR Part 180)**

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- (1) The grantee certifies to the best of its knowledge and belief, that it and its principles:
- (a) Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded by any Federal department or agency;
  - (b) Have not within a three-year period preceding this application been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;
  - (c) Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph (1)(b) of this certification; and
  - (d) Have not within a three-year period preceding this application had one or more public transactions (Federal, State or local) terminated for cause or default.
- (2) Where the grantee is unable to certify to any of the statements of this certification, he or she shall attach an explanation to this application.

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**PART B: Certification Regarding Drug-Free Workplace Requirements (Pursuant to 49 CFR Part 32)**

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- A. The grantee certifies that it will or continue to provide a drug-free workplace by:
- (a) Publishing a statement notifying employees that the unlawful manufacture, distribution, dispensing, possession, or use of a controlled substance is prohibited in the grantee's workplace and specifying the actions that will be taken against employees for violation of such prohibition;
  - (b) Establishing an ongoing drug-free awareness program to inform employees about—
    - (1) The dangers of drug abuse in the workplace;
    - (2) The grantee's policy of maintaining a drug-free workplace;
    - (3) Any available drug counseling, rehabilitation, and employee assistance programs; and
    - (4) The penalties that may be imposed upon employees for drug abuse violations occurring in the workplace;
  - (c) Making it a requirement that each employee to be engaged in the performance of the grant be given a copy of the statement required by paragraph (a);

- (d) Notifying the employee in the statement required by paragraph (a) that, as a condition of employment under the grant, the employee will—
  - (1) Abide by the terms of the statement; and
  - (2) Notify the employer in writing of his or her conviction for a violation of criminal drug statute occurring in the workplace no later than five calendar days after such conviction;
- (e) Notifying the agency in writing, within ten calendar days after receiving notice under subparagraph (d)(2) from an employee or otherwise receiving actual notice of such conviction. Employers of convicted employees must provide notice, including position title, to every grant officer on whose grant activity the convicted employee was working, unless the Federal agency has designated a central point for the receipt of such notices. Notice shall include the identification number(s) of each affected grant;
- (f) Taking one of the following actions, within 30 calendar days of receiving notice under subparagraph (d)(2), with respect to any employee is so convicted—
  - (1) Taking appropriate personnel action against such an employee, up to and including termination, consistent with the requirements of the Rehabilitation Act of 1973, as amended; or
  - (2) Requiring such employee to participate satisfactorily in a drug abuse assistance or rehabilitation program approved for such purposes by a Federal, State, or local health, law enforcement, or other appropriate agency;
- (g) Making a good faith effort to continue to maintain a drug-free workplace through implementation of paragraphs (a), (b), (c), (e) and (f).

B. The grantee may insert in the space below the site(s) for the performance of work done in connection with the specific grant:

Place of Performance (Street address, city, county, state, zip code)

|                                                         |
|---------------------------------------------------------|
| Vista Road, Helendale, San Bernardino County, CA, 92342 |
|                                                         |
|                                                         |

Check ☐ if there are workplaces on file that are not identified here.

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**PART C: Certification Regarding Lobbying (Pursuant to 49 CFR Part 20)**

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CHECK ☒ IF APPLICABLE

CERTIFICATION IS FOR THE AWARD OF A GRANT OR COOPERATIVE AGREEMENT

EXCEEDING

\$100,000

OR

A FEDERAL LOAN EXCEEDING \$150,000

The undersigned certifies, to the best of his or her knowledge and belief, that:

- (1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of an 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.

- (2) If any funds other than Federal appropriated funds 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 this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.
- (3) The undersigned shall require that the language of this certification be included in the award document for all subawards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all subrecipients shall certify accordingly.

This certification is a material representation of fact upon which reliance was 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 31 USC 1352. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

As the authorized certifying official, I hereby certify that the certifications in Parts A, B, and C (if C is applicable) are true.

Completed by Grants.gov upon submission

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SIGNATURE OF AUTHORIZED CERTIFYING OFFICIAL

Noel Castillo, Director - Department of Public Works

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TYPED NAME AND TITLE

Completed by Grants.gov

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DATE



## Federal Railroad Administration

### APPLICANT FINANCIAL CAPABILITY QUESTIONNAIRE

#### SECTION A: PURPOSE

Federal agencies are required to review and evaluate the potential risks posed by applicants prior to awarding Federal funds (2 C.F.R. § 200.205). The Federal Railroad Administration (FRA) considers a variety of factors and information in completing this risk assessment. FRA's evaluation may include the following: financial capability and/or stability of the applicant organization; quality of the organization's management and financial systems; history of past performance; and results of audits and/or reports.

Completion of this form is intended to assist FRA in evaluating the financial capability of the applicant organization. This form is to be completed by organizations applying for FRA programs that 1) have not previously completed this form or 2) have not had a current/active award with FRA within the last three years.

#### SECTION B: ORGANIZATION INFORMATION

**1. NAME OF ORGANIZATION:**

San Bernardino County

**2. NAME AND TITLE OF AUTHORIZED REPRESENTATIVE (individual who will accept the grant on behalf of your organization):**

Prefix:  First:  Middle:   
Last:  Suffix:   
Title:

**3. YEAR ORGANIZATION WAS FOUNDED/INCORPORATED:**

1853

**4. EMPLOYER IDENTIFICATION NUMBER (EIN):**

956002748

**5. UNIQUE ENTITY IDENTIFIER:**

CFXEZ75TPJ84

**6. PRIMARY ADDRESS OF THE ORGANIZATION:**

Street1:   
Street2:   
City:   
County/Parish:   
State:   
Country:   
Zip / Postal Code:

**7. DOES THE ORGANIZATION HAVE A CURRENT ORGANIZATIONAL CHART?**

☒ Yes ☐ No

IF YES, PLEASE PROVIDE A COPY

2026-Organizational-Structu

Add Attachment

Delete Attachment

View Attachment

**8. HAS YOUR ORGANIZATION RECEIVED FEDERAL ASSISTANCE FUNDS IN THE LAST 2 YEARS?**

☒ Yes ☐ No

**9. TOTAL OPERATING BUDGET IN THE PREVIOUS FISCAL YEAR:**

\$

**SECTION C: ACCOUNTING SYSTEM**

1. HAS ANY GOVERNMENT AGENCY RENDERED AN OFFICIAL WRITTEN OPINION CONCERNING THE ADEQUACY OF THE ACCOUNTING SYSTEM FOR THE COLLECTION, IDENTIFICATION AND ALLOCATION OF COSTS UNDER FEDERAL CONTRACTS/GRANTS?

☐ Yes ☒ No

1a. IF YES, PROVIDE NAME, AND ADDRESS OF AGENCY PERFORMING REVIEW:

Agency Name:

Street1:

Street2:

City:

County/Parish:

State:

Country:

Zip / Postal Code:

1b. ATTACH A COPY OF THE LATEST REVIEW AND ANY SUBSEQUENT CORRESPONDENCE, CLEARANCE DOCUMENTS, ETC.

Add Attachments

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View Attachments

2. WHICH OF THE FOLLOWING BEST DESCRIBES THE ORGANIZATION'S ACCOUNTING SYSTEM?

☐ MANUAL

☒ AUTOMATED

☐ COMBINATION

3. IS THE ORGANIZATION'S FINANCIAL MANAGEMENT PERFORMED IN-HOUSE (BY EMPLOYED STAFF) OR OUTSOURCED WITH CONTRACTED INDIVIDUALS?

☒ IN-HOUSE

☐ OUTSOURCED/CONTRACTED

☐ COMBINATION

4. DOES THE ORGANIZATION ANTICIPATE ANY SIGNIFICANT CHANGES TO ACCOUNTING SYSTEM IN THE NEXT 12 MONTHS?

☐ Yes

☒ No

IF YES, PLEASE EXPLAIN:

5. DOES THE APPLICANT HAVE EFFECTIVE INTERNAL CONTROLS IN PLACE TO ENSURE THAT FEDERAL FUNDS ARE USED SOLELY FOR AUTHORIZED PURPOSES?

☒ Yes

☐ No

6. DOES THE ORGANIZATION HAVE WRITTEN GRANTS MANAGEMENT POLICIES AND PROCEDURES FOR THE FOLLOWING:

6a. ACCOUNTING/FINANCIAL?

☒ Yes

☐ No

6b. PROCUREMENT?

☒ Yes

☐ No

6c. PROPERTY MANAGEMENT?

☐ Yes

☒ No

6d. PERSONNEL?

☐ Yes

☒ No

6e. TRAVEL?

☐ Yes

☒ No

7. DOES THE ORGANIZATION MAINTAIN TIMESHEETS (OR TIME AND ACTIVITY REPORTS) FOR EMPLOYEES THAT TRACK ACTUAL EFFORT BY PROJECT COST OR OBJECTIVE?

☒ Yes

☐ No

8. DOES THE ORGANIZATION HAVE A CURRENT AND APPROVED INDIRECT COST RATE?

☒ Yes

☐ No

9. DOES THE ACCOUNTING/FINANCIAL SYSTEM INCLUDE CONTROLS TO PREVENT INCURRING OBLIGATIONS IN EXCESS OF:

9a TOTAL FUNDS AVAILABLE FOR A GRANT? ☐ Yes ☒ No

9b TOTAL FUNDS AVAILABLE FOR A BUDGET COST CATEGORY (e.g. Personnel, Fringe Benefits, etc.) ☒ Yes ☐ No

10. ARE THE INDIVIDUALS RESPONSIBLE FOR ADMINISTERING GRANT FUNDS FAMILIAR WITH THE CURRENT REGULATIONS AND GUIDELINES ON ADMINISTRATION, COST PRINCIPLES AND AUDIT REQUIREMENTS FOR FEDERAL GRANTS (INCLUDING 2 C.F.R. 200)?

☒ Yes ☐ No

#### SECTION D: HISTORY OF PERFORMANCE

1. HAS THE ORGANIZATION EVER HAD A FEDERAL AWARD SUSPENDED OR TERMINATED FOR NON-COMPLIANCE?

☐ Yes ☒ No

#### SECTION E: FINANCIAL STATEMENTS

1. DID THE ORGANIZATION HAVE A FINANCIAL STATEMENT AUDIT IN ITS MOST RECENT FISCAL YEAR? ☐ Yes ☒ No

1a. WHEN IS THE ORGANIZATION'S FISCAL YEAR END?

2. IF THE ORGANIZATION HAD AN AUDIT IN ITS MOST RECENT FISCAL YEAR, IS THE REPORT AVAILABLE PUBLICLY? ☐ Yes ☐ No

IF YES, PLEASE PROVIDE LOCATION: (e.g. FEDERAL AUDIT CLEARINGHOUSE OR WEBSITE)

IF NO, PLEASE PROVIDE A COPY

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3. DID YOUR ORGANIZATION EXPEND \$750,000 OR MORE IN FEDERAL FUNDS IN THE MOST RECENT COMPLETED FISCAL YEAR?

☒ Yes ☐ No

#### SECTION F: ADDITIONAL INFORMATION

1. USE THIS SPACE FOR ANY ADDITIONAL INFORMATION (INDICATE SECTION AND ITEM NUMBERS IF A CONTINUATION).

#### SECTION G: APPLICANT CERTIFICATION

I CERTIFY THAT THE ABOVE INFORMATION IS COMPLETE AND CORRECT TO THE BEST OF MY KNOWLEDGE. (THE INDIVIDUAL CERTIFYING THIS FORM SHOULD BE FAMILIAR WITH THE ORGANIZATION'S MANAGEMENT AND FINANCIAL SYSTEMS.)

1. NAME OF THE CERTIFYING OFFICIAL

Prefix:

First:

Noel

Middle:

Last:

Castillo

Suffix:

1a. SIGNATURE

Completed by Grants.gov upon submission.

1b. DATE

Completed by Grants.gov upon submission.

1c. TITLE

Director, Department of Public Works

### BUDGET INFORMATION - Construction Programs

*NOTE: Certain Federal assistance programs require additional computations to arrive at the Federal share of project costs eligible for participation. If such is the case, you will be notified.*

| COST CLASSIFICATION                                                                                                                                                                                                                     | a. Total Cost                                 | b. Costs Not Allowable<br>for Participation | c. Total Allowable Costs<br>(Columns a-b)     |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|---------------------------------------------|-----------------------------------------------|
| 1. Administrative and legal expenses                                                                                                                                                                                                    | \$ <input type="text"/>                       | \$ <input type="text"/>                     | \$ <input type="text"/>                       |
| 2. Land, structures, rights-of-way, appraisals, etc.                                                                                                                                                                                    | \$ <input type="text" value="1,510,000.00"/>  | \$ <input type="text"/>                     | \$ <input type="text" value="1,510,000.00"/>  |
| 3. Relocation expenses and payments                                                                                                                                                                                                     | \$ <input type="text"/>                       | \$ <input type="text"/>                     | \$ <input type="text"/>                       |
| 4. Architectural and engineering fees                                                                                                                                                                                                   | \$ <input type="text"/>                       | \$ <input type="text"/>                     | \$ <input type="text"/>                       |
| 5. Other architectural and engineering fees                                                                                                                                                                                             | \$ <input type="text" value="2,600,000.00"/>  | \$ <input type="text"/>                     | \$ <input type="text" value="2,600,000.00"/>  |
| 6. Project inspection fees                                                                                                                                                                                                              | \$ <input type="text"/>                       | \$ <input type="text"/>                     | \$ <input type="text"/>                       |
| 7. Site work                                                                                                                                                                                                                            | \$ <input type="text"/>                       | \$ <input type="text"/>                     | \$ <input type="text"/>                       |
| 8. Demolition and removal                                                                                                                                                                                                               | \$ <input type="text"/>                       | \$ <input type="text"/>                     | \$ <input type="text"/>                       |
| 9. Construction                                                                                                                                                                                                                         | \$ <input type="text" value="42,760,000.00"/> | \$ <input type="text"/>                     | \$ <input type="text" value="42,760,000.00"/> |
| 10. Equipment                                                                                                                                                                                                                           | \$ <input type="text"/>                       | \$ <input type="text"/>                     | \$ <input type="text"/>                       |
| 11. Miscellaneous                                                                                                                                                                                                                       | \$ <input type="text"/>                       | \$ <input type="text"/>                     | \$ <input type="text"/>                       |
| 12. SUBTOTAL (sum of lines 1-11)                                                                                                                                                                                                        | \$ <input type="text" value="46,870,000.00"/> | \$ <input type="text"/>                     | \$ <input type="text" value="46,870,000.00"/> |
| 13. Contingencies                                                                                                                                                                                                                       | \$ <input type="text"/>                       | \$ <input type="text"/>                     | \$ <input type="text"/>                       |
| 14. SUBTOTAL                                                                                                                                                                                                                            | \$ <input type="text" value="46,870,000.00"/> | \$ <input type="text"/>                     | \$ <input type="text" value="46,870,000.00"/> |
| 15. Project (program) income                                                                                                                                                                                                            | \$ <input type="text"/>                       | \$ <input type="text"/>                     | \$ <input type="text"/>                       |
| 16. TOTAL PROJECT COSTS (subtract #15 from #14)                                                                                                                                                                                         | \$ <input type="text" value="46,870,000.00"/> | \$ <input type="text"/>                     | \$ <input type="text" value="46,870,000.00"/> |
| <b>FEDERAL FUNDING</b>                                                                                                                                                                                                                  |                                               |                                             |                                               |
| 17. Federal assistance requested, calculate as follows:<br>(Consult Federal agency for Federal percentage share.) Enter eligible costs from line 16c Multiply X <input type="text" value="80"/> %<br>Enter the resulting Federal share. |                                               |                                             | \$ <input type="text" value="37,496,000.00"/> |

## ASSURANCES - CONSTRUCTION PROGRAMS

OMB Number: 4040-0009  
Expiration Date: 06/30/2028

Public reporting burden for this collection of information is estimated to average 15 minutes per response, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to the Office of Management and Budget, Paperwork Reduction Project (0348-0042), Washington, DC 20503.

**PLEASE DO NOT RETURN YOUR COMPLETED FORM TO THE OFFICE OF MANAGEMENT AND BUDGET. SEND IT TO THE ADDRESS PROVIDED BY THE SPONSORING AGENCY.**

**NOTE:** Certain of these assurances may not be applicable to your project or program. If you have questions, please contact the Awarding Agency. Further, certain Federal assistance awarding agencies may require applicants to certify to additional assurances. If such is the case, you will be notified.

As the duly authorized representative of the applicant, I certify that the applicant:

1. Has the legal authority to apply for Federal assistance, and the institutional, managerial and financial capability (including funds sufficient to pay the non-Federal share of project costs) to ensure proper planning, management and completion of project described in this application.
2. Will give the awarding agency, the Comptroller General of the United States and, if appropriate, the State, the right to examine all records, books, papers, or documents related to the assistance; and will establish a proper accounting system in accordance with generally accepted accounting standards or agency directives.
3. Will not dispose of, modify the use of, or change the terms of the real property title or other interest in the site and facilities without permission and instructions from the awarding agency. Will record the Federal interest in the title of real property in accordance with awarding agency directives and will include a covenant in the title of real property acquired in whole or in part with Federal assistance funds to assure nondiscrimination during the useful life of the project.
4. Will comply with the requirements of the assistance awarding agency with regard to the drafting, review and approval of construction plans and specifications.
5. Will provide and maintain competent and adequate engineering supervision at the construction site to ensure that the complete work conforms with the approved plans and specifications and will furnish progressive reports and such other information as may be required by the assistance awarding agency or State.
6. Will initiate and complete the work within the applicable time frame after receipt of approval of the awarding agency.
7. Will establish safeguards to prohibit employees from using their positions for a purpose that constitutes or presents the appearance of personal or organizational conflict of interest, or personal gain.
8. Will comply with the Intergovernmental Personnel Act of 1970 (42 U.S.C. §§4728-4763) relating to prescribed standards of merit systems for programs funded under one of the 19 statutes or regulations specified in Appendix A of OPM's Standards for a Merit System of Personnel Administration (5 C.F.R. 900, Subpart F).
9. Will comply with the Lead-Based Paint Poisoning Prevention Act (42 U.S.C. §§4801 et seq.) which prohibits the use of lead-based paint in construction or rehabilitation of residence structures.
10. Will comply with all Federal statutes relating to non-discrimination. These include but are not limited to: (a) Title VI of the Civil Rights Act of 1964 (P.L. 88-352) which prohibits discrimination on the basis of race, color or national origin; (b) Title IX of the Education Amendments of 1972, as amended (20 U.S.C. §§1681 1683, and 1685-1686), which prohibits discrimination on the basis of sex; (c) Section 504 of the Rehabilitation Act of 1973, as amended (29 U.S.C. §794), which prohibits discrimination on the basis of handicaps; (d) the Age Discrimination Act of 1975, as amended (42 U.S.C. §§6101-6107), which prohibits discrimination on the basis of age; (e) the Drug Abuse Office and Treatment Act of 1972 (P.L. 92-255), as amended relating to nondiscrimination on the basis of drug abuse; (f) the Comprehensive Alcohol Abuse and Alcoholism Prevention, Treatment and Rehabilitation Act of 1970 (P.L. 91-616), as amended, relating to nondiscrimination on the basis of alcohol abuse or alcoholism; (g) §§523 and 527 of the Public Health Service Act of 1912 (42 U.S.C. §§290 dd-3 and 290 ee 3), as amended, relating to confidentiality of alcohol and drug abuse patient records; (h) Title VIII of the Civil Rights Act of 1968 (42 U.S.C. §§3601 et seq.), as amended, relating to nondiscrimination in the sale, rental or financing of housing; (i) any other nondiscrimination provisions in the specific statute(s) under which application for Federal assistance is being made; and (j) the requirements of any other nondiscrimination statute(s) which may apply to the application.

11. Will comply, or has already complied, with the requirements of Titles II and III of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (P.L. 91-646) which provide for fair and equitable treatment of persons displaced or whose property is acquired as a result of Federal and federally-assisted programs. These requirements apply to all interests in real property acquired for project purposes regardless of Federal participation in purchases.
12. Will comply with the provisions of the Hatch Act (5 U.S.C. §§1501-1508 and 7324-7328) which limit the political activities of employees whose principal employment activities are funded in whole or in part with Federal funds.
13. Will comply, as applicable, with the provisions of the Davis-Bacon Act (40 U.S.C. §§276a to 276a-7), the Copeland Act (40 U.S.C. §276c and 18 U.S.C. §874), and the Contract Work Hours and Safety Standards Act (40 U.S.C. §§327-333) regarding labor standards for federally-assisted construction subagreements.
14. Will comply with flood insurance purchase requirements of Section 102(a) of the Flood Disaster Protection Act of 1973 (P.L. 93-234) which requires recipients in a special flood hazard area to participate in the program and to purchase flood insurance if the total cost of insurable construction and acquisition is \$10,000 or more.
15. Will comply with environmental standards which may be prescribed pursuant to the following: (a) institution of environmental quality control measures under the National Environmental Policy Act of 1969 (P.L. 91-190) and Executive Order (EO) 11514; (b) notification of violating facilities pursuant to EO 11738; (c) protection of wetlands pursuant to EO 11990; (d) evaluation of flood hazards in floodplains in accordance with EO 11988; (e) assurance of project consistency with the approved State management program developed under the Coastal Zone Management Act of 1972 (16 U.S.C. §§1451 et seq.); (f) conformity of Federal actions to State (Clean Air) implementation Plans under Section 176(c) of the Clean Air Act of 1955, as amended (42 U.S.C. §§7401 et seq.); (g) protection of underground sources of drinking water under the Safe Drinking Water Act of 1974, as amended (P.L. 93-523); and, (h) protection of endangered species under the Endangered Species Act of 1973, as amended (P.L. 93-205).
16. Will comply with the Wild and Scenic Rivers Act of 1968 (16 U.S.C. §§1271 et seq.) related to protecting components or potential components of the national wild and scenic rivers system.
17. Will assist the awarding agency in assuring compliance with Section 106 of the National Historic Preservation Act of 1966, as amended (16 U.S.C. §470), EO 11593 (identification and protection of historic properties), and the Archaeological and Historic Preservation Act of 1974 (16 U.S.C. §§469a-1 et seq).
18. Will cause to be performed the required financial and compliance audits in accordance with the Single Audit Act Amendments of 1996 and OMB Circular No. A-133, "Audits of States, Local Governments, and Non-Profit Organizations."
19. Will comply with all applicable requirements of all other Federal laws, executive orders, regulations, and policies governing this program.
20. Will comply with the requirements of Section 106(g) of the Trafficking Victims Protection Act (TVPA) of 2000, as amended (22 U.S.C. 7104) which prohibits grant award recipients or a sub-recipient from (1) Engaging in severe forms of trafficking in persons during the period of time that the award is in effect (2) Procuring a commercial sex act during the period of time that the award is in effect or (3) Using forced labor in the performance of the award or subawards under the award.

|                                                                                                                                                                      |                                                                                                                                            |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|
| <b>SIGNATURE OF AUTHORIZED CERTIFYING OFFICIAL</b><br><div style="border: 1px solid black; padding: 5px; min-height: 40px;">Completed on submission to Grants.</div> | <b>TITLE</b><br><div style="border: 1px solid black; height: 20px; background-color: yellow;"></div>                                       |
| <b>APPLICANT ORGANIZATION</b><br><div style="border: 1px solid black; padding: 5px; min-height: 20px;">San Bernardino County</div>                                   | <b>DATE SUBMITTED</b><br><div style="border: 1px solid black; padding: 5px; min-height: 20px;">Completed on submission to Grants.gov</div> |

# Vista Road Crossing Closure and Grade Separation Project

Applicant:  
San Bernardino County



June 22, 2026





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# 1. COVER PAGE TABLE

|                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                          |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Project Title                                                                                                                                                                  | Vista Road Crossing Closure and Grade Separation Project                                                                                                                                                                                                                                                                                                                                                                 |
| Lead Applicant Name                                                                                                                                                            | San Bernardino County                                                                                                                                                                                                                                                                                                                                                                                                    |
| Amount of CRISI Program funding requested under this NOFO                                                                                                                      | \$37,496,000                                                                                                                                                                                                                                                                                                                                                                                                             |
| Total Amount of proposed non-Federal share \$                                                                                                                                  | \$9,374,000                                                                                                                                                                                                                                                                                                                                                                                                              |
| Amount of non-Crossing Safety Program Federal funding (if applicable) including pending awards                                                                                 | N/A                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Total Project Cost                                                                                                                                                             | \$46,870,000                                                                                                                                                                                                                                                                                                                                                                                                             |
| Source(s) of proposed non-Federal share                                                                                                                                        | BNSF Railways: \$9,374,000                                                                                                                                                                                                                                                                                                                                                                                               |
| Was Federal grant application previously submitted for this project?                                                                                                           | Yes.<br>FY 2024 RCE Grant Program<br>FY 2024 CRISI Grant Program<br>FY 2024/25 FSP Grant Program<br>FY 2025/26 RCE Program                                                                                                                                                                                                                                                                                               |
| City where project is located                                                                                                                                                  | Helendale, CA                                                                                                                                                                                                                                                                                                                                                                                                            |
| County where project is located                                                                                                                                                | San Bernardino County                                                                                                                                                                                                                                                                                                                                                                                                    |
| State where project is located                                                                                                                                                 | California                                                                                                                                                                                                                                                                                                                                                                                                               |
| Congressional district where project is located                                                                                                                                | CA-28                                                                                                                                                                                                                                                                                                                                                                                                                    |
| What percent of funding is spent in a Rural Area?                                                                                                                              | 100%                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Among of funding eligible for set-aside funds                                                                                                                                  | Amount:\$37,496,000<br>Set Aside: Rural                                                                                                                                                                                                                                                                                                                                                                                  |
| Lifecycle Stages proposed to be funded by this NOFO                                                                                                                            | Construction                                                                                                                                                                                                                                                                                                                                                                                                             |
| Current Lifecycle Stage and its anticipated completion date                                                                                                                    | Project Development: March 2027                                                                                                                                                                                                                                                                                                                                                                                          |
| Is project located on real property owned by someone others than the applicant                                                                                                 | Partially. Approximately twenty-nine (29) acres of land will need to be acquired for the project.                                                                                                                                                                                                                                                                                                                        |
| Host railroad/infrastructure owner of project assets                                                                                                                           | BSNF is the owner of the rail infrastructure over which the proposed grade separated structure will pass.                                                                                                                                                                                                                                                                                                                |
| Other impacted railroads                                                                                                                                                       | N/A                                                                                                                                                                                                                                                                                                                                                                                                                      |
| If applicant is a commuter railroad: list the intercity passenger and/or freight railroad services utilizing the proposed project.                                             | N/A. BNSF is the owner of the rail corridor over which the proposed grade separated structure will pass.                                                                                                                                                                                                                                                                                                                 |
| Has the applicant executed an agreement with the host railroad regarding use of the railroad right-of-way where the project will be located consistent with 49 U.S.C. 22905(c) | Pending                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Is the Project currently programmed into any medium- or long-range planning document?                                                                                          | Not specifically identified in any medium- or long-range planning, though the proposed Project is consistent with overarching safety objectives of the California State Rail Plan and specifically its Railroad-Highway Grade Crossing Program (RHGCP) which focuses on improving safety and operational efficiency by reducing the number of at-grade crossings through closures, consolidations, or grade separations. |
| Is the project located on a potential corridor selected for the Corridor Identification and Development Program                                                                | No                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Is the project expected to need a waiver under the FRA's domestic preference requirements                                                                                      | No                                                                                                                                                                                                                                                                                                                                                                                                                       |

## 2. PROJECT SUMMARY

San Bernardino County (the County) is pleased to submit this application seeking funding from the Federal Railroad Administration's (FRA) Consolidated Rail Infrastructure and Safety Improvement (CRISI) grant program the Vista Road Grade Separation Safety and Mobility Project (Project) in the unincorporated rural community of Helendale, California. The Project is comprised of a program of infrastructure improvements including the closure of an existing at-grade crossing at Vista Road ([USDOT Crossing ID 026068N](#)) and the Southern Transcontinental rail corridor (Transcon) in the community of Helendale, the extension of Vista Road approximately three-quarters of a miles south, and the construction of a new grade-separated structure over the rail corridor connecting to the National Trails Highway (also known as Route 66). When implemented and operational, the Project will improve the safety and reliability of freight and intercity passenger rail operations through the elimination of an at-grade crossing with a history of safety incidents. The Project will also deliver safer, more efficient, and more reliable travel for autos and trucks coming to and from Helendale, while providing safer pedestrian and cyclist movement across the rail corridor. In addition, the Project will reduce carbon emissions and promote short- and long-term economic opportunities for the local community and greater region.

**Figure 1: Vehicles Queued Vista Road While At-Grade Crossing is Occupied by Rail Traffic**



Source: San Bernadino County

### 3. GRANT FUNDS, SOURCES, AND USE OF PROJECT FUNDS

#### 3.1 Project Budget

The total budget for the Project has been estimated at \$46,870,000 and the County is seeking a CRISI award of \$37,496,000, representing 80% of the Project's costs. A detailed overview of the project costs by lifecycle stage and project element are shown in Table 1 below:

**Table 1: Vista Road Crossing Closure and Grade Separation Project: Estimated Costs**

| Lifecycle Stage     | Project Element                             | Cost                 |
|---------------------|---------------------------------------------|----------------------|
| Project Development | Environmental Documentation                 | \$ 350,000           |
|                     | Preliminary Design (60-95%)                 | \$ 1,750,000         |
|                     | Right-of-Way and Utilities Relocation       | \$ 1,510,000         |
| Final Design        | Final Design                                | \$ 500,000           |
| Construction        | Construction                                | \$ 30,770,000        |
|                     | Construction Soft Costs (PMCM, Contingency) | \$ 11,990,000        |
|                     | <b>Project Total Cost</b>                   | <b>\$ 46,870,000</b> |

Source: AECOM

#### 3.2 Sources

The CRISI grant request is for \$37.5 million which will be matched by the County and their project delivery partner BNSF who will contribute a local match of \$9.4 million, or 20% of the of total Project costs. The entirety of the non-federal match will come from the private sector, with the \$9.4 million contribution from BNSF considered cash and funded from their operating budget. A letter of financial commitment from project delivery partner BNSF has been included in this application. Table 2 on the following page provides an overview of the source of funding for each of the Project's elements. Though the Project is comprised of activities across the project development, final design, and construction lifecycle stages, CRISI grant funding is only sought for construction lifecycle stage activities.

**Table 2: Vista Road Crossing Closure and Grade Separation Project: Estimated Costs**

| Lifecycle Stage     | Project Element                       | Cost (\$M)     | Local Match (\$M) | CRISI Ask (\$M) |
|---------------------|---------------------------------------|----------------|-------------------|-----------------|
| Project Development | Environmental Documentation           | \$0.35         | \$0.35            | \$-             |
|                     | Preliminary Design (60-95%)           | \$1.75         | \$1.75            | \$-             |
|                     | Right-of-Way and Utilities Relocation | \$1.51         | \$1.51            | \$-             |
| Final Design        | Final Design                          | \$0.5          | \$0.50            | \$-             |
| Construction        | Construction                          | \$30.77        | \$-               | \$30.77         |
|                     | Construction Soft Costs               | \$11.99        | \$5.26            | \$6.73          |
|                     | <b>Project Total Cost</b>             | <b>\$46.87</b> | <b>\$9.55</b>     | <b>\$37.50</b>  |

Source: AECOM

### 3.3 Use of Funds

Table 3 provide a detailed overview of the Project's estimated costs and source of funds. It identifies each component of the project, its estimated cost, and the source of funding. The table also identifies the total project cost, the amount of the grant award sought under the CRISI program, and the quantum and source of the non-federal match.

**Table 3: Vista Road Crossing Closure and Grade Separation Project: Project Funding Overview**

| Task #                                              | Project Component                                 | Cost         | Percentage of Total Cost | Source of Funds                 |
|-----------------------------------------------------|---------------------------------------------------|--------------|--------------------------|---------------------------------|
| 1                                                   | Environmental Regulatory Analysis (CEQA and NEPA) | \$350,000    | 0.7%                     | BNSF                            |
| 2                                                   | Advancement of Design from 60% to 95%             | \$1,750,000  | 3.7%                     | BNSF                            |
| 3                                                   | Right of Way Acquisition                          | \$1,510,000  | 3.2%                     | BNSF                            |
| 4                                                   | Final Design                                      | \$500,000    | 1.1%                     | BNSF                            |
| 5                                                   | Construction (including soft costs)               | \$42,760,000 | 91.2%                    | CRISI Grant, Local match (BNSF) |
| Total Project Cost                                  |                                                   | \$46,870,000 |                          | CRISI Grant, Local Match (BNSF) |
| Federal CRISI funding requested in this application |                                                   | \$37,496,000 |                          | FRA CRISI Program               |
| Non-Federal Funding                                 |                                                   | Cash:        | \$9,374,000              | BNSF                            |
| Other Federal funding committed pending             |                                                   | N/A          |                          |                                 |



## 4. APPLICANT ELIGIBILITY CRITERIA

San Bernardino County, a political subdivision of a State, is the applicant and is an eligible recipient under 49 U.S. Code (U.S.C.) § 22909(c).

## 5. PROJECT ELIGIBILITY CRITERIA

This project is eligible under the following section in the CRISI Program NOFO: 3(d)(v):

A highway-rail grade crossing improvement project, including installation, repair, or improvement of grade separations, railroad crossing signals, gates, and related technologies, highway traffic signalization, highway lighting and crossing approach signage, roadway improvements such as medians or other barriers, railroad crossing panels and surfaces, and safety engineering improvements to reduce risk in quiet zones or potential quiet zones.

### 5.1 Project Lifecycle Activities

The Project comprises elements across the following three lifecycle stages:

- Project Development;
- Final Design; and
- Construction.

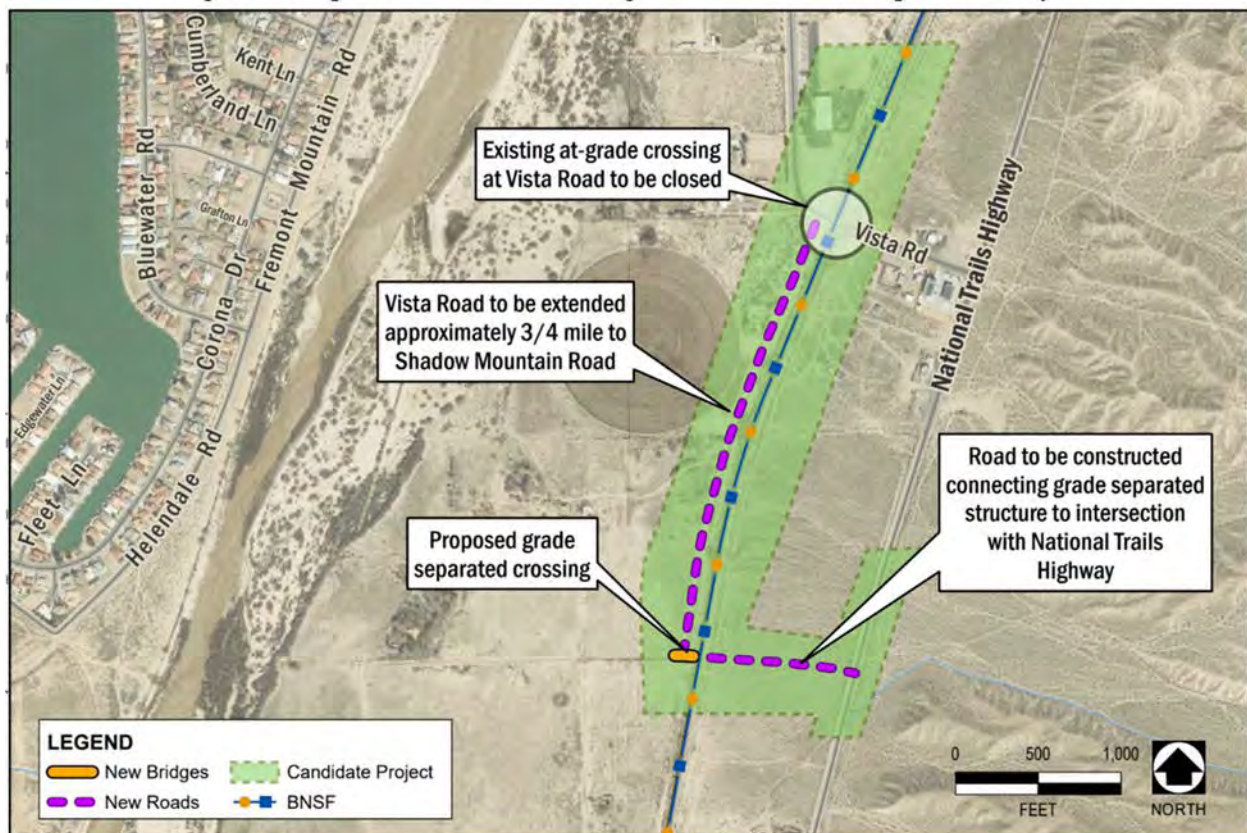
CRISI funding is sought only for construction lifecycle stage activities.

## 6. DETAILED PROJECT DESCRIPTION

### 6.1 Overview

The Project will eliminate the existing at-grade highway/rail crossing (USDOT Crossing ID 026068N) of Vista Road and the Southern Transcontinental rail corridor (Transcon) in the unincorporated rural community of Helendale in San Bernardino County. Vista Road will be extended southward adjacent to the rail corridor approximately three-quarters of a mile where it will connect to a newly constructed grade separated structure over the rail corridor and along an approximately 750-foot road extension connecting to the National Trails Highway (also known as Route 66). An overview of the Project's main construction elements is shown in Figure 2.

**Figure 2: Proposed Vista Road Crossing Closure and Grade Separation Project**



Source: San Bernardino County, AECOM

The Transcon carries between approximately 70 freight trains a day (rising to 90 during seasonal peaks) operated by BNSF and Union Pacific depending on operating needs. Additionally, Amtrak operates daily Southwest Chief service along the Transcon.

Vista Road is the only roadway allowing access to the Helendale/Silverlake community from the National Trails Highway. Increased train movements coupled with the growth in vehicular traffic has resulted in an increase of delays at the existing at-grade crossing. These delays have not only affected traffic but also impacted access by emergency vehicles. There is no medical facility, fire

station, or sheriff station in Helendale. With the closest emergency facilities located in Victorville fifteen miles to the south, delays at the occupied Vista Road at-grade crossing can be a vital factor in critical situations. In recent years, the at-grade crossing has also been the site of several accidents, including one resulting in a fatality in 2023.

The overarching objective of the Project is to enable safer, more efficient, and more reliable operations for intercity passenger rail, freight rail, and road vehicles. In addition to improving mobility, the Project's implementation will also promote economic opportunities in a rural and unincorporated area of the County experiencing economic and social disadvantages.

## 6.2 Statement of Works

The Project consists of several components addressing multiple modes of transportation and includes both pre-construction and construction activities (though CRISI funding is sought only for construction activities).

### 6.2.1 Preconstruction Activities

The Project's pre-construction activities comprise of Project Development lifecycle stage activities of Advancing Preliminary Engineering to 95%, Environmental Analysis and Determination, and Right of Way Acquisition, and the Final Design lifecycle stage activity of Advanced and Final Design.

#### **Advance Preliminary Engineering to 95%**

The County and their consultant team will build upon the existing preliminary engineering, and will review the current 60% design, updating standard and furthering the design to 95%, thus completing the planning, specification, and estimates (PS&E) stage.

#### **Environmental Analysis and Determination**

The County completed a Preliminary Environmental Study in 2012 evaluating the grade separation for permit and environmental requirements. The study found the Project is expected to be cleared with a Categorical Exclusion under current regulation 771.117(d)(3) enabling the construction of grade separations to replace existing at-grade railroad crossings.

In coordination with the FRA, the County will prepare necessary NEPA documents, including, but not limited to the following:

- Definition of the Project and existing conditions;
- Identification of the purpose of and need for the Project;
- Identification and analysis of Project build alternatives and a no-action alternative; and

- An analysis of existing conditions in comparison to the impacts of the proposed action, including any needed technical reports to perform section 106 clearance on the connection to National Trails Highway.

The County will address FRA comments and produce a final document for review and approval.

### **Right of Way Acquisition**

To successfully construct and implement the Project, the County needs to acquire – both permanently and temporarily (for access easements) approximately twenty-nine (29) acres of right-of-way with the bulk of this land needed for the extensions of Vista Road and Shadow Mountain Road to the newly constructed grade separated structure.

### **6.2.2 Final Design**

Having advanced the Project's design to 95%, the County's engineering team will prepare an Engineering Design Review package, including Final Design (FD) for FRA for review and acceptance to support construction. The Engineering Design Review will include Final Design Plans, specifications, updated cost estimates based on FD quantities, and schedules necessary to demonstrate the effectiveness, feasibility, and readiness of the Project to be bid and/or constructed by a qualified contractor. The Engineering Design Review will include an engineer's schedule, construction estimate and documentation approval of the plan by stakeholders, as applicable.

### **6.2.3 Construction**

The Project's construction lifecycle activity components are composed of two elements: Crossing Closure, Road Reconfiguration, and Extension; and Grade Separation Structure and Roadway Extension.

### **Crossing Closure, Road Reconfiguration, and Extension**

The existing at-grade crossing of Vista Road and the Transcon will be closed, eliminating the conflict point between roadway vehicles and trains. The roadway element of the Project will comprise the realignment of the existing intersection with Vista Road and Jordan Road to allow for free flow of traffic and eliminating the existing at-grade crossing with the BNSF corridor. Vista Road will be extended approximately 3,800 feet (0.72 miles) south within the footprint of the existing unpaved Jordan Road, where it will terminate at a T intersection with Shadow Mountain Road. The extended Vista Road will consist of two twelve-foot travel lanes with eight foot shoulders and six-foot sidewalks, curbing, striping, and traffic signals. To the immediate east of the Vista Road's extension's terminus, a grade separated structure will carry the Shadow Mountain Road over the BNSF corridor and along a newly constructed extension of Shadow Mountain Road of approximately 750 feet to a newly constructed T-intersection with National Trails Highway. This approximately 1,100-foot section of Shadow Mountain Road will consist of two twelve-foot lanes in each direction with eight-foot shoulders. Additional improvements will include drainage

elements consistent with best management practices consistent with the County's water quality management plan (WQMP).

### **Grade Separated Structure and Roadway Extension**

The grade separated structure carrying Shadow Mountain Road over the BNSF rail corridor a single span Cast-in-Place / Pre-Stressed (CIP/PS) Box Girder with a span length of 215 feet and width of 64.5 feet. with mechanically stabilized (MSE) walls to support bridge abutments and soil fill for the approaches. Abutments will be MSE wall abutment on stub footings, supported by deep foundations through reinforced fill. New roadway and embankments will be constructed on both abutment approaches up to 42 feet high with 2H:1V slopes. The facility will carry two twelve-foot lanes in each direction with eight-foot shoulders and concrete guardrails and fencing. The bridge will be built out to four lanes to accommodate the future four lane Shadow Mountain Road extension (Phase 2) which will provide secondary access to Helendale from National Trails Highway.

The County will be responsible for ensuring the Project is constructed in accordance with the FRA approved environmental documents and the FRA-accepted engineering documentation. The County is responsible for ensuring that any commitments identified in the approved environmental document are accounted for in the engineering design and implementation process.

Upon its completion and commencement of operations, the Project will deliver improved safety and reliability of passenger and freight rail operations along this section of the Transcon while providing safer and faster multimodal mobility to and from Helendale from the National Trails Highway. The elimination of delay associated with vehicular queueing at the existing at-grade crossing as a result of the Project's implementation will also improve reliability of access to and from Helendale, ensuring that emergency services are able to efficiently access the town when needed. The Project is the first phase of a larger program of works aimed at providing safer and more efficient access to Helendale from the National Trails Highway. The second phase, currently at an early stage of conceptual development, would be comprised of the extension of Shadow Mountain Road from the Phase 1 grade separated structure west to where it will be carried by a new bridge over the Mojave River thus providing a second point of access to Helendale from the National Trails Highway

## **6.3 Environmental Information**

The expected NEPA determination for the Project is a Categorical Exclusion in that it is not expected to result in any:

- Significant environmental impacts;
- Substantial controversy on environmental grounds;
- Significant impact on properties protected by Section 4(f) requirements or Section 106 of the National Historic Preservation Act; nor

- Inconsistencies with any Federal, State, or local law, requirement or administrative determination relating to the environmental aspects of the action.

The County completed a Preliminary Environmental Study in 2012 evaluating the grade separation for permit and environmental requirements. The study found the Project is expected to be cleared with a Categorical Exclusion under current regulation 771.117(d)(3) enabling the construction of grade separations to replace existing at-grade railroad crossings.

In coordination with the FRA, the County will prepare necessary NEPA documents, including, but not limited to the following:

- Definition of the Project and existing conditions;
- Identification of the purpose of and need for the Project;
- Identification and analysis of Project build alternatives and a no-action alternative; and
- An analysis of existing conditions in comparison to the impacts of the proposed action, including any needed technical reports to perform section 106 clearance on the connection to National Trails Highway.

The County will address FRA comments and produce a final document for review and approval.

## Grade Crossing Information

The Project, when implemented, would result in the permanent closure of the current at-grade crossing #026068N at Vista Road. A new grade separated crossing over the BNSF mainline would be constructed approximately three-quarters of a mile south, connecting an extended Vista Road and Shadow Mountain Road to the National Trails Highway. An overview the attributes of the at-grade crossing to be closed are shown in Table 4.

**Table 4: Grade Crossing Information for Crossing ID 026068N**

| USDOT Grade Crossing Inventory # | Proposed Improvement | Rail Operator | Railroad Owner | Latitude Coordinates | Longitude Coordinates |
|----------------------------------|----------------------|---------------|----------------|----------------------|-----------------------|
| 026068N                          | Closure              | BSNF, Amtrak  | BNSF           | 34.7329320           | -117.329264           |

## Safety Benefit Information

The existing Vista Road crossing proposed for closure crossing has been identified as a significant safety concern amongst all at-grade crossing in San Bernardino County, which has the highest number of at-grade crossing incidents in California (1,513 incidents). More than 70 passenger and freight trains traverse this crossing daily (rising to approximately 90 trains in the last quarter of the calendar year), and it ranks fifth in the county in terms of total incidents which have led to significant delays for both rail and road users. Given that California is the sixth-ranked state for total at-grade crossing incidents involving passenger and freight trains since 2019, the Project's primary objective is to enhance safety by decommissioning the Vista Road crossing and constructing a new grade separated crossing three quarters of a mile south, thereby significantly

reducing the risk of vehicular and train collisions and addressing the pressing need for safety improvements.

The FRA's Highway-Rail GXAPS corroborates the history of accidents at the Vista Road crossing. With a GXAPS rating of 0.302741, the existing Vista Road at-grade crossing is 12 times more likely to witness a crash than the average California crossing (GXAPS rating of 0.025143). Currently, Vista Road is ranked 109th out of the state's 5,516 railroad crossings in terms of its likelihood of experiencing a future crash. It also ranks third among the 264 highway-rail grade crossings in the County.

Over the past 5 years, the Vista Road crossing has been the site of major safety incidents. The most recent accident took place on April 18, 2023, when a BNSF train collided with a vehicle resulting in a fatality and another severe injury (aftermath shown in Figure 3). As vehicle traffic and train activity continue to increase, so do delays at the existing at-grade crossing, leading to obstructed access for emergency vehicles and an increased risk of crashes.

Based on safety incident activity at the crossing which has occurred within the past five years, the implementation and operation of the project would result in the avoidance of approximately 4 fatalities and 8 injuries over its first twenty years of operation.

**Figure 3: Rail-Vehicle Accident at Vista Road Crossing Resulting in Fatality and Severe Injury**



**Source: Victor Valley News (2023)**

In addition to eliminating the possibility of accidents at the Vista Road at-grade crossing, the Project will yield additional safety benefits, such as reducing travel delays for emergency services. Currently, the closest hospital to Silver Lakes is approximately 16 miles south in Victorville, and the community is isolated by the rail corridor. The response time of emergency services is

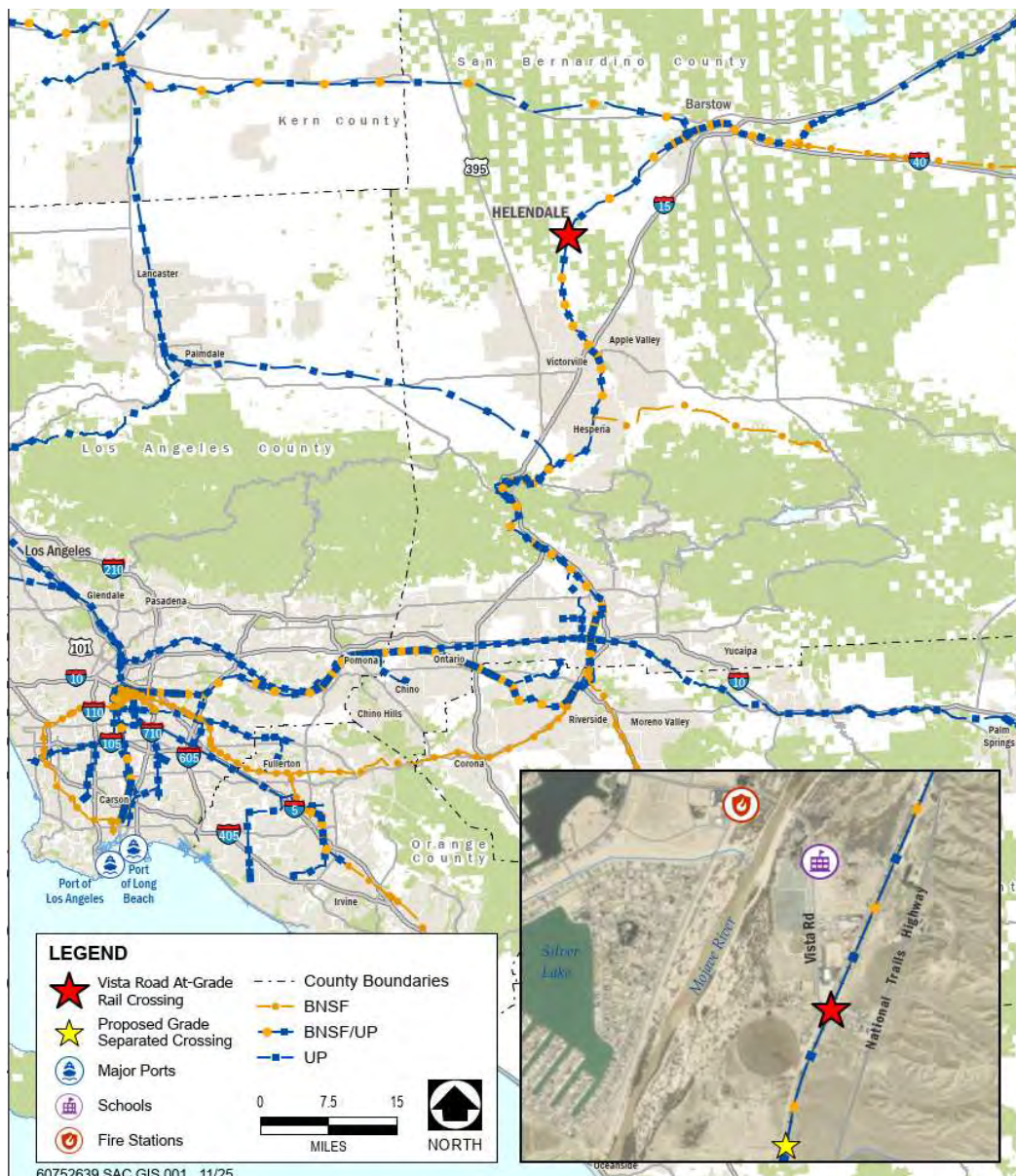


contingent on train traffic. Similarly, the County Sheriff's Department (Victor Valley Sheriff's Station), the nearest police station to the Silver Lakes community, is approximately 21 miles south. Its response time to emergencies can also be hindered due to train traffic occupying the crossing at Vista Road. Therefore, the Project is crucial for improving safety and emergency response times in the community.

## 7. PROJECT LOCATION

The Project is located in unincorporated San Bernardino County near the community of Helendale, in California's 23<sup>rd</sup> Congressional district (as shown in Figure 4). The Vista Road crossing (DOT No. 026068N) proposed for closure as part of the Project's implementation is located at railroad milepost 22 with a latitude of 34°43'58.67"N (34.7329320) and a longitude of 117°19'45.35"W (-117.329264). The proposed grade separated structure crossing over the BNSF rail corridor would be located approximately three-fourths of a mile south of the existing Vista Road crossing at latitude of 34°43'32.93"N and a longitude of 117°19'56.52"W.

**Figure 4: Location of Helendale Relative to Los Angeles and Major Ports**



Source: ESRI, AECOM

Situated in the western part of San Bernardino County, between Victorville and Barstow, Helendale is mainly made up of the Silver Lakes community and is a peaceful rural retreat in the Victor Valley of the Mojave Desert. With a population of 6,163 according to the 2020 U.S. Census, Helendale is defined by its remote desert location. Helendale's history is closely linked to the 1926 opening of Route 66. The area is predominantly made up of the Silver Lakes community but also encompasses ranches and agricultural lands. Since the early 1970s, the Silver Lakes community centers around two manmade lakes, covering approximately 277 acres, and includes a clubhouse, equestrian center, an inn, and three schools. The major roadways in the area are National Trails Highway (Route 66), Vista Road, and Shadow Mountain Road.

San Bernardino County is a bustling global commerce center with robust transportation infrastructure and a large, skilled workforce. The County is larger than nine U.S. states in area, spanning over 20,160 square miles, houses over 645,000 households with a median income of \$86,000 and a labor force of 950,000. It has three major airports, three major interstate highways, and significant railways.

The state of California ranks sixth in total at grade railroad crossings while San Bernardino County has the most incidents in the state. Unfortunately, the County ranks first in the state of California for total at-grade crossing incidents, making it the sixth most incident-prone county in the nation. The Port of Los Angeles and Long Beach are major gateways for goods imported from Asia and elsewhere. Freight transit through this corridor is a lynchpin distribution leverage point with great economic significance for Southern California and nation. The Project's location in this region enhances the importance of efficiency and safety of this freight network.

## 8. EVALUATION AND SELECTION CRITERIA

### 8.1 Project Readiness

#### 8.1.1 National Environmental Policy Act

A preliminary environmental study was conducted in 2012 and full National Environmental Policy Act (NEPA) clearance through a Categorical Exclusion (CE), as well as California Environmental Quality Act (CEQA) clearance through a Mitigated Negative Declaration (MND), is expected by June 2028.

#### 8.1.2 Status and Timeline of Agreements

The County anticipated announcement of the grant award by October 2026, with pre-construction activities to commence shortly after. The environmental analysis would begin in October 2006 and complete within one year. Concurrent with the environmental analysis would be the advancement of preliminary design from 60% to 95% (January 2027 – August 2027) and right-of-way acquisition (January 2027 – December 2027). Final Design would begin in September 2027 and complete by January 2028. Following acceptance of the final design review package by FRA, the receipt of a NEPA determination, and the satisfaction of all other pre-obligation administrative requirements, the County anticipates grant obligation in the first quarter of 2028. Bidding and procurement would follow immediately after with construction anticipated to begin in July 2028 and completing in December 2029. An overview of the Project's proposed schedule is shown in Table 4.

**Table 4: Vista Road Crossing Closure and Grade Separation Project: Proposed Schedule**

|                            |                                | 2026 | 2027 |    |    |    | 2028 |    |    |    | 2029 |    |    |    |
|----------------------------|--------------------------------|------|------|----|----|----|------|----|----|----|------|----|----|----|
| Lifecycle Stage            | Activity                       | Q4   | Q1   | Q2 | Q3 | Q4 | Q1   | Q2 | Q3 | Q4 | Q1   | Q2 | Q3 | Q4 |
|                            | CRISI Grant Award Notification |      |      |    |    |    |      |    |    |    |      |    |    |    |
| Project Development        | Environmental Documentation    |      |      |    |    |    |      |    |    |    |      |    |    |    |
|                            | Right of Way Acquisition       |      |      |    |    |    |      |    |    |    |      |    |    |    |
|                            | 60-90% Design                  |      |      |    |    |    |      |    |    |    |      |    |    |    |
| Final Design               | Final Design and Specification |      |      |    |    |    |      |    |    |    |      |    |    |    |
| Obligation and Procurement | CRISI Grant Obligation         |      |      |    |    |    |      |    |    |    |      |    |    |    |
|                            | Bid Notification/Procurement   |      |      |    |    |    |      |    |    |    |      |    |    |    |
| Construction               | Construction                   |      |      |    |    |    |      |    |    |    |      |    |    |    |

Source: San Bernardino County, AECOM

#### 8.1.3 Lifecycle Stage Activities

The grant request is for activities across three lifecycle stages: Project Development, Final Design, and Construction. The Project is currently at 60% design and is ready to proceed into more advanced planning and design. Project Development activities will include advancement for

design from its current level of 60% to 95%, environmental review and determination, and right-of-way acquisition. Final design activities bringing the Project's design up to 100% and construction readiness will follow. Following acceptance of the 100% design package by FRA, the construction lifecycle activities to deliver the Project will commence.

#### **8.1.4 Partner Coordination and Commitments**

San Bernardino County has partnered with BNSF, which is providing a financial commitment to the Project. A letter of funding commitment is attached to this application. Additional letters of support are attached and indicate strong community, business, and coordinating agency support for the Project. The 22905 agreement between BNSF and the County is currently pending and would be finalized in the months following CRISI award for the Project.

## **8.2 Technical Merit**

### **8.2.1 Tasks and Subtasks Outlined in the Statement of Works Are Appropriate to Achieve the Expected Outcomes**

The tasks and subtasks identified in the statement of works are appropriate for the funding request under the CRISI program as the Project's implementation would result in the closure of an at-grade rail/road crossing and the construction of a grade separated structure carrying vehicular traffic over the BSNF mainline.

The County estimates that the Project period of performance will be complete in December 2029.

The breakdown of Project Tasks area as follows:

- Task 1: Project Administration and Management
- Task 2: CEQA/NEPA Clearance (June 2027 completion)
- Task 3: Right-of-Way Clearance (December 2027 completion)
- Task 4: Final Design (January 2028 completion)
- Task 5: Construction (December 2029 completion)

### **8.2.2 Technical Qualifications and Experience of Key Personnel**

The County has an established track record of delivering projects of similar scope and size. The County has extensive experience, both in-house and through consultants, in administering federal aid projects, including the following bridge projects funded through USDOT's Highway Bridge Program and railroad crossing projects:



- Glen Helen Bridge Project in San Bernardino (\$52,000,000 – in progress);
- Garnet Bridge Reconstruction in Mentone (\$6,400,000 – completed in 2022;)
- 10 Bridges Project (bridges larger than 20 feet) on National Trails Highway (\$30,000,000 total – in progress); and
- Glen Helen Parkway Grade Separation over the BNSF and UPRR rail lines, (\$25,685,000 – completed in 2018).

In addition, the County has completed 95% design on its Rock Springs Road bridge over the Mojave River. This \$21,745,000 bridge project began construction in the spring of 2025.

Technical expertise, historical accomplishments, and successful project management will be brought to the table to ensure the Project is fully and successfully executed within the proposed time frame and budget. The County will designate experienced staff to manage the proposed project.

- Andy Silao, B.S., P.E. will serve as project manager. Andy brings over 20 years of engineering experience in both the private sector and with the County. He currently serves as the Division Chief for the Contracts Division, which is responsible for the advertisement, award, and administration of federal, state, and locally funded County Public Works and Flood Control District construction projects.
- Chris Nguyen, P.E. - Chris brings 29 years of engineering experience both in the private and public sector, bringing a key understanding of the dynamics of working with both parties.

### **8.2.3 Consistency with USDOT/FRA and State Planning**

The proposed Project is consistent with planning guidance and documents set forth by USDOT, including those required by law or State rail plans developed under Title 49, U.S.C., Chapter 227. The proposed Project is consistent with overarching safety objectives of the California State Rail Plan and specifically its Railroad-Highway Grade Crossing Program (RHGCP) which focuses on improving safety and operational efficiency by reducing the number of at-grade crossings through closures, consolidations, or grade separations

### **8.2.4 Financial Support from Impacted Rail Carrier**

The County has partnered with BNSF to obtain a financial commitment to the Project. A letter of funding commitment is attached to this application.

### **8.2.5 Commitment to Control of Use and Maintenance of Infrastructure**

The applicant San Bernardino County can confirm its commitment to the control of use and ongoing maintenance of all of infrastructure proposed for construction for which the County is seeking CRISI funding.

## 8.3 Project Benefits

### 8.3.1 Improved Safety

The Project will improve safety at the existing at-grade crossing by decommissioning the Vista Road crossing, significantly reducing the risk of vehicular and train collisions, and addressing the pressing need for safety improvements. Based on safety incident activity at the crossing which has occurred within the past five years, the implementation and operation of the project would result in the avoidance of approximately four (4) fatalities and eight (8) injuries over its first twenty years of operation. Through the prevention of accidents at the intersection, the Project will yield additional safety benefits, such as the reduction of travel delays for emergency services. As the nearest hospital to Silver Lakes is located approximately 16 miles south in Victorville and the community is isolated by the rail corridor, the response time of emergency services is contingent on train traffic. Similarly, the County Sheriff's Department (Victor Valley Sheriff's Station), the nearest police station to the Silver Lakes community, is located approximately 21 miles south. Police response times to emergencies can likewise be hindered due to train traffic at Vista Road. Therefore, the Project is crucial to improving safety and emergency response times in the community.

### 8.3.2 Increased Reliability of Passenger and Freight Rail Operations

The implementation of the Project, and specifically, the closure of the existing at-grade crossing will eliminate the potential for conflicts between rail, vehicles, and pedestrians. Unfortunately, the existing at-grade crossing has been the site of accidents resulting in injury and death in recent years which lead to the crossing being closed to all rail traffic for a duration while the accident is investigated, documented, and cleared. During these closures of the crossing, rail traffic is unable to pass through the corridor, leading to idling trains and rerouting of trains on the network leading to significant delay, increased travel times for passenger rail users, and increased operating costs for both passenger and rail operators. In constructing the project, the potential for crossing closure, and the associated delay for passenger rail and freight rail, will be eliminated. Over the first twenty years of operation following its implementation, the Project would lead to the avoidance of more than 90,000 hours of delay from rail passengers and nearly 3,000 hours of delay by freight and passenger trains.

### 8.3.3 Grade Crossing Elimination

The Project will close the at-grade crossing at Vista Road. There are frequent and ongoing delays due to the crossing being occupied and, in recent years, it has been the site of rail/vehicle accidents resulting in fatalities and injuries. The Project's construction of a grade-separated crossing over the rail corridor will allow for improved vehicular mobility, safety, and travel efficiency.

### **8.3.4 Improves Access to Emergency Services**

The Project will improve access to emergency services through the reduction in vehicle miles traveled by emergency services to Helendale. Through the prevention of accidents and the reduction of travel delays for emergency services, the Project will improve access to vital services. The nearest emergency services are located quite far from the community: the nearest hospital is in Victorville, 16 miles to the south, and the County Sheriff's Department (Victor Valley Sheriff's Station) is approximately 21 miles south. Ingress and egress from both locations is currently hampered by train traffic. The Project is vital for improving accessibility for emergency services through the decrease of delays related to the crossing being occupied by passenger and freight rail.

### **8.3.5 Deployment of Innovative Technology**

The Project will incorporate two innovative construction methods that are new to the area to reduce GHG emissions. Firstly, rubberized asphalt will be employed for the deck of the grade separation. Secondly, concrete containing up to 15% fly ash will be used. The inclusion of fly ash in concrete diminishes cracking, permeability, and bleeding, resulting in a dense, high-durability concrete that is impervious to sulphates and alkali-aggregate reactions. This type of concrete mix requires less water and is prone to resist shrinkage. Rubberized asphalt generates 34% fewer CO<sub>2</sub> emissions, extends the lifespan of roads by twofold, and reduces the life cycle cost of the road by 43%. These innovative methods foster sustainable construction.

### **8.3.6 Improved Mobility**

The Project, situated within BNSF's Cajon Subdivision, lies along a bustling freight corridor extending from the Ports of San Pedro (Los Angeles and Long Beach) inland. The track at the Project's location comprises double and triple rail lines, with the at-grade crossing existing as a two-track crossing. This existing rail line effectively segregates the Silver Lakes community, causing accessibility issues due to the frequent train traffic, averaging 70 trains daily, including two Amtrak passenger trains. With future plans for intermodal facilities and an increase in domestic passenger rail travel, rail operations are expected to rise. However, the Project will significantly reduce travel delays for all users. Currently, the Vista Road crossing experiences an average of 70 freight train-related delays per day. These delays affect all system users, including emergency responders, school buses, and the train traversing the corridor.

The Project aims to enhance the mobility of various transportation modes, impacting daily routes and improving access to community services, local businesses, and amenities. The southern extension of Vista Road will offer neighboring landowners new paved access driveways, simplifying property access. The grade separation over the BNSF rail line will establish an unimpeded connection to the National Trails Highway.

Upon completion, the Project will address east-west commuting challenges in the County's western region. Shadow Mountain Road, a crucial east-west arterial route, provides access to State

Road 395 and Interstate 15. Construction will bridge a gap, linking Shadow Mountain Road with Vista Road and National Trails Highway, creating an east-west corridor beneficial for freight transportation and inter-regional travel.

The Project aims to enhance mobility and accessibility in the Silver Lakes community, which is currently isolated by a rail corridor. Through the prevention of accidents and the reduction of travel delays for emergency services, the Project will improve access to vital services. The nearest emergency services are located quite far from the community. The nearest hospital is located in Victorville, 16 miles to the south, and the County Sheriff's Department (Victor Valley Sheriff's Station) is located approximately 21 miles south. Ingress and egress from both locations is currently hampered by train traffic. The Project is vital for increasing community mobility and accessibility, particularly for emergency services through the decrease in travel delays.

The Project will also enable pedestrians to cross the BNSF rail corridor safely and unobtrusively, providing access to the National Trails Highway and other commercial and residential properties. This access is vital for the rural community as the highway leads to job centers, as well as recreational and educational opportunities in Barstow to the north and Victorville to the south, both major regional cities offering amenities, medical care, and higher education institutions.

The Project will improve the mobility of people and goods. As the Project crossing lies along a bustling freight corridor, the reduction of freight train-related delays will improve the mobility of goods to and from the Ports of Los Angeles and Long Beach. Currently, the Vista Road crossing experiences an average of 70 freight train-related delays per day. These delays affect all system users but will no longer be an issue after Project implementation.

The Project aims to enhance the mobility of various transportation modes, improving daily routes and access to community services, local businesses, and amenities. The southern extension of Vista Road will offer neighboring landowners new paved access driveways, simplifying property access. The grade separated structure over the BNSF rail line will establish a connection to the National Trails Highway. The Project will also enable pedestrians to cross the BNSF rail corridor safely and unobtrusively, providing access to the National Trails Highway and other commercial and residential properties.

The implementation of the Project would result in the avoidance of nearly 700,000 hours in delay incurred by automobiles and their passengers and over 76,000 hours of delay by commercial truck drivers.

### **8.3.7 Fuel Savings and Reduction in Emissions**

The Project will reduce GHG emissions through enhanced traffic flow, leading to a decrease in vehicular emissions. The Project significantly reduces transportation-related air pollution and GHG emissions by decreasing idle emissions at the existing Vista Road at-grade in Helendale

when it is occupied by passenger and freight trains. The improved accessibility for motorists will save energy through a decrease in fuel consumption associated with vehicle idling at the crossing.

Beyond the sustainability benefits for motorists, the Project also contributes to a safer, more efficient, and environmentally friendly transportation system. Efficient rail transportation reduces reliance on trucks for freight movement, further benefiting the environment by shifting from road to rail transport. Improved air quality will reduce air-pollutant related diseases in the community, providing a community benefit that allows the local population to live longer and healthier lives.

### **8.3.8 Improves Access to Communities**

The Project will increase access throughout Helendale. Ingress and egress are currently hampered by train traffic. The Project will enable pedestrians and bicyclists to cross the BNSF rail corridor safely, providing access to the National Trails Highway and other commercial and residential properties. This access is vital for the rural community as the highway leads to job centers, as well as recreational and educational opportunities in Barstow to the north and Victorville to the south, both major regional cities offering amenities, medical care, and higher education institutions. The Project will likewise improve mobility of community residents who choose to drive, as there will be a reduction in travel time delays as vehicles will no longer have to stop and wait for train traffic to pass.

### **8.3.9 Provides Economic Benefit**

The Project provides a multifaceted economic benefit to rail passengers, rail operators (both passenger and freight), automobile users and their passengers, commercial truck drivers, and to the broader community. A benefit-cost analysis undertaken to support this grant application demonstrate that the Project would be cost effective and estimates that the Project's implementation and operation would result in a benefit-cost ratio (BCR) of 1.1:1. In addition to the quantitative findings reflected in the cost effective BCR, qualitative benefits the Project would deliver include decreased healthcare costs due to improved air quality and general improvements in the quality of life due to improved mobility for rail, vehicular, and active transportation users.

## **8.4 Project Outcomes**

The Project will create a grade separation crossing through the extension of Shadow Mountain Road and construction of a bridge over the BNSF rail corridor to connect to Route 66 and will eliminate the existing Vista Road railroad crossing located to the north. The Project will close the existing at-grade highway rail crossing at Vista Road and redirect the flow of traffic south on Jordan Road to the proposed grade separation crossing approximately three-quarters of a mile south of Vista Road. The new grade separated structure over the BNSF rail corridor will connect, via a new road segment carrying Shadow Mountain Road, to National Trails Highway.



It is not expected that the Project's implementation will result in changes to the train numbers, ridership, or train speeds. The speed classification of the section of the Transcon where the Project is located is Class 5 which allows for higher speeds, with a maximum speed of 90 mph for passenger trains and 80 mph for freight trains. Trains currently do not slow when approaching the existing at-grade crossing with Vista Road, though they are rarely traveling at or near the maximum allowable Class 5 speeds.

## 9. PROJECT IMPLEMENTATION AND MANAGEMENT

### 9.1 Technical Qualifications and Experience of Key Personnel

The County has an established track record of delivering projects of similar scope and size. The County has extensive experience, both in-house and through consultants, in administering federal aid projects including bridge projects funded through U.S. DOT's Highway Bridge Program and railroad crossing projects including:

- Glen Helen Parkway Grade Separation over the BNSF and UPRR lines, (\$25,685,000 - completed in 2018);
- Garnet Bridge Reconstruction in Mentone (\$6,400,000 – completed in 2022);
- Glen Helen Bridge Project in San Bernardino (\$52,000,000 – in progress); and
- 10 Bridges Project (bridges larger than 20 feet) on National Trails Highway (\$30,000,000 total in progress).
- Rock Springs Road bridge over the Mojave River (\$21,745,000 - in progress)

The Project team will bring technical expertise, historical accomplishments, and successful project management to ensure the Project is fully and successfully executed within the proposed time frame and budget.

### 9.2 Project Contracting Arrangements and Contract Oversight

San Bernardino County intends to deliver the Project using a design-bid-build approach for final design and construction. San Bernardino County, the Project applicant, will be responsible for contract oversight, control, and conformance to Federal requirements for Project progress reporting for work completed within the respective right-of-way.

### 9.3 Change-Order Management

A change order occurs when construction contract changes are needed, requiring an adjustment in the Project's price and schedule. The County has a structured approach for addressing change orders through change analysis reviews. These reviews analyze the size of the change and the level of coordination and changes required to implement it, all of which require pre-approval from the project manager. The project manager will document all change-order requests and communicate the change implementation across the board to all necessary team members. Lessons learned will likewise be documented.

## **9.4 Risk Oversight**

As consistent with 2 CFR 200.206(b), San Bernardino County will be responsible for risk management and has budgeted a contingency for unexpected costs and budget overruns. The County and their consultant team will identify and evaluate risks of the Project during the pre-obligation phase of project development. Where risks are identified that may affect either scope, schedule, or budget, these would be placed on a risk register and captured in a risk evaluation package. Mitigation plans would be implemented and lessons learned would be captured as part of the Project's knowledge base.

## **9.5 Conformance to Federal Requirements for Reporting**

San Bernardino County will ensure all reporting requirements are fulfilled on time. The County has a fiscal team as well as grants personnel with considerable experience administering federal grant funds who will help ensure Project delivery within budget. The Project Management Plan will include procedures for reporting and grant close-out milestones, as consistent with 2 CFR 200.345 and the FRA grant agreement.

## **9.6 Operations and Maintenance**

Upon completion of the project, the County will be responsible for the operations and maintenance of improved and new infrastructure, including the extended Vista Road, the new Shadow Mountain Road connecting to the National Trails Highway, and the new grade separated structure carrying Shadow Mountain Road over the BNSF corridor.



# Vista Road Crossing Closure and Grade Separation Project

## Appendix A: Letter of Financial Commitment

Applicant:  
San Bernardino County



June 22, 2026





**French Thompson**  
*General Director*  
*Public Infrastructure & Investments*

**BNSF Railway Company**  
P. O. Box 961502  
Fort Worth, TX 76161-0052

2600 Lou Menk Drive  
Fort Worth, Texas 76131-2830  
(817) 352-1549

French.Thompson@BNSF.com

June 22<sup>nd</sup>, 2026

David Fink, Administrator  
Federal Railroad Administration  
1200 New Jersey Ave, SE  
Washington, DC 20590

Subject: BNSF Letter of Support – Vista Road Crossing Closure and Grade Separation Project

Dear Administrator Fink,

BNSF Railway supports efforts by San Bernardino County, California to secure federal discretionary funding under the 2025-2026 Consolidated Rail Infrastructure and Safety Improvements Program (CRISI) for the Vista Road Crossing Closure and Grade Separation Project. This project will create a new grade separated crossing and close an existing at-grade crossing. If awarded, BNSF, subject to satisfactory review of funding requirements, final engineering, and entering into definitive agreements as may be required by BNSF or other project stakeholders, would be willing to contribute \$9,374,000 in private matching funds towards the \$46,860,000 total project cost, if the request of \$37,496,000 is granted in CRISI funds.

This important project will create a new grade separated crossing at Shadow Mountain Road connecting the community of Helendale, California to the National Trails Highway (Route 66) and closing the existing at-grade crossing at Vista Road (DOT No. 026068N). This will provide unimpeded access across BNSF's Transcon corridor which will improve access and response times for emergency response services. It will also help improve safety, reduce delays for residents, enhance economic development, and help improve the overall quality of life of the surrounding community.

BNSF values our working relationship with San Bernardino County and is prepared to work with all involved public agencies on further development of this project. BNSF appreciates your thorough review of this application and looks forward to continuing its relationship with San Bernardino County through this important project.

Sincerely,

A handwritten signature in black ink, consisting of a large, stylized loop followed by a horizontal line and a small mark at the end.

French Thompson  
General Director – Public Infrastructure & Investments



# Vista Road Crossing Closure and Grade Separation Project

## Appendix B: Letters of Support

Applicant:  
San Bernardino County



June 22, 2026



**JAY OBERNOLTE**  
TWENTY THIRD DISTRICT, CALIFORNIA

**COMMITTEE ON ENERGY  
AND COMMERCE**  
COMMUNICATIONS AND TECHNOLOGY  
COMMERCE, MANUFACTURING, AND  
TRADE  
HEALTH

**COMMITTEE ON SCIENCE, SPACE  
AND TECHNOLOGY**  
RESEARCH AND TECHNOLOGY, CHAIRMAN



**Congress of the United States**  
**House of Representatives**  
**Washington, DC**

WASHINGTON, D.C. OFFICE:  
2433 RAYBURN HOUSE OFFICE BUILDING  
WASHINGTON, DC 20515  
TELEPHONE: (202) 225-5861

DISTRICT OFFICE:  
9700 SEVENTH AVE., SUITE 201  
HESPERIA, CA 92345  
TELEPHONE: (760) 247-1815

E-MAIL VIA WEBSITE:  
<http://obernolte.house.gov>

May 21, 2026

David Fink  
Administrator  
Federal Railroad Administration  
1200 New Jersey Ave, SE  
Washington, DC 20590

**RE: Support for Vista Road Crossing Closure and Grade Separation Project CRISI Grant Application**

Dear Administrator Fink,

As the representative of California's 23<sup>rd</sup> Congressional District, I would like to express my strong support for San Bernardino County's and project delivery partner BNSF's application seeking funding under the Federal Railroad Administration's (FRA) Consolidated Rail Infrastructure and Safety Improvement (CRISI) Program for their Vista Road Crossing Closure and Grade Separation Project (Project).

The Project is comprised of a program of infrastructure improvements including the closure of an existing at-grade crossing at Vista Road and the Southern Transcontinental rail corridor (Transcon) in the town of Helendale, the extension of Vista Road approximately three-quarters of a mile south, and the construction of a new grade-separated structure over the rail corridor connecting to the National Trails Highway (also known as Route 66).

When implemented and operational, the Project will improve rail safety, operational reliability, and goods movement by eliminating an at-grade crossing with a documented history of safety incidents, reducing train-vehicle conflict points, and minimizing disruptions to both passenger and freight rail operations. The Project will also deliver safer, more efficient, and more reliable travel for autos and trucks coming to and from Helendale, while providing safer pedestrian movement across the rail corridor. In addition, the Project will promote short- and long-term economic opportunities for the local community and greater region.

The Project is the latest in a program of rail corridor improvements that undertaken along this section of the Transcon aimed at improving the operations of both passenger and freight rail through the elimination of at-grade crossings. Improved efficiency and reliability of passenger and freight operations in turn buttress national supply chains while supporting regional and national employment and economic vitality. I support the Project and the applicants' primary objective of improving rail safety, strengthening freight and passenger rail reliability, and enhancing operational fluidity along the heavily trafficked Transcon corridor, while also providing safer and more reliable crossings for roadway users and the surrounding community.

Consistent with all rules and regulations, I ask that you give the San Bernardino County's and project delivery partner BNSF's grant application for FRA funding the CRISI Program your full and fair consideration. If you have any additional questions, please feel free to contact my office at (202) 225-5861.

Sincerely,

A handwritten signature in blue ink, appearing to read "Jay Obernolte", with a stylized, cursive script.

Jay Obernolte  
Member of Congress



**French Thompson**  
*General Director*  
*Public Infrastructure & Investments*

**BNSF Railway Company**  
P. O. Box 961502  
Fort Worth, TX 76161-0052

2600 Lou Menk Drive  
Fort Worth, Texas 76131-2830  
(817) 352-1549

French.Thompson@BNSF.com

June 22<sup>nd</sup>, 2026

David Fink, Administrator  
Federal Railroad Administration  
1200 New Jersey Ave, SE  
Washington, DC 20590

Subject: BNSF Letter of Support – Vista Road Crossing Closure and Grade Separation Project

Dear Administrator Fink,

BNSF Railway supports efforts by San Bernardino County, California to secure federal discretionary funding under the 2025-2026 Consolidated Rail Infrastructure and Safety Improvements Program (CRISI) for the Vista Road Crossing Closure and Grade Separation Project. This project will create a new grade separated crossing and close an existing at-grade crossing. If awarded, BNSF, subject to satisfactory review of funding requirements, final engineering, and entering into definitive agreements as may be required by BNSF or other project stakeholders, would be willing to contribute \$9,374,000 in private matching funds towards the \$46,860,000 total project cost, if the request of \$37,496,000 is granted in CRISI funds.

This important project will create a new grade separated crossing at Shadow Mountain Road connecting the community of Helendale, California to the National Trails Highway (Route 66) and closing the existing at-grade crossing at Vista Road (DOT No. 026068N). This will provide unimpeded access across BNSF's Transcon corridor which will improve access and response times for emergency response services. It will also help improve safety, reduce delays for residents, enhance economic development, and help improve the overall quality of life of the surrounding community.

BNSF values our working relationship with San Bernardino County and is prepared to work with all involved public agencies on further development of this project. BNSF appreciates your thorough review of this application and looks forward to continuing its relationship with San Bernardino County through this important project.

Sincerely,

A handwritten signature in black ink, consisting of a large, stylized loop followed by a horizontal line and a small mark at the end.

French Thompson  
General Director – Public Infrastructure & Investments



CALIFORNIA  
HIGHWAY PATROL

May 5, 2026

File No.: 860.15244

David Fink, Administrator  
Federal Railroad Administration  
1200 New Jersey Ave, SE  
Washington, DC 20590

**RE: Letter of Support for Vista Road Crossing Closure and Grade Separation Project**

Dear Administrator Fink:

I am writing to express my support of San Bernardino County's and project delivery partner BNSF's application seeking funding under the Federal Railroad Administration's (FRA) Consolidated Rail Infrastructure and Safety Improvement (CRISI) Program for their Vista Road Crossing Closure and Grade Separation Project (Project).

The Project is comprised of a program of infrastructure improvements including the closure of an existing at-grade crossing at Vista Road and the Southern Transcontinental rail corridor (Transcon) in the town of Helendale, the extension of Vista Road approximately three-quarters of a mile south and the construction of a new grade-separated structure over the rail corridor connecting to the National Trails Highway (also known as Route 66). When implemented and operational, the Project will improve rail safety, operational reliability, and goods movement by eliminating an at-grade crossing with a documented history of safety incidents, reducing train-vehicle conflict points, and minimizing disruptions to both passenger and freight rail operations. The Project will also deliver safer, more efficient, and more reliable travel for autos and trucks coming to and from Helendale, while providing safer pedestrian and cyclist movement across the rail corridor. In addition, the Project will reduce carbon emissions and promote short- and long-term economic opportunities for the local community and greater region.

The Project is the latest in a program of rail corridor improvements that undertaken along this section of the Transcon aimed at improving the operations of both passenger and freight rail



May 5, 2026

through the elimination of at-grade crossings. Improved efficiency and reliability of passenger and freight operations in turn buttress national supply chains while supporting regional and national employment and economic vitality.

I strongly support the Project because it advances the applicants' objective of improving rail safety, strengthening freight and passenger rail reliability, and enhancing operational fluidity along the heavily trafficked Transcon corridor, while also providing safer and more reliable crossings for roadway users and the surrounding community. I hope that federal participation for the Vista Road Crossing Closure and Grade Separation Project is seriously considered.

Sincerely,



L. C. BERNs, Captain  
Commander



STATE CAPITOL  
P.O. BOX 942849  
SACRAMENTO, CA 94249-0034  
(916) 319-2034  
FAX (916) 319-2134  
DISTRICT OFFICE  
12TH STREET WEST, SUITE F  
(661) 267-7636  
FAX (661) 267-7736



COMMITTEES  
VICE CHAIR: ELECTIONS  
VICE CHAIR: GOVERNMENTAL  
ORGANIZATION  
VICE CHAIR: PUBLIC EMPLOYMENT  
AND RETIREMENT  
ARTS, ENTERTAINMENT, SPORTS,  
AND TOURISM  
BUDGET  
PUBLIC SAFETY  
SPECIAL COMMITTEE ON  
LEGISLATIVE ETHICS

May 6, 2026

David Fink  
Administrator  
Federal Railroad Administration  
1200 New Jersey Ave, SE  
Washington, DC 20590

**RE: Support for Vista Road Crossing Closure and Grade Separation Project CRISI Grant Application**

Dear Mr. Fink,

I am pleased to submit this letter in support of San Bernardino County's (County) and project delivery partner BNSF's application seeking funding under the Federal Railroad Administration's (FRA) Consolidated Rail Infrastructure and Safety Improvement (CRISI) Program for their Vista Road Crossing Closure and Grade Separation Project (Project).

The Project is comprised of a program of infrastructure improvements including the closure of an existing at-grade crossing at Vista Road and the Southern Transcontinental rail corridor (Transcon) in the town of Helendale, the extension of Vista Road approximately three-quarters of a mile south and the construction of a new grade-separated structure over the rail corridor connecting to the National Trails Highway (also known as Route 66). When implemented and operational, the Project will improve rail safety, operational reliability, and goods movement by eliminating an at-grade crossing with a documented history of safety incidents, reducing train-vehicle conflict points, and minimizing disruptions to both passenger and freight rail operations. The Project will also deliver safer, more efficient, and more reliable travel for autos and trucks coming to and from Helendale, while providing safer pedestrian and cyclist movement across the rail corridor. In addition, the Project will reduce carbon emissions and promote short- and long-term economic opportunities for the local community and greater region.

The Project is the latest in a program of rail corridor improvements that undertaken along this section of the Transcon aimed at improving the operations of both passenger and freight rail through the elimination of at-grade crossings. Improved efficiency and reliability of passenger and freight operations in turn buttress national supply chains while supporting regional and national employment and economic vitality.

I strongly support the Project because it advances the applicants' objective of improving rail safety, strengthening freight and passenger rail reliability, and enhancing operational fluidity along the heavily trafficked Transcon corridor, while also providing safer and more reliable crossings for roadway users and the surrounding community. I hope that federal participation for the Vista Road Crossing Closure and Grade Separation Project is seriously considered.

Sincerely,

A handwritten signature in black ink that reads "Thomas Lackey". The signature is written in a cursive, flowing style.

Assemblyman Tom Lackey, 34<sup>th</sup> District

# California State Senate

1021 O STREET  
SACRAMENTO, CA 95814  
(916) 651-4019  
SENATOR.OCHOABOGH@SENATE.CA.GOV  
SR19.SENATE.CA.GOV

SENATOR  
**ROSILICIE OCHOA BOGH**  
NINETEENTH SENATE DISTRICT



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& CONSUMER PROTECTION  
RULES  
JOINT LEGISLATIVE BUDGET

May 15, 2026

David Fink, Administrator  
Federal Railroad Administration  
1200 New Jersey Avenue, SE  
Washington, DC 20590

## **RE: Support for Vista Road Crossing Closure and Grade Separation Project CRISI Grant Application**

Dear Administrator Fink:

I write this letter in support of San Bernardino County's (County) and project delivery partner BNSF's application seeking funding under the Federal Railroad Administration's (FRA) Consolidated Rail Infrastructure and Safety Improvement (CRISI) Program for their Vista Road Crossing Closure and Grade Separation Project (Project).

The Project includes three main infrastructure improvements: (1) closing the existing at-grade crossing at Vista Road and the Southern Transcontinental rail corridor (Transcon) in Helendale; (2) extending Vista Road approximately three-quarters of a mile south; and (3) constructing a new grade-separated structure over the rail corridor to connect to the National Trails Highway (Route 66). Once complete, the Project will increase rail safety, operational reliability, and efficiency of goods movement by eliminating a crossing with a history of safety incidents, reducing train-vehicle conflicts, and minimizing disruptions to passenger and freight rail service. The Project also enhances travel safety and reliability for autos and trucks accessing Helendale and provides safer pedestrian and cyclist paths across the rail corridor. Additionally, the Project will help reduce carbon emissions and foster economic opportunities for the local and regional community.

The Project is the latest in a program of rail corridor improvements undertaken along this section of the Transcon. The Project specifically targets the elimination of at-grade crossings to improve both passenger and freight rail operations. These improvements enhance efficiency and reliability for rail operations, strengthening national supply chains while supporting regional and national employment and economic vitality.

I strongly support the Project because it advances the applicants' objective of improving rail safety, strengthening freight and passenger rail reliability, and enhancing operational fluidity along the heavily

trafficked Transcon corridor, while also providing safer and more reliable crossings for roadway users and the surrounding community. I urge you to consider the Vista Road Crossing Closure and Grade Separation Project. If you have any questions, please do not hesitate to contact my District Office at (909) 335-0271.

Sincerely,

A handwritten signature in black ink, appearing to read 'Rosilicie Ochoa Bogh', with a long horizontal line extending to the right.

ROSILICIE OCHOA BOGH  
Senator, 19<sup>th</sup> District



SOUTHERN CALIFORNIA  
ASSOCIATION OF GOVERNMENTS  
900 Wilshire Blvd., Ste. 1700  
Los Angeles, CA 90017  
(213) 236-1800  
www.scag.ca.gov

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Transportation Commission

May 18, 2026

The Honorable David Fink  
Administrator, U.S. Department of Transportation  
Federal Railroad Administration  
1200 New Jersey Ave., SE  
Washington, DC 20590

### **RE: SCAG Support for Vista Road Crossing Closure and Grade Separation Project**

Dear Administrator Fink:

On behalf of the Southern California Association of Governments, I write in support of San Bernardino County's and project delivery partner BNSF's application seeking funding under the Federal Railroad Administration's (FRA) Consolidated Rail Infrastructure and Safety Improvement (CRISI) Program for their Vista Road Crossing Closure and Grade Separation project.

The project is comprised of a program of infrastructure improvements including the closure of an existing at-grade crossing at Vista Road and the Southern Transcontinental rail corridor (Transcon) in the town of Helendale, the extension of Vista Road approximately three-quarters of a miles south and the construction of a new grade-separated structure over the rail corridor connecting to the National Trails Highway (also known as Route 66). When implemented and operational, the project will improve rail safety, operational reliability, and goods movement by eliminating an at-grade crossing with a documented history of safety incidents, reducing train-vehicle conflict points, and minimizing disruptions to both passenger and freight rail operations. The project will also deliver safer, more efficient, and more reliable travel for autos and trucks coming to and from Helendale, while providing safer pedestrian and cyclist movement across the rail corridor. In addition, the project will reduce carbon emissions and promote short- and long-term economic opportunities for the local community and greater region.

The project is the latest in a program of rail corridor improvements undertaken along this section of the Transcon aimed at improving the operations of both passenger and freight rail through the elimination of at-grade crossings. Improved efficiency and reliability of passenger and

freight operations in turn buttress national supply chains while supporting regional and national employment and economic vitality.

As this project is aligned with SCAG's adopted long-range plan, Connect SoCal, the 2024-2050 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS), we support these efforts and respectfully request full and fair consideration. If you have any questions, please do not hesitate to contact Courtney Aguirre, Manager of Mobility Planning and Goods Movement, at (213) 236-1990 or [aguirre@scag.ca.gov](mailto:aguirre@scag.ca.gov).

Sincerely,



Kome Ajise  
Executive Director

ADAM B. SCHIFF  
UNITED STATES SENATOR  
CALIFORNIA

112 HART SENATE  
OFFICE BUILDING  
WASHINGTON, DC 20510

(202) 224-3841

[schiff.senate.gov](http://schiff.senate.gov)

United States Senate

WASHINGTON, DC 20510

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AGRICULTURE, NUTRITION,  
AND FORESTRY

SMALL BUSINESS AND  
ENTREPRENEURSHIP

May 5, 2026

Administrator David Fink  
Federal Railroad Administration  
1200 New Jersey Ave, SE  
Washington, DC 20590

Dear Administrator Fink:

I would like to express my support of San Bernardino County and project delivery partner BNSF's application to the Federal Railroad Administration's (FRA) Consolidated Rail Infrastructure and Safety Improvement (CRISI) Program for the Vista Road Crossing Closure and Grade Separation Project.

The Project comprises several infrastructure improvements, including the closure of an existing at-grade crossing at Vista Road and the Southern Transcontinental rail corridor (Transcon) in the town of Helendale, the extension of Vista Road approximately three-quarters of a mile south and the construction of a new grade-separated structure over the rail corridor connecting to the National Trails Highway (also known as Route 66). When implemented and operational, the Project will improve rail safety, operational reliability, and goods movement by eliminating an at-grade crossing with a documented history of safety incidents, reducing train-vehicle conflict points, and minimizing disruptions to both passenger and freight rail operations.

The Project will also deliver safer, more efficient, and more reliable travel for all road users along the rail corridor. In addition, the Project will promote both short- and long-term economic opportunities for the local community and greater region.

As a Senator for California, I support the Project because it advances the county's objective of improving rail safety, strengthening freight and passenger rail reliability, and enhancing operational fluidity along the heavily trafficked Transcon corridor. I urge you to give the County of San Bernardino and delivery partner BNSF's application full and fair consideration.

Sincerely,



**ADAM B. SCHIFF**  
United States Senator



# Vista Road Crossing Closure and Grade Separation Project

## Appendix C: Benefit Cost Analysis Technical Memorandum

Applicant:  
San Bernardino County



June 22, 2026



**Benefit Cost Analysis Memorandum**

**Vista Road Grade Separation Safety and Mobility Project**

Prepared for San Bernardino County by AECOM

May 18, 2026

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# Executive Summary

A benefit-cost analysis (BCA) for the Vista Road Crossing Closure and Grade Separation Project (“Project” hereafter) was prepared at the request of San Bernardino County (the County) for the purposes of supporting their application seeking funding under the FRA’s Consolidated Rail Infrastructure and Safety Improvements (CRISI) Program. The BCA was conducted in accordance with the U.S. Department of Transportation’s (USDOT’s) “December 2025 Benefit-Cost Analysis Guidance for Discretionary Grant Programs.”<sup>1</sup> This BCA compares expected benefits and costs of undertaking the Project (the “Build” alternative) to the “No Build” baseline alternative, to estimate the Project’s net benefits.

---

<sup>1</sup> <https://www.transportation.gov/sites/dot.gov/files/2025-12/Benefit%20Cost%20Analysis%20Guidance%202026%20Update%20%28Final%29.pdf>

Exhibit 1 – Impact Matrix presents the Impact Matrix, which describes the baseline, the Project, and all estimated benefits.

## Exhibit 1 – Impact Matrix

| Current Status/Baseline & Problem to be Addressed                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Change to Baseline or Alternatives                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Types of Impacts                                                   | Affected Population   | Economic Benefit (Net Present Values, \$2024 M) |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------|-----------------------|-------------------------------------------------|
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                    |                       | Discounted at 7%                                |
| The increasing frequency of both freight and passenger trains, operated by Union Pacific Railroad (UPRR), Burlington Northern Santa Fe Railway (BNSF), and Amtrak, has resulted in a significant rise in vehicle trip delays at the rail crossing.<br><br>The situation obstructs emergency response vehicles and increases the risk of vehicle accidents as drivers attempt to cross the tracks ahead of the train. The Project is designed to improve road safety and traffic flow in the area by eliminating intersections between vehicles and trains, thereby eliminating train-induced travel delays for all commuters. | the Project will improve the safety and reliability of passenger and freight rail operations through the elimination of an at-grade crossing with a history of safety incidents. The Project will also deliver safer, more efficient, and more reliable travel for autos and trucks coming to and from Helendale, while providing safer pedestrian and cyclist movement across the rail corridor. In addition, the Project will reduce carbon emissions and promote short- and long-term economic opportunities for the local community and greater regions. | Effects on Safety                                                  |                       |                                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Reduced accidents                                                  | Auto and Truck        | \$21.4                                          |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Effects on System and Service Performance                          |                       |                                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Residual value                                                     | San Bernardino County | \$3.4                                           |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | O&M Costs                                                          | San Bernardino County | -\$0.8                                          |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Reduced Amtrak Operational Costs                                   | Amtrak                | \$0.1                                           |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Reduced Freight Train Operational Costs                            | BNSF                  | \$0.5                                           |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Effects on Competitiveness, Reliability, Trip Time, and Resilience |                       |                                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Time Saving Travel (Autos and Passengers)                          | Autos and Passengers  | \$8.0                                           |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Travel Time Savings (Commercial Trucks)                            | Commercial Trucks     | \$1.1                                           |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Travel Time Savings (Passenger Rail)                               | Amtrak                | \$0.3                                           |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Commercial Vehicle Operating Cost Savings                          | Commercial Trucks     | \$1.7                                           |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Automobile Fuel Costs Savings                                      | Auto                  | \$0.4                                           |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Emission Savings                                                   | Auto and Truck        | \$0.4                                           |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Train Emission Savings                                             | Amtrak and BNSF       | \$1.7                                           |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Ability to Meet Existing or Anticipated Demand                     |                       |                                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Effects on the rest of the Network                                 |                       | Qualitative                                     |

Source: AECOM

Notes: BCA = benefit-cost analysis, M = millions

All values are in 2024 dollars and are discounted to 2024. analysis covers a 20-year operating period following the commencement of operations of the Project beginning in 2030. The BCA estimates the Project's Net Present Value to be \$2.5 million and the benefit-cost ratio (BCR) to be 1.1:1. The discounted cost of the Project is \$35.6 million.

As shown in Exhibit 2, the Project provides \$38.1 million in total benefits over the analysis period, using a 7% discount rate. The quantitative benefits include Reduced Accidents; Residual value; Reduced Amtrak and Freight Train Operational Costs; Travel Time Savings for Autos, Passenger Rail, and Commercial Trucks; Commercial Vehicle Operating Cost Savings; Automobile Fuel Costs Savings; and Emission Savings for Vehicles and Trains. Additionally, the positive effects on the rest of the network were identified as a qualitative benefit.

## Exhibit 2 – Costs and Benefits Delivered by Long-Term Outcomes (2030 – 2049)

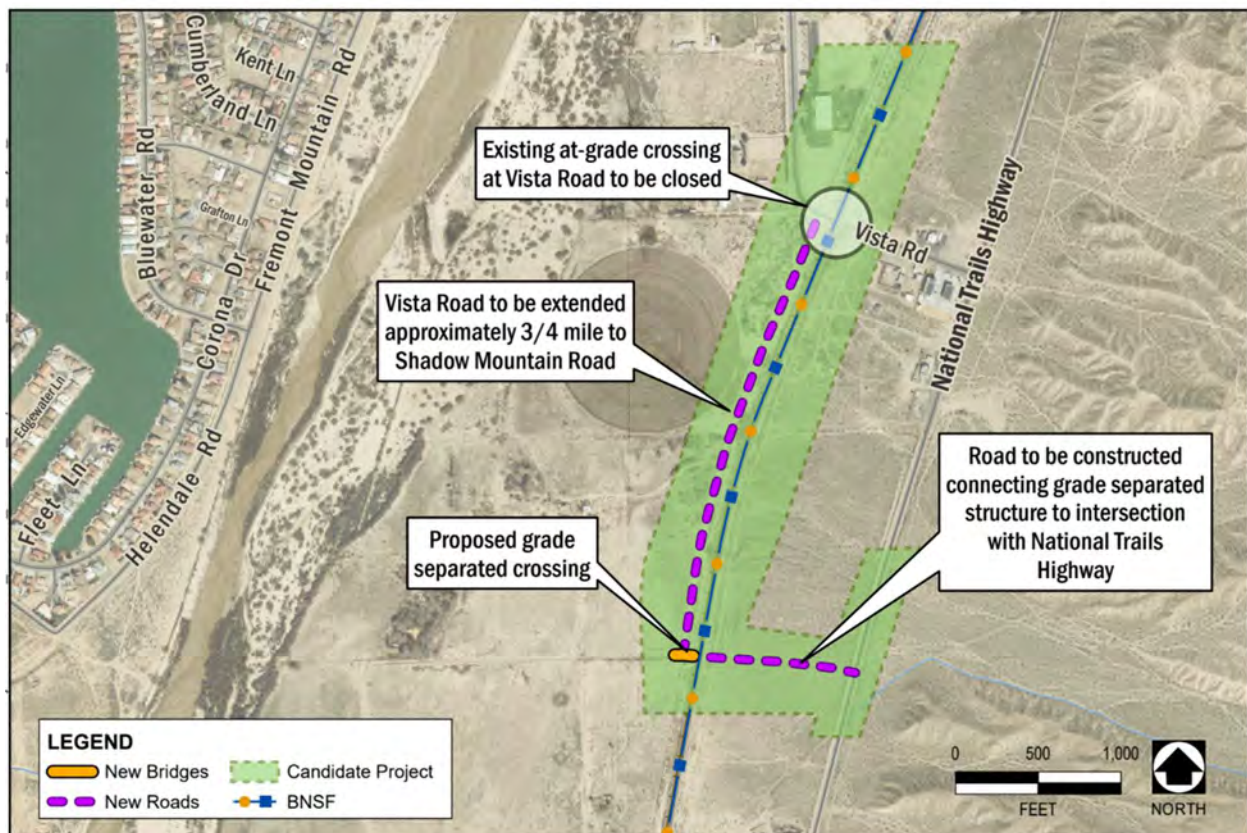
| Vista Road Grade Separation Safety and Mobility Project                   |                |
|---------------------------------------------------------------------------|----------------|
| Benefit-Cost Analysis                                                     |                |
| 20 Year Analysis Period (2030-2049)                                       |                |
| All Values are in Millions of 2024\$ - 7% Discount Rate                   |                |
| Costs                                                                     |                |
| <b>Capital Costs</b>                                                      | <b>\$35.64</b> |
| Benefits                                                                  |                |
| <b>Effects on Safety</b>                                                  |                |
| Reduced Accidents                                                         | \$21.42        |
| <b>Effects on System and Service Performance</b>                          |                |
| Residual value                                                            | \$3.40         |
| O&M Costs                                                                 | -\$0.84        |
| Reduced Amtrak Operational Costs                                          | \$0.11         |
| Reduced Freight Train Operational Costs                                   | \$0.51         |
| <b>Effects on Competitiveness, Reliability, Trip Time, and Resilience</b> |                |
| Travel Time Savings (Autos and Passengers)                                | \$7.98         |
| Travel Time Savings (Commercial Trucks)                                   | \$1.08         |
| Travel Time Savings (Passenger Rail)                                      | \$0.35         |
| Commercial Vehicle Operating Cost Savings                                 | \$1.66         |
| Automobile Fuel Costs Savings                                             | \$0.37         |
| Emission Savings                                                          | \$0.39         |
| Train Emission Savings                                                    | \$1.67         |
| <b>Ability to Meet Existing or Anticipated Demand</b>                     |                |
| Effects on the rest of the Network                                        | Qualitative    |
| <b>Total Benefits</b>                                                     | <b>\$38.10</b> |
| <b>BC Ratio</b>                                                           | <b>1.07</b>    |
| <b>Net Present Value</b>                                                  | <b>\$2.46</b>  |

Source: AECOM

# 1. Introduction

The Vista Road Crossing Closure and Grade Separation Project (“the Project”) is comprised of a program of infrastructure improvements including the closure of an existing at-grade crossing at Vista Road ([USDOT Crossing ID 026068N](#)) and the Southern Transcontinental rail corridor (Transcon) in the community of Helendale, the extension of Vista Road approximately three-quarters of a mile south and the construction of a new grade-separated structure over the rail corridor connecting to the National Trails Highway (also known as Route 66). When implemented and operational, the Project will improve the safety and reliability of passenger and freight rail operations through the elimination of an at-grade crossing with a history of safety incidents. The Project will also deliver safer, more efficient, and more reliable travel for autos and trucks coming to and from Helendale, while providing safer pedestrian and cyclist movement across the rail corridor. In addition, the Project will reduce carbon emissions and promote short- and long-term economic opportunities for the local community and greater region. This analysis considers the Project’s costs to be expended between 2026 and 2029 and for its benefits to accrue between 2030 and 2049, consistent with the USDOT’s 20-year analysis period. A map of the Project location and planned improvements can be seen below.

## Exhibit 3 – Project Area and Sites



Source: BNSF, AECOM

## 2. Benefits Analysis Framework

This benefits analysis was conducted using the “USDOT Benefit-Cost Analysis Guidance for Discretionary Grant Programs” document<sup>2</sup> as a guide for preferred methods and monetized values. The parameters of the benefits analysis follow the protocols set by the Office of Management and Budget (OMB) “Circular A-94,”<sup>3</sup> as well as recommended benefit quantification methods from the USDOT. Generally, for benefits calculations, standard factors and values accepted by Federal agencies were used, except in cases where Project-specific values or prices were available. In such cases, modifications are noted, and references are provided for data sources.

This analysis follows a conservative estimation of the quantifiable benefits of the Project; the actual total benefits of the Project may be greater than depicted in the results. The “No-Build” alternative (baseline) assumes that the Project will not be built and the purpose of, and need for, the Project would not be met. The Project (“Build” alternative) was compared to the “No-Build” alternative to identify net benefits in the following categories: “Effects on Safety”, “Effects on competitiveness, Reliability, Transit time, and Resilience”; “Effects on System and Service performance”; and “Efficiencies from Improved Integration with other Modes”.<sup>4</sup>

A custom model was applied to estimate the future benefits of the Project. Benefits were estimated over a 20-year period, beginning with completion of construction and commencement of operations in 2030 and concluding after 20 full years of operation in 2049. All dollar values are in 2024 dollars and were discounted to 2024 at 7%. The calculations, assumptions, and sources for the benefit analysis are reported in their respective sheets within the provided BCA workbook.

---

<sup>2</sup> <https://www.transportation.gov/sites/dot.gov/files/2025-12/Benefit%20Cost%20Analysis%20Guidance%202026%20Update%20%28Final%29.pdf>

<sup>3</sup> <https://www.transportation.gov/office-policy/transportation-policy/benefit-cost-analysis-guidance-discretionary-grant-programs-0>

<sup>4</sup> <https://obamawhitehouse.archives.gov/sites/default/files/omb/assets/a94/a094.pdf>

<sup>4</sup> Benefits categories are consistent with the merit criteria found in the FY 2025–2026 CRISI NOFO

### 3. Analysis Assumptions

This BCA is based on several assumptions regarding the differences between the Build and No-Build models. A list of assumptions and sources used in the analysis is provided in Exhibit 4.

#### Exhibit 4 – Benefit-Cost Analysis Inputs

| Input                                              | Value        | Source                                                                                                                                              |
|----------------------------------------------------|--------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| General                                            |              |                                                                                                                                                     |
| Discount Rate                                      | 7%           | Benefit-Cost Analysis Guidance for Discretionary Grant Programs – 2026 Update (Final), December 2025                                                |
| Discount Year                                      | 2024         |                                                                                                                                                     |
| Dollar Year                                        | 2024         |                                                                                                                                                     |
| Analysis Period (years)                            | 20           |                                                                                                                                                     |
| Construction Start Date                            | 6/1/2028     | Construction Schedule                                                                                                                               |
| Construction End Date                              | 12/31/2029   |                                                                                                                                                     |
| Operations Start                                   | 1/1/2030     |                                                                                                                                                     |
| Construction End Year                              | 12/31/2029   |                                                                                                                                                     |
| Project Opening - Benefits Realized                | 2030         |                                                                                                                                                     |
| Last Year in Operations Period/Analysis Period End | 2049         |                                                                                                                                                     |
| Operations Period                                  | 20           |                                                                                                                                                     |
| Annualization Factor                               | 365          |                                                                                                                                                     |
| Annual Growth Rate                                 | 1%           |                                                                                                                                                     |
| Conversion rate for grams per metric ton           | 1,000,000    | <a href="https://www.metric-conversions.org/weight/grams-to-metric-tons.htm">https://www.metric-conversions.org/weight/grams-to-metric-tons.htm</a> |
| AADT at the crossing Vista Road W (0.5%)           | 7,512        |                                                                                                                                                     |
| AADT Route 66 Northbound 2025 (0.75%)              | 2,977        |                                                                                                                                                     |
| AADT Rout 66 Southbound 2025 (1%)                  | 5,733        |                                                                                                                                                     |
| Capital Cost                                       |              |                                                                                                                                                     |
| Project Cost (\$2023)                              | \$46,870,000 | AECOM Estimate (November 2025)                                                                                                                      |
| Project Cost (\$2024)                              | \$48,121,710 |                                                                                                                                                     |
| Reduced Accidents                                  |              |                                                                                                                                                     |
| O - No Injury                                      | \$5,500      | Benefit-Cost Analysis Guidance for Discretionary Grant Programs – 2026 Update (Final), December 2025                                                |
| C - Possible Injury                                | \$122,400    |                                                                                                                                                     |
| B – Non incapacitating                             | \$256,300    |                                                                                                                                                     |
| A - Incapacitating                                 | \$1,302,300  |                                                                                                                                                     |
| K - Killed                                         | \$13,700,000 |                                                                                                                                                     |
| U - Injured (Severity Unknown)                     | \$238,500    |                                                                                                                                                     |
| Property Damage Only (PDO) Crashes (per vehicle)   | \$9,700      |                                                                                                                                                     |

| O&M Costs                                                         |         |                                                                                                      |
|-------------------------------------------------------------------|---------|------------------------------------------------------------------------------------------------------|
| Annual O&M Costs Year 1-5 - Percentage of Project Capital Costs   | 0%      | Assumptions                                                                                          |
| Annual O&M Costs Year 5-15 - Percentage of Project Capital Costs  | 0.25%   |                                                                                                      |
| Annual O&M Costs Year 11-20 - Percentage of Project Capital Costs | 0.50%   |                                                                                                      |
| Amtrak Passenger & Operational Savings                            |         |                                                                                                      |
| Frequency of crashes per year (Expected closures per year)        | 0.33    | Assuming one crash every 3 years                                                                     |
| Closure duration due to accident (Hours)                          | 12      | Conservative estimate                                                                                |
| Passenger trains affected per closure                             | 2       | Amtrak                                                                                               |
| Closure a year                                                    | 4       | The average delay each train avoids per year                                                         |
| Train-hours delayed per closure                                   | 24      | Calculation                                                                                          |
| Annual Passenger trains trip delayed hours per closure            | 8       | Train-hours delayed/year                                                                             |
| Amtrak Long-Distance Operating Cost per Hour, Hauling, 2024\$     | \$1,084 | Benefit-Cost Analysis Guidance for Discretionary Grant Programs – 2026 Update (Final), December 2025 |
| Amtrak Long-Distance Operating Cost per Hour, Idling, 2024\$      | \$723   |                                                                                                      |
| BNSF Freight Train Operational Costs                              |         |                                                                                                      |
| Frequency of crashes per year (Expected closures per year)        | 0.33    | Assuming one crash every 3 years                                                                     |
| Closure duration due to accident (Hours)                          | 12      | Conservative estimate                                                                                |
| # BNSF Freight trains affected per closure                        | 35      | BNSF                                                                                                 |
| Hours of crossing closure a year                                  | 4       | The average delays each train avoids per year                                                        |
| Total Train-hours delayed per closure                             | 420     | Calculation                                                                                          |
| Annual Freight trains delayed hours per closure                   | 140     | Train-hours delayed/year; Calculation                                                                |
| Ridership 2024 - SNB (San Bernardino, CA)                         | 88,429  | Amtrak (November 2025) - Passengers between Barstow and Victorville Stations                         |
| Ridership 2024 - VRV (Victorville, CA)                            | 86,706  |                                                                                                      |
| Freight Train Operating Cost per Hour, Idling, 2024\$             | \$259   | Benefit-Cost Analysis Guidance for Discretionary Grant Programs – 2026 Update (Final), December 2025 |
| Hourly Operating Costs, Hauling, Freight Train, 2024\$            | \$655   |                                                                                                      |
| Travel Time Saving (Autos and Passengers) & Commercial Truck      |         |                                                                                                      |
| Intersection Delay Data Inputs                                    |         |                                                                                                      |
| Average Daily Train Crossings at Vista Road                       | 70      | BNSF                                                                                                 |
| Average Time per Train Crossing (minutes)                         | 3.6     | Assumption                                                                                           |
| Total Daily Delay from Train Crossings (hours)                    | 4.2     | Calculation                                                                                          |
| Percentage of Traffic Affected by Train Crossings                 | 18%     | Calculation                                                                                          |

|                                                                       |           |                                                                                                                                                                                                                                                                                |
|-----------------------------------------------------------------------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Average Delay per Affected Vehicle (No Build)-minutes                 | 4         | Assumption, vehicle delay time is 100% of train crossing time                                                                                                                                                                                                                  |
| Average Delay per Vehicle (No Build)-Minutes                          | 0.7       |                                                                                                                                                                                                                                                                                |
| Average Delay per Vehicle (No Build)-hours                            | 0.012     | Calculation                                                                                                                                                                                                                                                                    |
| Average Delay per Vehicle (Build)-hours                               | 0         | Assumption, vehicle delay time is eliminated                                                                                                                                                                                                                                   |
| Annualization Factor                                                  | 365       | Factor                                                                                                                                                                                                                                                                         |
| <b>Detour / alignment</b>                                             |           |                                                                                                                                                                                                                                                                                |
| Extra miles for north users (miles)                                   | 2         | Google Map                                                                                                                                                                                                                                                                     |
| Speed (mph)                                                           | 60        | Google Map                                                                                                                                                                                                                                                                     |
| Extra travel time for northbound users (hours)                        | 0.03      |                                                                                                                                                                                                                                                                                |
| For southbound users- net time saved per trip (hrs)                   | 0.012     |                                                                                                                                                                                                                                                                                |
| For northbound users- net time saved per trip (hrs)                   | 0.006     |                                                                                                                                                                                                                                                                                |
| Percentage of traffic from north                                      | 18%       | Percentage of Traffic Affected by Train Crossings                                                                                                                                                                                                                              |
| Trucks as Percentage of Traffic in Project Area                       | 10%       |                                                                                                                                                                                                                                                                                |
| Value of Personal Time, 2024\$                                        | \$20.10   | Benefit-Cost Analysis Guidance for Discretionary Grant Programs – 2026 Update (Final), December 2025                                                                                                                                                                           |
| Value of Time All Purposes, 2024\$                                    | \$21.80   |                                                                                                                                                                                                                                                                                |
| Value of Time Truck, 2024\$                                           | \$37.20   |                                                                                                                                                                                                                                                                                |
| Auto Occupancy                                                        | 1.52      |                                                                                                                                                                                                                                                                                |
| <b>Vehicle Operating Savings</b>                                      |           |                                                                                                                                                                                                                                                                                |
| Hourly fuel consumption (idling)                                      | 0.4       | <a href="https://afdc.energy.gov/files/u/publication/which_is_green_e_r.pdf">https://afdc.energy.gov/files/u/publication/which_is_green_e_r.pdf</a>                                                                                                                            |
| Fuel Cost West Coast 2025\$                                           | \$ 3.66   | retrieve on (1/19/2026) from:<br><a href="https://www.eia.gov/petroleum/gasdiesel/">https://www.eia.gov/petroleum/gasdiesel/</a>                                                                                                                                               |
| Fuel Cost West Coast 2024\$                                           | \$3.58    | <a href="#">Discounted from 2025</a>                                                                                                                                                                                                                                           |
| Truck operating costs per hour (excluding Tolls &Driver Wages) 2024\$ | \$57.28   | <a href="https://truckingresearch.org/2025/07/an-analysis-of-the-operational-costs-of-trucking-2025-update/">Analysis of the Operational Costs of Trucking: 2025 Update https://truckingresearch.org/2025/07/an-analysis-of-the-operational-costs-of-trucking-2025-update/</a> |
| <b>Emissions</b>                                                      |           |                                                                                                                                                                                                                                                                                |
| Light Vehicle Idle Emissions Rates g/hr. NOx                          | 4         | Idling Vehicle Emissions for Passenger Cars, Light-Duty Trucks, and Heavy-Duty Trucks Emission Facts, EPA420-F-08-025, October 2008                                                                                                                                            |
| Heavy Duty (Class VII) Idle Emissions Rates g/hr. NOx                 | 30        |                                                                                                                                                                                                                                                                                |
| Heavy Duty (Class VII) Idle Emissions Rates g/hr. PM2.5               | 1         |                                                                                                                                                                                                                                                                                |
| Conversion - g/metric ton                                             | 1,000,000 |                                                                                                                                                                                                                                                                                |
| Freight Train Emission cost per hour hauling 2024\$                   | \$2,356   | Benefit-Cost Analysis Guidance for Discretionary Grant Programs – 2026 Update (Final), December 2025                                                                                                                                                                           |
| Freight Train Emission cost per hour idling 2024\$                    | \$799     |                                                                                                                                                                                                                                                                                |
| Amtrak Long Distance Emission cost per hour hauling 2024\$            | \$780     |                                                                                                                                                                                                                                                                                |

|                                                           |                                     |                        |
|-----------------------------------------------------------|-------------------------------------|------------------------|
| Amtrak Long Distance Emission cost per hour idling 2024\$ | \$109                               |                        |
| Cost of SOx, Nox, PM2.5 emissions (per metric ton)        | See Sheet "Emissions Dollar Values" |                        |
| Truck emissions rates of SOx, Nox, PM2.5 (g/mile)         | See Sheet "EMFAC2021"               | California ARB / EMFAC |

Source: USDOT BCA Guidance, Amtrak, BNSF

## 4. Benefits Methodology

This Project will produce “Effects on Safety” benefit; “effects on System and Service Performance” benefits; “Effects on Competitiveness, Reliability, Transit time, and Resilience” benefits; and “Ability to Meet Existing or Anticipated Demand” benefits. The methodologies used to estimate the benefits of the Project are described in the following sections, along with associated results.

### Effects on Safety

The analysis evaluates the reduction in collisions between roadway vehicles and trains with the elimination of the Vista Road at-grade crossing. According to the Accident/Incident Report extracted from the FRA’s Annual GAXPS 2025 crossing inventory for the project crossing # 026068N, from 2019 to 2023, crashes resulting in two injuries and one fatality occurred between a roadway vehicle and a train. With the replacement of the at-grade crossing with a grade-separated crossing as part of the Project, future collisions between roadway vehicles and trains are expected to be eliminated. The project avoided collisions under the Build conditions demonstrates the value of the proposed improvements. The analysis monetizes the value of these impacts using the KABCO scale for collision severity and standardized factors published by the USDOT.

During the 20-year analysis period, the total value of avoided injuries and fatalities is calculated to be \$56.7 million in undiscounted 2024 dollars. **Assuming a base year of 2024 and real discount rate of 7 percent, the net present value of avoided injuries and fatalities is calculated to be \$21.4 million in discounted 2024 dollars.**

### Effects on System and Service Performance

The project would generate train-related benefits by avoiding corridor closures caused by grade-crossing crashes. FRA Historical Accident/Incident Reports indicate that one crash has occurred approximately every three years since 2019. Each crash is assumed to result in a 12-hour closure of the crossing (accounting for accident response, investigation, clearance, and inspections) as a conservative assumption. Eliminating these crash-related disruptions would prevent roughly 140 freight train-hours and 8 passenger train-hours of delay annually.

These avoided delays equate to operating and emissions cost savings, as well as passenger travel time savings for Amtrak’s *Southwest Chief* service around the Project area. The project would also generate operating savings for train operators by eliminating idling and reverse movements at the Project site, along with corresponding emissions reductions from the elimination of these inefficiencies.

### Reduced Freight Operational Costs

The delay avoided per freight train was calculated by annualizing the assumed 12-hour closure duration associated with each crash, which occurs approximately once every three years. This annualized delay per train was then multiplied by the estimated number of BNSF freight trains affected during each 12-hour closure to determine the total annual freight train delay avoided (in train hours).

The reduced travel time for impacted trains will lead to operational cost savings for BNSF freight operations. Because freight trains must slow down and sometimes stop to maintain sufficient distance from Amtrak trains, it was assumed that the impacted trainsets will split idling and hauling time evenly (50/50). These operating cost figures were applied to each delay of 140 annual freight train hours per closure to calculate the cost savings in the Build scenario. With the Project, these delays are expected to disappear entirely due to reduced freight train delays and improved rail infrastructure.

These computations were subsequently used to estimate the annual train operating savings by applying the USDOT guidance values for Freight Train Operating Cost per Hour for Idling and Hourly Operating Costs for Freight Train Hauling.

**The Reduced Freight Operational Costs due to the Project amounted to \$0.51 million in 2024 dollars, discounted at 7%.**

## Reduced Amtrak Operational Costs

The reduced delays mean that Amtrak trains will have fewer active operating hours, leading to cost savings for the company. USDOT BCA Guidance estimates that an Amtrak Long-Distance train costs approximately \$723 per hour to run while idling, and \$1,084 per hour when hauling. These values were applied to the total amount of hours Amtrak trains will be delayed each year, which in turn is based on the average delay reduction per train of 4 hours (with 2 trains per day, one idling and one hauling), allowing for the calculation of the Amtrak operational cost savings. The delay reduction is estimated to equal half of the current delay per train, as the reverse move distance is being reduced by more than half.

**The value of Reduced Amtrak Operational Costs for the Project amounted to \$0.11 million in 2024 dollars, discounted at 7%.**

## Residual Value

The Project would produce benefits beyond the 20-year period of analysis because the useful life of the Project is greater than 20 years. The useful life of the Project (75 years for bridge structures<sup>5</sup>, 30 years for roadways<sup>6</sup>, and 50 years for utilities) is used to depreciate the asset to the end of the analysis period using straight-line depreciation. The remaining value of this cost is discounted from the final year of the 20-year analysis period 2049. Only material and equipment costs were considered, thus excluding labor costs from the calculation. ROW does not depreciate and is expected to maintain its full value by the end of the analysis period.

**The value of the remaining useful life for the Project amounts to \$3.40 million in 2024 dollars, discounted at 7%.**

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<sup>5</sup> <https://nap.nationalacademies.org/catalog/25672/guide-specification-for-service-life-design-of-highway-bridges>

<sup>6</sup> Bureau Of Economic Analysis, Depreciation Rates. [https://apps.bea.gov/national/pdf/BEA\\_depreciation\\_rates.pdf](https://apps.bea.gov/national/pdf/BEA_depreciation_rates.pdf)

## Effects on Competitiveness, Reliability, Trip Time, and Resilience

### Travel Time Savings (Passenger Rail)

Passenger train travel time savings are generated by avoiding train delays associated with incident-related closures of the at-grade crossing. Under the No Build scenario, a safety incident at the crossing is assumed to close the corridor and delay Amtrak's Southwest Chief service, between the San Bernardino and Victorville stations, whereas under the Build scenario, the project is expected to eliminate these closures and thereby avoid the associated passenger delay. FRA's Historical Accident/Incident Reports indicate that, since 2019, one crash-related closure occurs, on average, once every three years, and each event is assumed to result in a 12-hour corridor shutdown under a conservative assumption.

Two Amtrak passenger trains are expected to be affected by each closure. Using Amtrak's ridership data, it was possible to calculate how many passengers are affected by each delay. For this analysis, the 2024 ridership data for the segment between the San Bernardino and Victorville stations on Amtrak's Southwest Chief service was provided by Amtrak, as stated in Exhibit 4. The reported ridership of 88,429 for San Bernardino (SNB) was converted to an average daily ridership and then divided by two to estimate the daily ridership in each direction. This resulted in a daily directional ridership of 120 passengers. This daily ridership was projected over the analysis period using a 5% growth rate for 2025 and a 1% growth rate for the remainder of the analysis period.

Using the average number of passengers impacted per train and the average delay incurred, it was possible to calculate the total time lost by passengers on each trip at the Project location. USDOT estimates that each hour of travel (for all purposes) is valued at \$20.1, which allows the monetization of the total time saved in the Build scenario.

**The Travel Time Savings for Passenger Rail due to the Project is \$0.35 million, discounted at 7% in 2024 dollars.**

### Travel Time Saving (Autos and Passengers)

In the No-Build scenario, all vehicles traveling to and from Route 66 to and from Helendale would continue to experience delays at the Vista Road at-grade crossing due to train gate downtime when freight or passenger trains pass through the corridor. In the Build scenario on the other hand, the Vista Road crossing would be closed, and all vehicles accessing Helendale would instead cross the BNSF corridor using the proposed grade separation located approximately three quarters of a mile south of the existing crossing. Using the intersection data provided in Exhibit 4, the average delay per vehicle in the No-Build condition is calculated by multiplying the share of vehicles affected (18 percent) by the average existing delay per affected vehicle, conservatively assumed to be four minutes and representative of gate down time. Under the Build scenario, these train-related delays would be fully eliminated for all vehicles.

In the analysis, the travel time effects differ by direction of travel. Vehicles approaching Helendale from the southbound will experience no additional travel distance, as the new overpass lies directly along their existing route. Thus, southbound autos receive the full benefit of eliminating train-related delays. In contrast, vehicles approaching Helendale from the northbound must travel an additional two miles, one mile south to reach the new overpass and one mile north to reconnect

with Vista Road crossing. This detour would result in a net travel time impact of 0.006 hours per northbound vehicle.

For each direction, the analysis multiplies the appropriate AADT (northbound or southbound) by the relevant vehicle time saved to estimate total annual vehicle-hours traveled (VHT) savings. These VHT savings are then applied to USDOT's recommended average auto occupancy and monetized value to determine the travel time saving.

**The present value of travel time savings for autos and passengers (northbound and southbound) is estimated at \$7.98 million in 2024 dollars over the 20-year analysis period, using a 7% discount rate.**

## Travel Time Savings (Commercial Trucks)

To quantify the annual travel time saving for Commercial Trucks, the analysis multiplies the directional AADT for trucks (northbound and southbound) by the corresponding vehicle hours saved to compute annual vehicle-hours travel (VHT). These VHT values are then monetized using USDOT's recommended commercial vehicle driver value of time from Exhibit 4.

**The present value of travel time savings for commercial trucks (northbound and southbound) is estimated at \$1.08 million in 2024 dollars over the 20-year analysis period, using a 7% discount rate.**

## Commercial Vehicle Operating Cost Savings

The Commercial Vehicle Operating Cost Savings were calculated by multiplying the annual truck delay hours avoided by the truck operating costs per hour of \$57.28, excluding tolls and driver wages, as recommended by the 2025 American Transportation Research Institute report (Table 9) on the *Operational Cost of Trucking 2024*<sup>7</sup>.

**The present value of this benefit stream is estimated at \$1.66 million in 2024 dollars over the 20-year analysis period using a 7 percent discount rate.**

## Automobile Fuel Costs Savings

The automobile vehicle operating cost savings were estimated using the Fuel Cost Savings Benefit for autos. For this benefit, the Auto Annual VHT avoided was multiplied by the hourly fuel consumption rate while idling<sup>8</sup> (0.4 gallons per hour) to calculate the avoided fuel use during idling. This avoided fuel consumption was then multiplied by the West Coast average gasoline price (2024 dollars)<sup>9</sup> to determine the Avoided Fuel Used Benefit for automobiles.

**The present value of Fuel Cost Savings Benefit for autos is estimated at \$0.37 million dollars in 2024 over the 20-year analysis period, using a 7% discount rate.**

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<sup>7</sup> Analysis of the Operational Costs of Trucking: 2025 Update; <https://truckingresearch.org/2025/07/an-analysis-of-the-operational-costs-of-trucking-2025-update/>

<sup>8</sup> [https://afdc.energy.gov/files/u/publication/which\\_is\\_greener.pdf](https://afdc.energy.gov/files/u/publication/which_is_greener.pdf)

<sup>9</sup> <https://www.eia.gov/petroleum/gasdiesel/>

## Emissions Reductions

Reductions in vehicle hours traveled (VHT) resulting from the Project will lead to lower vehicle emissions for autos and trucks. This reduction in VHT and idling time results in the reduction in nitrous oxides (NOx) and PM2.5 (MT) in the atmosphere. These reductions in VHT were then multiplied by emission rates (g/hr.) found from the EPA report<sup>10</sup> and held constant throughout the analysis period. Subsequently, they were monetized using the recommended emission values from the 2026 USDOT BCA Guidance (refer to Exhibit 4).

**The total emissions savings for both trucks and autos amount to \$0.39 million in 2024 dollars and 7 percent for all other emissions.**

## Train Emission Savings

The Project will lead to reductions in emissions for trains, as both Amtrak and BNSF trains would avoid idling during instances where the crossing is closed due to the occurrence of a safety incident.

Two Amtrak Southwest Chief trains, travelling between the San Bernardino and Victorville stations, would be affected on average of two per day, one of which must idle and wait, the other of which must reverse down another track, and return to the main line after traffic has passed by. The idling and hauling USDOT BCA Guidance values were used to calculate the impact of these delays, with idling costing \$106 per hour and hauling costing \$755 per hour. The average delay times discussed in the Passenger Time Savings section were applied with these values, yielding avoided emission costs with the Project.

While 35 BNSF trains are impacted per day, they must reduce speed and sometimes stop, depending on their position when the Amtrak trains approach. For this reason, a 50/50 split of hauling and idling emission values was used to calculate the pollution avoided by the Project in the Build scenario. According to USDOT BCA Guidance, per hour, idling freight trains cost \$776 per hour and hauling freight trains cost \$2,284 per hour.

**The value of Train Emissions Reductions for the Project amounted to \$1.67 million in 2024 dollars, discounted at 7%.**

## Ability to Meet Existing or Anticipated Demand

### Effects on the rest of the Network

Reducing delays for both Amtrak and BNSF trains on the Southwest Chief route is expected to have widespread positive impacts throughout the rail network. Improved punctuality and reduced idling times enhance the overall efficiency of the rail system, allowing for more precise scheduling and better allocation of resources. For BNSF, the benefits include more streamlined freight operations, reducing transit times and operational costs, and improving delivery service to customers. For Amtrak, the benefits are similar, with the addition of increasing customer satisfaction and the value proposition of the route.

**The value of the positive effects on the rest of the network are qualitatively evaluated.**

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<sup>10</sup> Idling Vehicle Emissions for Passenger Cars, Light-Duty Trucks, and Heavy-Duty Trucks Emission Facts, EPA420-F-08-025, October 2008

## 5. Costs

### Capital Cost

The capital costs for the Project shown in Exhibit 5. Capital costs are expected to be expended between mid-2026 and end-2029 in accordance with the engineer estimate's schedule, with the Project opening in 2030. The costs for the Project were provided in 2024 dollars.

#### Exhibit 5 – Summary of Project Capital Costs

| Lifecycle Stage Activity                    | Grade Separated Structure | Roadway             | Undiscounted Project Cost in \$2023 |
|---------------------------------------------|---------------------------|---------------------|-------------------------------------|
| Environmental Documentation                 | \$175,000                 | \$175,000           | \$350,000                           |
| Preliminary Design (60-95%)                 | \$875,000                 | \$875,000           | \$1,750,000                         |
| Right-of-Way and Utilities Relocation       | \$755,000                 | \$755,000           | \$1,510,000                         |
| Final Design                                | \$250,000                 | \$250,000           | \$500,000                           |
| Construction                                | \$15,755,200              | \$15,017,550        | \$30,770,000                        |
| Construction Soft Costs (PMCM, Contingency) | \$5,995,000               | \$5,995,000         | \$11,990,000                        |
| <b>Project Total Cost</b>                   | <b>\$23,805,200</b>       | <b>\$23,067,550</b> | <b>\$46,870,000</b>                 |

#### Exhibit 6 - Discounted Summary of Project Capital Costs Expenditure by Year In \$2024

| EXPENDITURE BY YEAR In \$2024               | 2026             | 2027               | 2028                | 2029                | Total Cost Discounted 7% (2024\$) |
|---------------------------------------------|------------------|--------------------|---------------------|---------------------|-----------------------------------|
| Environmental Documentation                 | \$156,934        | \$146,667          | -                   | -                   | \$303,601                         |
| Preliminary Design (60-95%)                 | -                | \$1,466,671        | -                   | -                   | \$1,466,671                       |
| Right-of-Way and Utilities Relocation       | -                | \$1,265,528        | -                   | -                   | \$1,265,528                       |
| Final Design                                | -                | \$419,049          | -                   | -                   | \$419,049                         |
| Construction                                | -                | -                  | \$8,879,386         | \$14,225,985        | \$23,105,371                      |
| Construction Soft Costs (PMCM, Contingency) | -                | -                  | \$4,695,698         | \$4,388,503         | \$9,084,201                       |
| <b>Total</b>                                | <b>\$156,934</b> | <b>\$3,297,915</b> | <b>\$13,575,084</b> | <b>\$18,614,488</b> | <b>\$35,644,421</b>               |

The total capital costs for the Project amount to \$35.6 million in 2024 dollars, discounted at 7 percent.

### Operations and Maintenance (O&M) Costs

The analysis estimates annual operations and maintenance (O&M) costs as a percentage of total project capital costs. To maintain a conservative approach, O&M costs are assumed to be negligible (zero) during the first five years following project completion, based on the expectation that newly constructed infrastructure typically requires minimal upkeep in its early lifecycle. Starting in Year 6 and through Year 15, annual O&M costs are estimated at 0.25 percent of total

capital costs. From Year 16 through Year 20, the rate increases to 0.50 percent, reflecting the greater maintenance needs associated with aging infrastructure.

**The total O&M costs over the analysis period are valued at \$0.84 million as disbenefit, discounted at 7 percent.**

## 6. BCA Results

The analysis results in a total Project BCR of 1.1:1 when discounted at a rate of 7%. Exhibit 7 provides a summary of the BCA results for the Project.

### Exhibit 7 – Benefit Cost Analysis Results

| Vista Road Grade Separation Safety and Mobility Project - Benefit-Cost Analysis |                    |
|---------------------------------------------------------------------------------|--------------------|
| 20 Year Analysis Period (2030-2049)                                             |                    |
| All Values are in Millions of 2024\$ - 7% Discount Rate                         |                    |
| Costs                                                                           |                    |
| <b>Capital Costs</b>                                                            | <b>\$35.64</b>     |
| Benefits                                                                        |                    |
| <b>Effects on Safety</b>                                                        |                    |
| Reduced Accidents                                                               | \$21.42            |
| <b>Effects on System and Service Performance</b>                                |                    |
| Residual value                                                                  | \$3.40             |
| O&M Costs                                                                       | -\$0.84            |
| Reduced Amtrak Operational Costs                                                | \$0.11             |
| Reduced Freight Train Operational Costs                                         | \$0.51             |
| <b>Effects on Competitiveness, Reliability, Trip Time, and Resilience</b>       |                    |
| Travel Time Savings (Autos and Passengers)                                      | \$7.98             |
| Travel Time Savings (Commercial Trucks)                                         | \$1.08             |
| Travel Time Savings (Passenger Rail)                                            | \$0.35             |
| Commercial Vehicle Operating Cost Savings                                       | \$1.66             |
| Automobile Fuel Costs Savings                                                   | \$0.37             |
| Emission Savings                                                                | \$0.39             |
| Train Emission Savings                                                          | \$1.67             |
| <b>Ability to Meet Existing or Anticipated Demand</b>                           |                    |
| Effects on the rest of the Network                                              | <i>Qualitative</i> |
| <b>Total Benefits</b>                                                           | <b>\$38.10</b>     |
| <b>BC Ratio</b>                                                                 | <b>1.07</b>        |
| <b>Net Present Value</b>                                                        | <b>\$2.46</b>      |

Source: AECOM



# Vista Road Crossing Closure and Grade Separation Project

Applicant:  
San Bernardino County



June 22, 2026



## **Draft Agreement Required Under 49 U.S.C. 22905(c)(1)**

### *Vista Road Crossing Closure and Grade Separation Project*

BNSF Railway owns the right-of-way where components of the Project (specifically the existing-at grade crossing proposed for closure, and rail corridor over which a grade separated crossing carrying Shadow Mountain Drive will be constructed) proposed to be funded by the Federal Railroad Administration's Consolidated Rail Infrastructure and Safety Improvements (CRISI) Grant Program. BNSF Railway and San Bernadino County, the Grantee, confirm that: the infrastructure capacity is adequate to accommodate both existing and future freight and passenger rail operations as applicable; railroad collective bargaining agreements with railroad employees (including terms regulating the contracting of work) will remain in full force and effect according to their terms for work performed on the railroad transportation corridor; and the Grantee assures compliance with liability requirements consistent with 49 U.S.C. § 28103.

Additionally, the Grantee will enter into project specific funding and construction agreement(s) as relevant with BNSF Railway. Prior to obligation of the grant, the Grantee will certify that the written agreement referenced in 49 U.S.C. § 22905(c)(1) has been executed.



# Vista Road Crossing Closure and Grade Separation Project

## Appendix F: Environmental Documentation

Applicant:  
San Bernardino County



June 22, 2026



# SAN BERNARDINO COUNTY

## INITIAL STUDY ENVIRONMENTAL CHECKLIST FORM

This form and the descriptive information in the application package constitute the contents of Initial Study pursuant to County Guidelines under Ordinance 3040 and Section 15063 of the State CEQA Guidelines.

### **PROJECT LABEL:**

|                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>APN:</b>        | 0467-014-10<br><br>0467-101-1, 0467-101-02, 0467-101-11, 0467-101-15,<br>0467-101-16, 0467-101-17<br><br>0467-102-01<br><br>0467-111-02, 0467-111-20, 0467-111-23, 0467-111-24,<br>0467-111-29, 0467-111-30, 0467-111-36, 0467-111-37<br><br>0467-121-05, 0467-121-06, 0467-121-17, 0467-121-22,<br>0467-121-24, 0467-121-28, 0467-121-30<br><br>0467-141-20                                                                                                                                           |
| <b>Applicant:</b>  | County of San Bernardino<br>Department of Public Works                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Community:</b>  | Near unincorporated community of Helendale                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Location:</b>   | Approximately ½ mile south of the existing at-grade crossing of Vista Road and the Burlington Northern and Santa Fe (BNSF) rail line, in the southwestern portion of San Bernardino County.                                                                                                                                                                                                                                                                                                            |
| <b>Project No:</b> | TBD                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Staff:</b>      | Chris C. Nguyen, P.E.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Rep:</b>        | TBD                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Proposal:</b>   | Shadow Mountain Road would be extended east and terminate at a new "T" intersection at National Trails Highway. Shadow Mountain Road extension would result in the construction of two bridges, one over the Mojave River Basin, and the other over the BNSF rail line on the segment of Shadow Mountain Road between Jordan Road and National Trails Highway. In addition, Vista Road would be extended south, parallel to the BNSF right-of-way to meet with the new Shadow Mountain Road extension. |

**USGS Quad:** Helendale

**T, R, Section:** T 7/8 N, R 4/5 W, S 5, 6, 31, 32

**Thomas Bros.:** P 3934 / GRID: H-6, H-7, J-6, J-7  
P 3936 / GRID: A-5, A-6, A-7

**Planning Area:** DESERT REGION

**LUZD:** RS – Single Residential  
FW – Floodway  
RL-5 – Rural Living (min. lot size  
5 ac.)

**Overlays:** IC – Community Industrial  
FP1 (Zone A – Inside 100 Year  
Flood Plain)  
FP2 (Zone X – Inside 500 Year  
Flood Plain)  
Dam Inundation – Area of  
Inundation

### **PROJECT CONTACT INFORMATION:**

**Lead agency:** County of San Bernardino  
Department of Public Works-Team B, Transportation Design  
825 East Third Street  
San Bernardino, CA 92415

**Contact person:** Chris C. Nguyen, P.E.  
**Phone No:** (909) 387-7948 **Fax No:** (909) 387-7899  
**E-mail:** cnguyen@dpw.sbcounty.gov

**Project Sponsor:** County of San Bernardino  
Department of Public Works  
825 East Third Street  
San Bernardino, CA 92415

## **PROJECT OVERVIEW:**

Shadow Mountain Road is one of the principal east/west arterials within this part of the County of San Bernardino, connecting U.S. Route 395 and National Trails Highway. Currently Shadow Mountain Road ends at Helendale Road, but traffic can still access to/from National Trails Highway via Helendale Road and Vista Road. Vista Road is the only route between National Trails Highway and Helendale/Silver Lake Community. An at-grade BNSF railroad crossing is located on Vista Road approximately 900 feet west of the intersection of Vista Road and National Trails Highway. Increased traffic, and increased train movement, have resulted in the increase of delays at the existing at-grade crossings of Vista Road and BNSF mainline double-track. These delays have not only affected traffic but also have impacted the access by emergency vehicles to/from National Trails Highway. In addition, several accidents have occurred in the immediate vicinity of Vista Road at the BNSF at-grade railroad crossing.

The Shadow Mountain Road Grade Separation (Proposed Project) includes the extension of Shadow Mountain Road (east) which terminates at a new "T" intersection at National Trails Highway. Shadow Mountain Road extension would result in the construction of two bridges, one over the Mojave River Basin and the other over the Burlington Northern and Santa Fe (BNSF) rail line. In addition, Vista Road would be extended south, parallel to the BNSF right-of-way, to meet with the new Shadow Mountain Road extension.

## **ENVIRONMENTAL/EXISTING SITE CONDITIONS:**

The Project Site encompasses a portion of the Mojave River valley but has a relatively flat topography with elevations ranging from approximately 2,480 feet at the southeast corner to approximately 2,448 feet along the river bed in the central Project area. The Project Site is within the Mojave River watershed (HUC 18090208), within Regional Water Quality Control Board (RWQCB) Region 6, South Lahontan Hydrologic Basin Planning Area. The annual rainfall in the region is about 3.9 inches, and humidity is low throughout the year. Most of the Project Site is covered in Pleistocene-age soils (1.8 million to 10,000 years before present). These younger alluvium soils are composed of unconsolidated and poorly sorted stream, fan, and basin deposits ranging from clay to boulder in size. The Project Site also includes limited areas of Quaternary older alluvium consisting of dry, loose-to-medium dense, silty fine-to-coarse sand with occasional gravel. No hydric soils are present within the Project Site. Majority of the (approximately 85 percent of the total acreage) Project Site located east of the Mojave River slopes to the west toward the river. The other portion of the Project Site, west of the river, slopes eastward toward the river. The Mojave River in this area flows to the north-northeast. Based on surface topography, groundwater flow in this area would tend to be northerly and toward the river.

| EXISTING LAND USE DESIGNATIONS     | ZONING/OVERLAY DISTRICTS                   |
|------------------------------------|--------------------------------------------|
| Single Residential                 | RS                                         |
| Floodway                           | FW                                         |
| Rural Living (min. lot size 5 ac.) | RL-5                                       |
| Community Industrial               | IC                                         |
|                                    | FP1 (Zone A – Inside 100-Year Flood Plain) |
|                                    | FP2 (Zone X – Inside 500-Year Flood Plain) |
|                                    | Dam Inundation – Area of Inundation        |

In addition to the County of San Bernardino, other public agencies that may also have oversight over the Proposed Project or may be responsible for issuing subsequent permits necessary to implement the Proposed Project are identified below:

Federal

- Army Corps of Engineers (USACE)

State

- California Department of Fish and Game (CDFG)
- Regional Water Quality Control Board (RWQCB)
- South Coast Air Quality Management District (SCAQMD)

**PROJECT DESCRIPTION:**

**Project Site Location**

The Project Site is located in the southwestern portion of San Bernardino County, near the unincorporated community of Helendale, along the segment of Shadow Mountain Road between US Highway 395 (US 395) and National Trails Highway (also known historically as Route 66) (see Figure 1, Regional Map). The Proposed Project limits are approximately 1.5 mile in length (see Figure 2, Vicinity Map).

**Proposed Alignment**

The County of San Bernardino (County) proposes to replace the existing at-grade crossing of Vista Road and the BNSF rail line with an elevated grade separation crossing (see Figure 3, Project Site Components). After review of several alignment alternatives, the County has decided to retire the existing at-grade BNSF rail line crossing at Vista Road and shift the crossing approximately 3,000 feet to the south. The existing segment of Vista Road east of the rail line would become a cul-de-sac, while the segment to the west would be extended to the south, parallel to the BNSF right-of-way (ROW). Shadow Mountain Road, the main east-west roadway corridor serving the southern portion of the Helendale community, would be extended from its current eastern termination at Helendale Road, east to Vista Road. A bridge extending Shadow Mountain Road would be constructed over the Mojave River, after which Shadow Mountain Road would be extended through the flat area between the Mojave River and the BNSF rail line and cross with the above-described Vista Road extension at an elevated grade. The proposed Vista Road extension would end at a 90-degree intersection with the proposed Shadow Mountain Road extension. The new Shadow Mountain Road extension would continue east and cross over the BNSF rail line (at grade) with another proposed bridge structure (the southerly-shifted, grade-separated crossing mentioned above) and terminate at a new "T" intersection at National Trails Highway. Widening and cross-grade modifications would be required on National Trails Highway approaching the new T-intersection to accommodate new dual left-turn pockets for northbound traffic and one dedicated right-turn lane for southbound traffic onto future Shadow Mountain Road. A new traffic signal would be installed at this intersection which would serve as an upgraded "gateway" to the fast growing Helendale community.

The proposed Shadow Mountain Road extension throughout the Project area would be categorized as Secondary Highway per the County's transportation standard with two 12-foot wide traffic lanes in each direction plus one 8-foot wide shoulder (or potentially bike lane) with curb, gutter, and sidewalk. As previously mentioned, Vista Road would be extended toward the south to meet with the new Shadow Mountain Road extension. Wherever the proposed alignment is above the existing ground level at a location other than the two new bridge structures, an embankment would be constructed beneath the roadway, with slope applied behind the back of the sidewalk on both sides. The design speed for both Vista Road and Shadow Mountain Road would be 65 miles per hour (mph), and the posted speed would be 55 mph.

### **Project Characteristics**

The proposed Shadow Mountain Road extension crossing the Mojave River would use a six-span bridge configuration, approximately 805 feet (one bridge bent/column to the next) in length and 82-89 feet in width. Caltrans Type 26 sidewalk/barriers are proposed on both sides of the bridge for pedestrian traffic. A concrete barrier would separate vehicle traffic. The substructure consists of pier walls and seat-type abutments supported on drilled shafted piles, with rock slope protection used for scour protection of the abutment foundations.

The proposed Shadow Mountain Road extension crossing the BNSF rail line would use a single-span bridge configuration measuring 220 feet (one span at 220 feet) in length and varying in width from 79 feet to 89 feet because of traffic lane tapering. Caltrans Type 26 sidewalk/barriers are proposed on both sides of the bridge for pedestrian traffic. The substructure consists of circular columns, supported on drilled shaft foundations, and seat-type abutments supported on driven piles, with rock slope protection used for protection of the abutment foundations.

In addition to the bridge work, the Proposed Project would include roadway improvements. Infrastructure improvements for the Proposed Project include constructing accesses to multiple nearby ranch properties adjacent to the Proposed Project.

### **Staging Area**

The staging areas for construction equipment would be selected so as to provide appropriate acreage and proximity to the work areas, including the storing of false work beams and materials if they cannot be stored in the river bed. Two potential staging areas have been tentatively identified and would be designated by the contractor during construction. The first staging area would be located in the triangular area bounded by the proposed Shadow Mountain Road extension, the existing Helendale Road, and the Mojave River. The second staging area would be located in a triangular area (parcel 0467-111-20) west of the BNSF rail line, bounded to the north by Jordan Road and to the west by Pearl Road (see Figure 3). The majority of the construction would occur within the County's right-of-way. The balance of the construction would occur on BNSF right-of-way or private holdings that would be acquired.

## **Access**

The Project Site has adequate clearance to accommodate access roads for the construction of the bridges. Temporary construction easements would be required from local property owners and BNSF during the construction phase. If needed, additional access roads would be built within the project footprint of disturbance. The access roads would be used for accessing the river bed and for hauling materials with dump trucks, for delivery of materials and equipment, and by workers to perform the work (including forming, placing rebar, pouring concrete, etc.).

## **Utilities**

Implementation of the Proposed Project would require the relocation of some utilities. The utility companies with facilities within the Project Site are: Southern California Edison (SCE), Southwest Gas Company, Mojave Water Agency, County of San Bernardino, telephone companies (Verizon, Sprint), and cable companies (Charter Communications, Level 3 Communications, Verizon).

**Figure 1 – Regional Map**  
**Shadow Mountain Road Grade Separation**

**Figure 2 – Vicinity Map**  
**Shadow Mountain Road Grade Separation**

**Figure 3 – Proposed Project**  
**Shadow Mountain Road Grade Separation**

## **EVALUATION FORMAT**

This initial study is prepared in compliance with the California Environmental Quality Act (CEQA) pursuant to Public Resources Code Section 21000, et seq. and the State CEQA Guidelines (California Code of Regulations Section 15000, et seq.). Specifically, the preparation of an Initial Study is guided by Section 15063 of the State CEQA Guidelines. This format of the study is presented as follows. The Proposed Project is evaluated based upon its effect on seventeen (17) major categories of environmental factors. Each factor is reviewed by responding to a series of questions regarding the impact of the Proposed Project on each element of the overall factor. The Initial Study Checklist provides a formatted analysis that provides a determination of the effect of the Proposed Project on the factor and its elements. The effect of the Proposed Project is categorized into one of the following four categories of possible determinations:

|                                      |                                                             |                                    |              |
|--------------------------------------|-------------------------------------------------------------|------------------------------------|--------------|
| Potentially<br>Significant<br>Impact | Less than<br>Significant<br>With Mitigation<br>Incorporated | Less than<br>Significant<br>Impact | No<br>Impact |
|--------------------------------------|-------------------------------------------------------------|------------------------------------|--------------|

Substantiation is then provided to justify each determination. One of the four following conclusions is then provided as a summary of the analysis for each of the major environmental factors.

1. **No Impact:** Therefore, no impacts are identified or anticipated and no mitigation measures are required.
2. **Less than Significant Impact:** Therefore, no significant adverse impacts are identified or anticipated and no mitigation measures are required.
3. **Less than Significant Impact with Mitigation Incorporated:** Possible significant adverse impacts have been identified or anticipated and the following mitigation measures are required as a condition of Project approval to reduce these impacts to a level below significant. The required mitigation measures are: (List mitigation measures)
4. **Potentially Significant Impact:** Significant adverse impacts have been identified or anticipated. An Environmental Impact Report (EIR) is required to evaluate these impacts, which are (Listing the impacts requiring analysis within the EIR).

At the end of the analysis the required mitigation measures are restated for the Mitigation Monitoring and Reporting Program.

## ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED:

The environmental factors checked below would be potentially affected by this Proposed Project, involving at least one impact that is a "Potentially Significant Impact" as indicated by the checklist on the following pages.

- |                                                   |                                                             |                                                             |
|---------------------------------------------------|-------------------------------------------------------------|-------------------------------------------------------------|
| <input type="checkbox"/> Aesthetics               | <input type="checkbox"/> Agriculture and Forestry Resources | <input type="checkbox"/> Air Quality                        |
| <input type="checkbox"/> Biological Resources     | <input type="checkbox"/> Cultural Resources                 | <input type="checkbox"/> Geology / Soils                    |
| <input type="checkbox"/> Greenhouse Gas Emissions | <input type="checkbox"/> Hazards & Hazardous Materials      | <input type="checkbox"/> Hydrology / Water Quality          |
| <input type="checkbox"/> Land Use / Planning      | <input type="checkbox"/> Mineral Resources                  | <input type="checkbox"/> Noise                              |
| <input type="checkbox"/> Population / Housing     | <input type="checkbox"/> Public Services                    | <input type="checkbox"/> Recreation                         |
| <input type="checkbox"/> Transportation / Traffic | <input type="checkbox"/> Utilities / Service Systems        | <input type="checkbox"/> Mandatory Findings of Significance |

## DETERMINATION: (To be completed by the Lead Agency)

On the basis of this initial evaluation, the following finding is made:

- ☐ The Proposed Project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.
- ☒ Although the Proposed Project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the Project have been made by or agreed to by the Project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.
- ☐ The Proposed Project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.
- ☐ The Proposed Project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.
- ☐ Although the Proposed Project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the Proposed Project, nothing further is required.

\_\_\_\_\_  
Signature (prepared by XX, XX)

\_\_\_\_\_  
XX XX, 2012  
Date

\_\_\_\_\_  
Signature: Chema Ude, Senior Associate Planner

\_\_\_\_\_  
Date

| Issues                                                                                                                                                  | Potentially<br>Significant<br>Impact | Less than<br>Significant<br>with Mitigation<br>Incorporated | Less than<br>Significant<br>Impact  | No<br>Impact             |
|---------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|-------------------------------------------------------------|-------------------------------------|--------------------------|
| <b>I. AESTHETICS</b> - Would the project                                                                                                                |                                      |                                                             |                                     |                          |
| a) Have a substantial adverse effect on a scenic vista?                                                                                                 | <input type="checkbox"/>             | <input type="checkbox"/>                                    | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| b) Substantially damage scenic resources, including but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway? | <input type="checkbox"/>             | <input type="checkbox"/>                                    | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| c) Substantially degrade the existing visual character or quality of the site and its surroundings?                                                     | <input type="checkbox"/>             | <input type="checkbox"/>                                    | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| d) Create a new source of substantial light or glare, which would adversely affect day or nighttime views in the area?                                  | <input type="checkbox"/>             | <input type="checkbox"/>                                    | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

**SUBSTANTIATION:** (Check ☒ if project is located within the view-shed of any Scenic Route listed in the General Plan):

- a) **Less than Significant Impact.** According to the Open Space Element of the County's General Plan, San Bernardino County possesses vast expanses of scenic vistas (i.e., vast undeveloped tracts of land). The Proposed Project consists of an extension to Shadow Mountain Road and associated road improvements within the vicinity of the Helendale community. As part of the Proposed Project, the extension of Shadow Mountain Road would be bridged over the Mojave River for approximately 800 feet in length and would be bridged over the BNSF railroad for approximately 220 feet in length. These bridge structures and their substructures, which would consist of pier walls and seat-type abutments or circular columns supported on drilled/driven piles with rock slope protection, would be visible from some locations within the vicinity of the Helendale community.

Visual simulations were prepared to show a before-and-after illustration of the Proposed Project. Exhibit 1 (Attachment A) provides a key view location map showing the location/direction of the visual simulation view. Exhibits 2 and 3 (Attachment A) provide the existing view and the unvegetated and vegetated visual simulations of the Proposed Project from viewpoints A and B. Viewpoint A provides a before-and-after view of above-grade sections of the Proposed Project. This view is from Helendale Road looking southeast across the Mojave River. This viewpoint was chosen to be representative of views from residences along Helendale Road in the Helendale community. In the existing view, vegetation and trees dominate the foreground and middle-ground of the view, and predominantly undeveloped land and mountains dominate the background of the view. The BNSF railroad is visible on the left side of the view in the middle of the photo and appears as a dark, horizontal linear feature. National Trails Highway is located beyond the BNSF. The relatively undeveloped appearance in the middle- and background of this view could be considered scenic due to their relatively undeveloped nature. In the unvegetated and

| <i>Issues</i> | <i>Potentially<br/>Significant<br/>Impact</i> | <i>Less than<br/>Significant<br/>with Mitigation<br/>Incorporated</i> | <i>Less than<br/>Significant<br/>Impact</i> | <i>No<br/>Impact</i> |
|---------------|-----------------------------------------------|-----------------------------------------------------------------------|---------------------------------------------|----------------------|
|---------------|-----------------------------------------------|-----------------------------------------------------------------------|---------------------------------------------|----------------------|

vegetated views, the Proposed Project structures are primarily blocked by existing vegetation and trees, with only portions of the above-grade elements visible through gaps in the vegetation/trees or immediately below the BNSF on the left side of the view. The visible elements of the Proposed Project in this view are most noticeable in the unvegetated visual simulation due to their light tan color; however, in the vegetated visual simulation, these tan-colored areas are landscaped with native plants of similar color to the surrounding area that blend these elements with the existing setting. Therefore, from this view point, introduction of the above-grade Project features would not substantially alter the view, as the view would continue to be dominated by vegetation, trees, and largely undeveloped tracts of land and mountains.

Viewpoint B is from National Trails Highway looking southwest. In the existing view, the foreground and middle-ground are dominated by low, shrubby vegetation. In the background, a ridge-like feature is visible, which is the elevated western bank of the Mojave River. Beyond this elevated bank, mountains are barely discernible in this photograph due to poor visibility. The normally visible outline of these mountains has been traced in the exhibit with a gray-dashed line to provide a visual reference. The undeveloped character of this view could be considered scenic. In the unvegetated and vegetated views, above-grade elements of the Proposed Project are very prominent. The bridge over the BNSF railroad is located in the center of this view; and the foundations of the bridge extend horizontally across much of the view, blocking views of the elevated western bank of the Mojave River from this particular vantage point. The faint-appearing mountains would still be visible beyond the bridge and road foundations. The visible elements of the Proposed Project in this view are most noticeable in the unvegetated visual simulation due to their light tan color; however, in the vegetated visual simulation, these tan-colored areas are landscaped with native plants of similar color to the surrounding area that blend these elements with the existing setting. It should be noted that this view was chosen as a worst-case scenario view to depict the most prominent view of the Proposed Project from a motorist's line of sight. However, this worst-case view of these Project elements would be of a short duration, as motorists would be traveling past this location at a fairly high rate of speed (i.e., the posted speed limit for National Trails Highway at this location is 55 mph). Furthermore, all elements of the Proposed Project would be constructed on the west side of National Trails Highway, in the vicinity and context of existing development associated with the Helendale community. No development would occur to the east of National Trails Highway, which for the most part consists of views of undeveloped tracts of land and mountains. Therefore, potential impacts to scenic vistas would be considered less than significant, and no mitigation measures would be required.

- b) **Less than Significant Impact.** The Project Site is within the viewshed of National Trails Highway, a County-designated Scenic Route. As stated in the General Plan, "the County desires to retain the scenic character of visually important roadways throughout the County. A 'scenic route' is a roadway that has scenic vistas and other scenic and aesthetic qualities

| <i>Issues</i> | <i>Potentially<br/>Significant<br/>Impact</i> | <i>Less than<br/>Significant<br/>with Mitigation<br/>Incorporated</i> | <i>Less than<br/>Significant<br/>Impact</i> | <i>No<br/>Impact</i> |
|---------------|-----------------------------------------------|-----------------------------------------------------------------------|---------------------------------------------|----------------------|
|---------------|-----------------------------------------------|-----------------------------------------------------------------------|---------------------------------------------|----------------------|

that over time have been found to add beauty to the County.” According to the General Plan, “the boundaries of a scenic corridor generally encompass the land adjacent to and visible from the highway using a motorist’s line of sight.” As discussed in the response for question I(a) above, a visual simulation representing the most prominent view of the Proposed Project from a motorist’s line of sight while on National Trails Highway was prepared. As described for the visual simulation, above-grade elements of the Proposed Project are very prominent. The bridge over the BNSF railroad is located in the center of this view; and the foundations of the bridge extend horizontally across much of the view, blocking views of the elevated western bank of the Mojave River from this particular vantage point. The faint-appearing mountains are still visible beyond the bridge and road foundations. This worst-case view of these Project elements would be of a short duration, as motorists would be traveling past this location at a fairly high rate of speed (i.e., the posted speed limit for National Trails Highway at this location is 55 mph). Furthermore, all elements of the Proposed Project would be constructed on the west side of National Trails Highway, in the vicinity and context of existing development associated with the Helendale community. No development would occur to the east of National Trails Highway, which for the most part consists of views of undeveloped tracts of land and mountains.

It should be noted the Proposed Project would require some modification to National Trails Highway. A new “T” intersection at National Trails Highway would be introduced. Widening and cross-grade modifications would be required on National Trails Highway approaching the new T-intersection to accommodate new dual left-turn pockets for northbound traffic and one dedicated right-turn lane for southbound traffic onto future Shadow Mountain Road. A new traffic signal would also be installed at this intersection. These changes to National Trails Highway would not be considered substantial, as National Trails Highway has previously been modified in this area (i.e., repaved and widened to accommodate a third lane for left-turning northbound vehicles at Vista Road), which has altered the historic character of the road in this area. A limited number of trees would need to be removed to accommodate the new road alignment; however, the nearest location of these trees to National Trails Highway would be approximately 1,000 feet. Also, these trees would not be considered scenic, as they are shade trees and not sensitive species of the San Bernardino Desert Region, such as Joshua, mesquite, smoketree, desert ironwood, palo verdes, etc.

Therefore, implementation of the Proposed Project would not substantially damage scenic resources, including but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway. Impacts would be considered less than significant, and no mitigation measures would be required.

- c) **Less than Significant Impact.** As discussed in the responses for questions I(a) and (b), above, the Proposed Project would not substantially degrade the existing visual character or quality of the site and its surroundings. Therefore, impacts to visual character and quality of the site would be considered less than significant, and no mitigation measures would be

| <i>Issues</i> | <i>Potentially<br/>Significant<br/>Impact</i> | <i>Less than<br/>Significant<br/>with Mitigation<br/>Incorporated</i> | <i>Less than<br/>Significant<br/>Impact</i> | <i>No<br/>Impact</i> |
|---------------|-----------------------------------------------|-----------------------------------------------------------------------|---------------------------------------------|----------------------|
|---------------|-----------------------------------------------|-----------------------------------------------------------------------|---------------------------------------------|----------------------|

required.

- d) **Less than Significant Impact.** Implementation of the Proposed Project would result in the introduction of new signaled intersections and new street lighting (i.e., high-pressure sodium vapor safety luminaries [150- to 200-watt]). All lighting would comply with the San Bernardino County Development Code with respect to glare and outdoor lighting requirements for the desert region. Therefore, impacts related to light and glare would be considered less than significant, and no mitigation measures would be required.

**No significant adverse impacts are identified or anticipated and no mitigation measures would be required.**

**II. AGRICULTURE AND FORESTRY RESOURCES** - In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment Project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. Would the project:

- |                                                                                                                                                                                                                                               |                          |                          |                          |                                     |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|
| a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland) as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?                                                                                                                                                          | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code                                                                                                                                  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

| Issues                                                                                                                                                                                                        | Potentially<br>Significant<br>Impact | Less than<br>Significant<br>with Mitigation<br>Incorporated | Less than<br>Significant<br>Impact | No<br>Impact                        |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|-------------------------------------------------------------|------------------------------------|-------------------------------------|
| section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?                                 |                                      |                                                             |                                    |                                     |
| d) Result in the loss of forest land or conversion of forest land to non-forest use?                                                                                                                          | <input type="checkbox"/>             | <input type="checkbox"/>                                    | <input type="checkbox"/>           | <input checked="" type="checkbox"/> |
| e) Involve other changes in the existing environment, which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use? | <input type="checkbox"/>             | <input type="checkbox"/>                                    | <input type="checkbox"/>           | <input checked="" type="checkbox"/> |

**SUBSTANTIATION:** (Check ☐ if project is located in the Important Farmlands Overlay):

- a) **No Impact.** The Project Site is not identified or designated as Prime Farmland, Unique Farmland, or Farmland of Statewide Importance on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency. Therefore, no impacts related to the conversion of farmland would occur, and no mitigation measures would be required.
- b) **No Impact.** The Project Site contains the following land use zoning districts: Single Residential (RS); Floodway (FW); Rural Living 1 unit per 5 acres (RL-5); and Community Industrial (IC). According to Table LU-1 (Primary Purpose and Intended Uses of Land Use Zoning Districts) of the County of San Bernardino General Plan (2007), the RL-5 District “provides for incidental agricultural uses,” and the FW District “provides sites for animal raising, grazing, crop production, and similar and compatible uses.” Although agricultural uses are allowed within these two districts, agriculture is not the focus of these districts, as in other districts such as the Agriculture (AG) District. Development of a non-agricultural use on the Project Site, such as the proposed road improvements, would not conflict with the districts discussed above. In addition, no Williamson Act Contracts cover the Project Site. Therefore, no conflicts with agricultural zoning or Williamson Act Contracts would occur, and no mitigation measures would be required.
- c) **No Impact.** The Project Site does not conflict with nor would it result in the rezoning of forest or timberland. As mentioned above, the property is zoned for residential uses, floodway uses, and community industrial uses. Therefore, no conflicts with zoning for forest or timberland would occur, and no mitigation measures would be required.
- d) **No Impact.** The Proposed Project would not involve the conversion or removal of forest land. Therefore, no impacts would occur, and no mitigation measures would be required.

| <i>Issues</i> | <i>Potentially<br/>Significant<br/>Impact</i> | <i>Less than<br/>Significant<br/>with Mitigation<br/>Incorporated</i> | <i>Less than<br/>Significant<br/>Impact</i> | <i>No<br/>Impact</i> |
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- e) **No Impact.** The Proposed Project would not involve any other changes in the existing environment, which, due to their location or nature, could result in conversion of Farmland to non-agricultural use or conversion of forest land to non-forest use. Therefore, no impacts would occur, and no mitigation measures would be required.

**No significant adverse impacts are identified or anticipated and no mitigation measures would be required.**

**III. AIR QUALITY** - Where available, the significance criteria established by the applicable air quality management or air pollution control district might be relied upon to make the following determinations. Would the project:

- |                                                                                                                                                                                                                                                                                             |                          |                          |                                     |                          |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|
| a) Conflict with or obstruct implementation of the applicable air quality plan?                                                                                                                                                                                                             | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?                                                                                                                                                                          | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| d) Expose sensitive receptors to substantial pollutant concentrations?                                                                                                                                                                                                                      | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| e) Create objectionable odors affecting a substantial number of people?                                                                                                                                                                                                                     | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

**SUBSTANTIATION:** *(Discuss conformity with the South Coast Air Quality Management Plan, if applicable):*

The analysis and information in the following section is primarily derived from the *Shadow Mountain Railroad Grade Separation – Air Quality and Climate Change Technical Report* prepared for the Proposed Project. This document is included as Appendix A of this Initial Study.

- a) **Less Than Significant Impact.** The Project Site is located in the Mojave Desert Air Basin

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(MDAB). The Mojave Desert Air Quality Management District (MDAQMD) is the regional agency responsible for regulation and enforcement of federal, state, and local air pollution control regulations in the MDAB. The MDAQMD operates seven monitoring stations in the MDAB, develops and enforces rules and regulations for stationary sources and equipment, prepares emissions inventory and air quality attainment planning documents, and conducts source testing and inspections. The most recent Air Quality Attainment Plans (AQAPs) for the region include the 2008 MDAQMD Federal 8-Hour Ozone Attainment Plan (Western Mojave Desert Non-attainment Area), the 2004 (1-hr) Ozone Attainment Plan, and the 1995 Final Mojave Desert Planning Area Federal PM<sub>10</sub> Attainment Plan. These AQAP's include control measures and strategies to attain the National Ambient Air Quality Standards (NAAQS) and California Ambient Air Quality Standards (CAAQS) in the MDAB. The MDAQMD then implements these control measures as regulations to control or reduce criteria pollutant emissions from stationary sources or equipment (MDAQMD, 2008, 2004, 1995).

The MDAQMD developed the *CEQA and Federal Conformity Guidelines* (Guidelines) for use in evaluating project-level impacts resulting from construction activities and operations. The MDAQMD Guidelines specify thresholds of significance, provided in both daily and annual mass emission rates for direct and indirect sources, and conformity requirements. Per MDAQMD guidance, project-level conformity is determined through demonstration of consistency with AQAPs, compliance with all applicable local rules and regulations, and all proposed control measures not yet adopted from the applicable plan, and is consistent with the growth forecasts in the applicable plan (or is directly included in the applicable plan) (MDAQMD 2009).

Existing control measures presented in the 8-hr Ozone Attainment Plan are geared towards reducing emissions from permitted stationary sources through technology requirements (Reasonably Available Control Technology) and would not apply to the Proposed Project. Rules and regulations adopted by the MDAQMD which are applicable to the Proposed Project are presented below:

**Rule 403 Fugitive Dust** aims to reduce and control fugitive dust from activities such as material handling and storage and construction and requires emissions to be controlled such that transport beyond the property boundary does not occur. All feasible control measures are to be implemented. Additionally, the regulatory emission limit is 100 µg/m<sup>3</sup>; this limit shall be based on the difference between upwind and downwind concentrations measured by high-volume sampling devices, averaged over a minimum 5-hour period.

**Rule 403.2 Fugitive Dust Control for the Mojave Desert Planning Area** aims to reduce and control fugitive dust emissions such that the NAAQS for PM<sub>10</sub> and PM<sub>2.5</sub> are not exceeded and requires implementation of specific control measures for various project types. For the Proposed Project, categorized as a "Construction/Demolition

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source,” required control measures include the following: periodic site watering, installation of track-out devices, requirement for haul loads to be covered, and implementation of soil stabilization measures for graded surfaces.

**Rule 1113 Architectural Coatings** aims to reduce VOC emissions from the manufacture, sale, or use of industrial maintenance coatings. Typical materials that could be used during the Proposed Project include waterproofing sealers, with an applicable VOC content limit of 250 g/L. The Project proponent should verify that all materials purchased and used during the Proposed Project are in compliance with the current regulatory VOC limits.

Construction of the Proposed Project would include roadway clearing and grading, aerial bridge construction, site grading and excavation, drainage work/utility relocation, roadway improvements, and application of architectural coatings such as sealer or waterproofing membranes. The types of construction equipment required for these activities include the following: dozer, grader, roller, water truck, drill rig, cement/mortar mixer, crane, compactor, pump, tractor/loader/backhoe, scraper, excavator, skid steer loader, trencher, paver, and paving equipment.

Peak daily emissions generated during construction activities result from concurrent equipment operations. This analysis estimated peak daily emissions based on concurrent operations of 18 pieces of equipment during activities associated with aerial bridge construction, site grading, and excavation, as presented in Table 1.

**Table 1: Peak Daily Construction Emissions Summary (lbs/day)**

| Activity                                                                                                                                                                                                                                                                                                                                      | VOCs  | NOx   | CO    | SO <sub>2</sub> | Fugitive Dust <sup>1</sup> |                   | Combustion       |                   |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|-------|-------|-----------------|----------------------------|-------------------|------------------|-------------------|
|                                                                                                                                                                                                                                                                                                                                               |       |       |       |                 | PM <sub>10</sub>           | PM <sub>2.5</sub> | PM <sub>10</sub> | PM <sub>2.5</sub> |
| Aerial Bridge Construction                                                                                                                                                                                                                                                                                                                    | 1.21  | 7.42  | 8.96  | 0.00            | 0.00                       | 0.00              | 0.35             | 0.32              |
| Site Grading/Excavation                                                                                                                                                                                                                                                                                                                       | 5.15  | 35.52 | 22.52 | 0.00            | 13.62                      | 2.85              | 1.29             | 1.50              |
| On-road Mobile Sources                                                                                                                                                                                                                                                                                                                        |       |       |       |                 |                            |                   |                  |                   |
| Haul Trucks                                                                                                                                                                                                                                                                                                                                   | 5.48  | 36.67 | 48.82 | --              | --                         | --                | 1.73             | 1.22              |
| Employee Commute                                                                                                                                                                                                                                                                                                                              | 0.17  | 0.69  | 8.09  | 0.00            | --                         | --                | 0.23             | 0.12              |
| Peak Daily Emissions Total (lbs/day)=                                                                                                                                                                                                                                                                                                         | 12.01 | 80.30 | 88.39 | 0.00            | 13.62                      | 2.85              | 3.60             | 3.16              |
| Daily Significance Threshold (lbs/day) =                                                                                                                                                                                                                                                                                                      | 137   | 137   | 548   | 137             | 82                         |                   | 82               |                   |
| Exceed Significance Threshold (Y or N)? =                                                                                                                                                                                                                                                                                                     | No    | No    | No    | No              | No                         |                   | No               |                   |
| Notes: “—” indicates source or activity would not result in generation of criteria pollutant.                                                                                                                                                                                                                                                 |       |       |       |                 |                            |                   |                  |                   |
| 1. A control efficiency of 70% has been applied to fugitive dust emissions based on implementation of required control measures including site watering, application of soil stabilization measures on graded surfaces, installation of trackout devices at ingress and egress points, and requirements for haul truck enclosure or covering. |       |       |       |                 |                            |                   |                  |                   |



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1. A control efficiency of 70% has been applied to fugitive dust emissions based on implementation of required control measures including site watering, application of soil stabilization measures on graded surfaces, installation of trackout devices at ingress and egress points, and requirements for haul truck enclosure or covering.

Source: Modeled by AECOM, 2012

As presented in Table 2, annual construction emissions would not exceed the MDAQMD's annual threshold for VOCs, NO<sub>x</sub>, CO, SO<sub>2</sub>, PM<sub>10</sub> or PM<sub>2.5</sub>.

Operation of the Proposed Project would alter the existing travel route only in the local vicinity and, therefore, would not generate any new vehicle trips or associated criteria pollutant emissions. Furthermore, as presented previously in Tables 1 and 2, Project-related emissions are below both the annual and the peak daily construction emissions; therefore, the Proposed Project would not conflict with or obstruct implementation of the applicable AQAP. Therefore, impacts related to the AQAP would be considered less than significant, and no mitigation measures would be required.

- b) **Less Than Significant Impact.** As discussed in item (a) above, the Proposed Project would not generate any air quality emissions during operation and would result in the generation of criteria pollutant emissions below the MDAQMD annual and peak daily emissions for construction activities. These thresholds are designed to identify those projects which may result in significant levels of air pollution and to assist the region in attaining the applicable state and federal ambient air quality standards. Because the Proposed Project would not exceed any MDAQMD air quality significance threshold, it would not violate any air quality standard or contribute substantially to an existing or projected air quality violation. Therefore, impacts would be considered less than significant, and no mitigation measures would be required.
- c) **Less Than Significant Impact.** An evaluation of CEQA-approved concurrent projects within Helendale, the City of Victorville, and the County of San Bernardino was conducted utilizing the online CEQA database. No other projects were identified within a 5-mile radius which would result in concurrent construction activities. In addition, because the Proposed Project would not exceed any MDAQMD air quality threshold, the incremental ambient air quality impact resulting from construction-related emissions would not result in a significant impact to existing attainment and non-attainment designations. The Proposed Project is not considered to result in significant levels of emissions, and these emissions are not cumulatively considerable or cumulatively significant. Therefore, cumulative air quality impacts would be considered less than significant, and no mitigation measures would be required.
- d) **Less Than Significant Impact.** Construction of the Proposed Project would result in the temporary and short-term generation of diesel particulate matter (DPM) from the use of diesel-powered on- and off-road equipment required for site grading and excavation,

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paving, and other construction activities including material hauling. The dose to which the receptors are exposed (a function of concentration and duration of exposure) is the primary factor used to determine health risk (i.e., potential exposure to toxic air contaminant [TAC] emission levels that exceed applicable standards). According to the California Office of Environmental Health Hazard Assessment (OEHHA), health risk assessments (HRAs) that determine the exposure of sensitive receptors to TAC emissions should be based on a 70-year exposure period.

The duration of mobilized equipment used near sensitive receptors located near the corner intersection of Shadow Mountain Road and Helendale Road should be less than 12 months. In addition, as roadway improvements are completed, mobile equipment would progress along the proposed new alignment and would not operate near (within approximately 500 feet of) any one sensitive receptor for more than a maximum of a few weeks at a time. The Proposed Project would represent less than 0.1 percent of the 70-year exposure period for any nearby sensitive receptor in the area. Because the exposure period for receptors in the vicinity of the Proposed Project would be minimal, and because the MDAQMD does not have guidance for evaluation of short-term DPM exposure, additional analysis has not been conducted for this evaluation.

During operation, intersections have the potential to result in a CO hotspot if the level of service (LOS) is rated D, E, or F, which is based on conditions related to traffic flow. Based on results obtained from the Traffic and Transportation Technical Report, intersections within the project Study Area, during the interim (2020) and full build-out (2040) years with the Proposed Project, would operate at an LOS of C or better. As such, CO hotspots would not be generated.

Therefore, implementation of the Proposed Project would not expose sensitive receptors to substantial pollutant concentrations. Impacts would be considered less than significant, and no mitigation measures would be required.

- e) **Less Than Significant Impact.** Operation of the Proposed Project would not generate unusual or objectionable odors because the Proposed Project consists of an extension to Shadow Mountain Road and associated road improvements. Some odors may be associated with diesel engines used during construction; however, these odors are typical during construction and would be subject to construction and air quality regulations, including proper maintenance of diesel engines to minimize engine emissions. These emissions would also be of short duration during the construction phase. Implementation of the Proposed Project would not create objectionable odors that would affect a substantial number of people. Therefore, impacts related to odors would be considered less than significant, and no mitigation measures would be required.

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**No significant adverse impacts are identified or anticipated and no mitigation measures would be required.**

**IV. BIOLOGICAL RESOURCES - Would the project:**

- |                                                                                                                                                                                                                                                                                                                |                          |                                     |                                     |                          |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|-------------------------------------|-------------------------------------|--------------------------|
| a) Have substantial adverse effects, either directly or through habitat modifications, on any species identified as a candidate, sensitive or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service? | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> |
| b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by the California Department of Fish and Game or US Fish and Wildlife Service?                                                           | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> |
| c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc...) through direct removal, filling, hydrological interruption, or other means?                                         | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> |
| d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?                                                                             | <input type="checkbox"/> | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?                                                                                                                                                                            | <input type="checkbox"/> | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional or state habitat conservation plan?                                                                                                                            | <input type="checkbox"/> | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

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**SUBSTANTIATION:** (Check if project is located in the Biological Resources Overlay or contains habitat for any species listed in the California Natural Diversity Database ☒):  
Category N/A

The analysis and information in the following section is primarily derived from the *Biological Resources Technical Report For The Proposed Shadow Mountain Road Grade Separation Project* and the *Shadow Mountain Road Extension Jurisdictional Delineation Report* prepared for the Proposed Project. These documents are included as Appendix B of this Initial Study.

- a) **Less Than Significant With Mitigation Incorporated.** Impacts to existing upland plant community and land cover types (i.e., fallow agriculture land, disturbed land, and saltbush scrub) are anticipated to occur during construction of the Proposed Project; however, these existing plant community and land cover types are not determined sensitive nor are they determined to provide habitat for special status species.

Four special status plant species, cited by the California Natural Diversity Database (CNDDDB) and California Native Plant Society (CNPS), were determined to potentially occur within the regional area of the Proposed Project (CNDDDB 2003 and CNPS 2011). Of the four special status plant species, none are federal- or state-listed as endangered or threatened. Only one of these species, white pygmy-poppy (*Canbya candida*), was determined to have a moderate potential to occur at the Project Site. White pygmy-poppy is typically found in creosote scrub desert and therefore would likely be restricted to the area east of National Trails Highway (outside the Proposed Project limits), as most of the creosote scrub west of the highway is moderately to heavily disturbed.

Five special status wildlife species, cited by the CNDDDB, were determined to potentially occur within the regional area of the Proposed Project (CNDDDB 2003). These special status wildlife species include the desert tortoise (*Gopherus agassizii*), Mohave ground squirrel (*Xerospermophilus mohavensis*), burrowing owl (*Athene cunicularia*), prairie falcon (*Falco mexicanus*), and the Mojave river vole (*Microtus californicus mohavensis*).

Although suitable foraging habitat for the prairie falcon is present within the Project Site, no breeding habitat for this species occurs within, or in proximity to, the Project Site. Also, although the Project Site is within the known range of the Mojave river vole, potentially suitable habitat is limited due to disturbance from past use for agricultural production, flood control activities along the Mojave River, and the dominance of salt cedar in the moister habitats adjacent to the Mojave River. Therefore, no significant impacts to the prairie falcon or Mojave river vole are anticipated. Focused surveys for the burrowing owl and the Mohave ground squirrel and a preliminary desert tortoise survey were conducted within and adjacent to the Project Site between February and July of 2011. These surveys were conducted to determine presence of these species due to potential habitat located within and adjacent to the permanent and temporary disturbance areas. The surveys were negative for all three species; however, despite absence of these species, suitable habitat

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remains on and near the Project Site. Since construction of the Proposed Project would occur at later, Mohave ground squirrel, burrowing owl, or desert tortoise have potential to utilize and/or occupy this suitable habitat. Therefore, the Proposed Project has the potential to impact Mohave ground squirrel, burrowing owl, or desert tortoise. Impacts would be less than significant with the implementation of Mitigation Measures BIO-1 through BIO-6.

Incidental observations of four mammal, 46 bird, and two reptile species were found within and surrounding the Project Site. Among those species observed, the following three are California Department of Fish and Game (CDFG) California Species of Special Concern: olive-sided flycatcher (*Contopus cooperi*), loggerhead shrike (*Lanius ludovicianus*), and yellow warbler (*Dendroica petechia*). The olive-sided flycatcher and yellow warbler incidental observations are considered to be migrant individuals due to the time period (mid-April to early June) and due to the lack of typical habitat for these two species. However, suitable habitat for the loggerhead shrike was observed in the south-eastern portion of the Project Site. Therefore, should construction of the Proposed Project occur during the breeding season, potential impacts to nesting loggerhead shrike could occur. The Migratory Bird Treaty Act makes it unlawful to pursue, hunt, take, capture, or kill migratory birds, including active nests. The County's standard protocol for construction includes a provision to limit construction activity occurring during bird-nesting season (March 15 through September 15) without a breeding bird survey conducted within seven (7) days prior to construction to determine if active nests are present. If no nesting birds are observed, project activities may begin. If an active bird nest is located, the nest site shall be flagged and a buffer established at the appropriate distance, depending on the nesting species.

Impacts would be less than significant with the above stated mitigation measures and incorporation of County nesting bird protocol.

- b) **Less Than Significant With Mitigation Incorporated.** Construction activity in the vicinity of the Mojave River is expected to result in potential impacts to riparian scrub (i.e., would be crushed or removed) due to required access of construction equipment within the Mojave River. Although the bridge is designed to span the Mojave River, direct impacts of the pilings and indirect impacts of shading would result in some impacts to riparian vegetation; however, the riparian scrub is scattered across the floodplain, and does not represent a continuous riparian corridor. In addition, the most common shrub species in this riparian scrub is a nonnative plant (tamarisk). This nonnative shrub is considered an invasive plant species and often dominates floodplains where it is located. The tamarisk-dominated scrub does not represent good quality habitat. Thus, although riparian vegetation (in general) is often considered a sensitive community, the minor, temporary impacts associated with bridge construction would not result in a significant impact to the riparian scrub.

Further protection for the Project Site would occur through the implementation of construction-related Best Management Practices (BMPs) required by the County to be

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approved as part of a Storm Water Pollution Prevention Plan (SWPPP). Examples of protection policies in such plans may include, but not be limited to, the following:

All debris, bark, slash, sawdust, rubbish, silt, cement or concrete or washings thereof, asphalt, paint or other coating materials, oil or other petroleum products, or any other substance resulting from Project-related activities which would be hazardous to aquatic life or water of the state, shall be prevented from contaminating the soil and/or entering the waters of the state. None of these materials shall be allowed to enter into or be placed within or where they may be washed by rainfall or runoff into waters of the state. When operations are completed, any excess materials or debris shall be removed from the work area. No rubbish shall be deposited within 150 feet of the high water mark of any stream.

Aquatic resources, including the entire length of the Mojave River within the Project Site, are also protected under the Clean Water Act (CWA) and the Porter Cologne Water Quality Control Act. These resources are regulated under CWA Sections 404 and 401 by the U.S. Army Corps of Engineers (USACE) and the Lahontan Regional Water Quality Control Board (RWQCB), respectively, and Section 1602 of the California Fish and Game Code, by the California Department of Fish and Game (CDFG). Permits from each of these three regulatory agencies would be required prior to any construction activities within the Mojave River. These permits may include additional requirements for protection of the Project Site.

Impacts would be less than significant with County policy, regulatory permits, and the implementation of Mitigation Measures BIO-1, BIO-2, and BIO-3.

c) **Less Than Significant With Mitigation Incorporated.** The Proposed Project would cross over the Mojave River and would therefore result in temporary and permanent impacts to jurisdictional waters of the United States and state. The Proposed Project is anticipated to directly impact approximately 0.02 acre of jurisdictional waters of the United States and 0.02 acre of jurisdictional waters of the state. The proposed bridge includes six pilings, all of which are located directly within waters of the United States and state. The entire shaded portion under the bridge (1.36 acres) is subject to CDFG jurisdiction. Potential impacts to jurisdictional waters and wetlands include the following:

- Shading from the new bridge has the potential to impact riparian scrub or wetland plant communities associated with the bridge crossing of the Mojave River.
- The installation and permanent existence of the pilings is anticipated to directly impact 0.02 acre of existing habitat.
- The proposed staging area would result in impacts to the isolated water of the state

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(0.05 acre) located in the western section of the Proposed Project.

- The construction and operation of the Proposed Project could potentially result in runoff from dirt piles during rain events, which could cause siltation.
- The construction of the Proposed Project would result in the removal of approximately 0.5 acre of riparian scrub associated with the Mojave River and an identified isolated water of the state.

Impacts would be less than significant with the implementation of Mitigation Measures BIO-1, BIO-2, BIO-3, and BIO-7.

- d) **Less Than Significant Impact.** Wildlife corridors and linkages are essential to maintain populations of healthy and genetically diverse wildlife species. At a minimum, wildlife corridors promote colonization of habitat and genetic variability for both plant and wildlife species by connecting fragments of habitat that are separated by otherwise foreign or inhospitable habitats. Isolation of plant and wildlife populations can have many harmful effects and may contribute significantly to local species extinctions. Therefore, wildlife corridors are important because they help sustain individual species distributions within these habitat fragments.

The Mojave River is a major watercourse/floodplain and hydraulic feature within the desert and represents a substantial linear resource with connectivity to a large expanse of habitat and open space. In fact, the Mojave River is designated as a Wildlife Corridor in the Open Space element of the County of San Bernardino General Plan. This linear feature, coupled with presence of seasonal waters and riparian vegetation, provides cover, forage, rest, breeding, and movement opportunities that are more abundant due to the topography and focused hydrology. The Mojave River presents movement opportunities for free-ranging mammals, dispersal of bird populations, reptile movement and dispersal, and local and regional migration of butterfly/moth populations due partly to the presence of host plants and nectar. This resource can also attract insectivorous and nectar-loving bat species and local movement. As the Proposed Project is expected to bridge over the Mojave River, with minimal infrastructure that would potentially provide substantial impediments to wildlife movement, no significant impacts from the Proposed Project on potential wildlife movement would be expected. Although adverse impacts on wildlife movement may be most likely to occur during the construction phase of the Proposed Project, these impacts would be considered temporary and not significant. As such, impacts associated with interference with a migratory wildlife corridor would be considered less than significant, and no mitigation measures would be required.

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- e) **Less Than Significant Impact.** The Proposed Project would comply with the San Bernardino County Development Code which requires a Tree or Plant Removal Permit for the removal of regulated desert native plants or regulated riparian plants near the Mojave River. According to Section 83.10.080(c), Regulated Desert Native Plants, creosote rings (i.e., a circular group or patch) 10 feet or greater in diameter, “shall not be removed except under a Tree or Plant Removal Permit in compliance with Section 88.01.050 (Tree or Plant Removal Permits).” According to Section 88.01.080, Riparian Plant Conservation, “the removal of vegetation within 200 feet of the bank of a stream . . . shall require approval of a Tree or Plant Removal Permit in compliance with Section 88.01.050 (Tree or Plant Removal Permits).” Construction-related activities requiring the removal of creosote rings 10-feet or greater in diameter and all vegetation within 200 feet of the Mojave River would be subject to the Tree or Plant Removal Permit. As such, the Proposed Project would not conflict with any local policies or ordinances protecting biological resources. Impacts would be considered less than significant, and no mitigation measures would be required.
- f) **Less Than Significant Impact.** The West Mojave Plan is a Habitat Conservation Plan (HCP) and federal land use plan amendment that (1) presents a comprehensive strategy to conserve and protect the desert tortoise, the Mohave ground squirrel, and nearly 100 other sensitive plants and animals and the natural communities of which they are a part and (2) provides a streamlined program for complying with the requirements of the California and federal Endangered Species Acts (CESA and FESA, respectively). Although the Proposed Project is located within the West Mojave Plan, it is not anticipated to have an adverse effect on those species identified in the West Mojave Plan, as the desert tortoise and Mohave ground squirrel were not found at or adjacent to the Project Site. Therefore, impacts associated with an adopted Habitat Conservation Plan would be considered less than significant, and no mitigation measures would be required.

**Potentially significant impacts have been identified or anticipated and the mitigation measures that follow are required as conditions of Project approval to reduce these impacts to a level below significant.**

### **Mitigation Measures**

**BIO-1. Contractor Education Program** – Prior to construction, the County or its designee will retain the services of a qualified biological monitor. The biological monitor will conduct a contractor education program for all personnel regarding the avoidance, as much as is practicable, of harm, harassment, injury, or death of wildlife. This program will emphasize the conservation of the wetlands/riparian systems, native habitats, and associative wildlife during Project construction and include: (a) the purpose of resource protection, (b) a description of the on-site sensitive habitats (e.g., wetland/riparian habitat), (c) the conservation measures that will be implemented in conjunction with project construction,

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and (d) any special site issues. This instruction will be given as often as necessary to ensure that all personnel working on site are adequately briefed as to these matters.

**BIO-2. Construction Work Limits and Hydroseeding** – Prior to construction/site preparation, the County or its designee shall confirm that the construction work limits, including temporary staging areas, are surveyed, staked, and marked (i.e., by caution tape, temporary fencing, etc.) by qualified personnel. No vegetation removal or grading will occur outside the designated work limits. All fencing or other markers will be clearly visible to construction personnel and verified by the biological monitor. Parking; stockpiling and storage of equipment; all equipment maintenance; and dispensing of fuel, oil, or coolant; or other similar activities will be restricted to designated areas within the fenced work limits. Additional measures will include erosion and siltation control measures, protective fencing guidelines, dust control measures, grading techniques, construction area limits, and biological monitoring requirements.

After Project construction, the County or its Contractor will use fiber rolls and hydroseeding for the side slopes along the edge of the road. The hydroseeding will occur using a native seed mix of locally endemic plant species adapted to the desert environment.

**BIO-3. Erosion Control** – The County or its designee will ensure that the fenced impact limits include erosion control measures to minimize erosion and siltation during initial vegetation clearing/removal and Project construction through the use of silt fencing, siltation basins, sand bags, or other controls necessary to stabilize the soil in cleared or graded areas. Erosion control measures will be installed prior to the onset of vegetation clearing/removal. These measures will be maintained in good repair until the completion of Project construction.

**BIO-4. Burrowing Owl Avoidance** – As suitable burrowing owl habitat is present on portions of the Proposed Project Site, a preconstruction presence/absence survey should be conducted if grading or other soil disturbance activities are proposed in areas of suitable habitat. This would minimize the potential for the Proposed Project to impact burrows and habitat that might be occupied by burrowing owls at the time of construction. The preconstruction surveys should be completed no more than 30 days prior to initial ground-disturbing activity to minimize the chance that owls might occupy burrows on the site in the interim period between the surveys and initial ground-disturbing activity.

The following burrowing owl avoidance measures are adapted from recommendations provided by CDFG and the California Burrowing Owl Consortium. If a burrowing owl is observed and it is possible for the Proposed Project to avoid the area of the active burrow, no disturbance should occur within about 50 meters of the burrow during the non-breeding season (September 1 through January 31) or within about 75 meters during the breeding season (February 1 through August 31). Avoidance of an active burrow also requires that a

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minimum of 6.5 acres of foraging habitat be permanently preserved contiguous with the burrow site.

If burrowing owls are detected during the preconstruction surveys, and impacts to the site cannot be avoided, it is recommended that the birds be removed by implementing “passive relocation” techniques. In compliance with resource agency requirements, however, any form of owl relocation must be completed outside the owl’s breeding season to avoid impacts to active nests or dependent young. If burrowing owls are found, coordination with CDFG will be necessary.

**BIO-5. Mohave Ground Squirrel** – Mohave Ground Squirrel (MGS) focused surveys shall be conducted for the Proposed Project at least one year prior to construction in order to obtain a current determination as to the status of MGS on the site. Alternatively, development of the site can be mitigated by purchasing suitable or occupied MGS habitat in an accepted MGS habitat area.

**BIO-6. Desert Tortoise Monitoring** – A desert tortoise monitor shall be required during all grading and other construction operations. This individual may be the assigned biological monitor or another biologist that specializes in desert tortoise identification and relocation. If a tortoise is found, USFWS shall be notified to discuss protocol.

**BIO-7. Regulatory Permits and Authorizations** – Prior to the approval of project plans and specifications, the County or its designee shall ensure that the plans and specifications stipulate that prior to undertaking ground-disturbing activities within any USACE- and CDFG-jurisdictional resources, the County shall coordinate with the appropriate regulatory agencies to verify wetland delineation and jurisdictional determination results and obtain all discretionary permits and authorizations. The County will also demonstrate compliance with applicable regulatory permits per the Clean Water Act, California Fish and Game Code, and the Porter-Cologne Act (if necessary). With the above action, it is the intent of the County to mitigate for any impacts to wetland/riparian habitat, consistent with resource agency requirements and conditions presented in the following permits: Section 404 Nationwide Permit, Section 1602 Streambed Alteration Agreement, and Section 401 Water Quality Certification. Regulatory permitting may also involve waters of the state (isolated wetlands/waters not jurisdictional to USACE) which requires a waste discharge requirement (WDR) per the Porter-Cologne Act. The County shall comply with the regulatory permits.

As part of the regulatory permitting process, the County will prepare (if required by the permits) a Habitat Mitigation and Monitoring Plan (HMMP) in order to mitigate for any permanent and temporary impacts to potential wetland waters of the United States and riparian areas within the Project area. Details of a conceptual mitigation approach will be developed further during the subsequent permitting process and will include the preparation of a conceptual HMMP consistent with USACE’s Mitigation Rule (Federal Register 2008).

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Mitigation shall include offsite (or onsite, if feasible) mitigation in the form of habitat creation, restoration, and/or enhancement and may include an agency-approved contribution to a mitigation bank or in-lieu fee mitigation program. The plan shall be prepared by a qualified restoration biologist familiar with the biology and ecology of southern California plant communities and that of the Project Site.

The HMMP shall include (but not be limited to) the following:

- (a) Sources of plant materials and methods of propagation.
- (b) Site preparation (clearing, grading, weed eradication, soil amendment, topsoil storage), irrigation, planting (container plantings, seeding), maintenance (weed control, irrigation system checks, replanting), and monitoring of the mitigation area.
- (c) Remedial measures to be taken if performance standards are not met.
- (d) Methods and requirements for monitoring.

### **Additional Mitigation Measures**

The Mojave River presents movement opportunities for free-ranging mammals, dispersal of bird populations, reptile movement and dispersal, and local and regional migration of butterfly/moth populations due partly to the presence of host plants and nectar. This resource can also attract insectivorous and nectar-loving bat species. Although the Proposed Project would not result in any significant impacts to bat species, regulatory agencies (i.e., CDFG) have requested that the bridge over the Mojave River be designed to accommodate bats. Mitigation Measure BIO-8 will be incorporated into the Project design to satisfy this request.

**BIO-8. Bat Boxes** – In order to decrease the potential for the new bridge structure to adversely affect bats that may use the new bridge for shelter, it is recommended that the County or its designee implement the use of “bat boxes” in the bridge design. As such, a specification may be included in the construction plans to ensure the proper type and placement of such bat boxes (e.g., Caltrans specifications for similar type projects).

### **V. CULTURAL RESOURCES - Would the project**

- a) Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5? ☐ ☐ ☒ ☐
- b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5? ☐ ☒ ☐ ☐

| Issues                                                                                                  | Potentially<br>Significant<br>Impact | Less than<br>Significant<br>with Mitigation<br>Incorporated | Less than<br>Significant<br>Impact | No<br>Impact             |
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| c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature? | <input type="checkbox"/>             | <input checked="" type="checkbox"/>                         | <input type="checkbox"/>           | <input type="checkbox"/> |
| d) Disturb any human remains, including those interred outside of formal cemeteries?                    | <input type="checkbox"/>             | <input checked="" type="checkbox"/>                         | <input type="checkbox"/>           | <input type="checkbox"/> |

**SUBSTANTIATION:** (Check if the project is located in the Cultural ☐ or Paleontologic ☐ Resources overlays or cite results of cultural resource review):

The analysis and information in the following section is primarily derived from the *Cultural Resources Survey Report for Shadow Mountain Road Grade Separation Project* prepared for the Proposed Project. This document is included as Appendix C of this Initial Study.

- a) **Less Than Significant Impact.** A reconnaissance built environment survey, designed to recognize and evaluate historic standing structures, was conducted by AECOM on June 7, 2011. Prior to the survey, available aerial photographs and historic maps of the built environment/area of potential effect (APE) were reviewed to identify existing structures and to determine whether historic buildings and structures were present. Resources located in the APE that were 45 or more years old were identified and documented.

Fifteen newly identified built environment resources were recorded (i.e., 046-701-405, 046-701-410, 046-710-102, 046-710-111, 046-710-113, 046-711-102, 046-711-105 (SM-TC-H-008), 046-711-113, 046-711-114, 046-711-120, 046-711-124, 046-711-130, 046-711-132, 046-711-202, 046-712-106), which were comprised of residential and commercial buildings and agricultural structures that date to the mid-twentieth century. The majority of these resources do not have significant associations with historical events or persons, or exhibit architectural significance, to meet the criteria of the National Register of Historic Places (NRHP) or California Register of Historical Resources (CRHR). The remaining resources which demonstrated significant historical associations or architectural merit did not retain sufficient integrity to meet the requirements for inclusion in the NRHP or CRHR. As such, none of these resources is recommended eligible for the NRHP or CRHR; and implementation of the Proposed Project would not result in a significant impact on these resources through the alteration of these resources or their setting.

Additionally, four previously recorded historic linear resources were identified. These consisted of National Trails Highway (P-36-002910 [CA-SBR-2910]); Mojave Trail (P-36-003033 [CA-SBR-3033H]); Atchison, Topeka and Santa Fe (AT&SF) Railroad (P-36-006793 [CA-SBR-6793H]); and a telecommunication line (CA-SBR-10318H). Of these four resources, National Trails Highway, the Mojave Trail, and the AT&SF are the only resources within the APE that are considered historic properties; and implementation of the Proposed Project would intersect with all three significant linear resources. Although these are listed in or determined eligible for NRHP listing, segments of the National Trails Highway and the Mojave Trail within the APE appear to have lost aspects of integrity that would contribute to

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the historical significance of the entire historic properties. The segment of the National Trails Highway within the APE has been repaved and widened at the Vista Road intersection and has lost material integrity. Evidence of the segment of the Mojave Trail within the APE could not be identified during the survey, and its material integrity is also compromised. As such, these segments are not contributing factors to the overall eligibility of these resources; and the Proposed Project would have no significant impact on the historic properties. The segment of the AT&SF within the Project limits of disturbance is approximately 0.2-mile long; however, the Proposed Project would not directly affect or impact this resource. The Proposed Project has the potential to compromise the integrity of the resource's setting; but because the segment of the AT&SF within the APE is a miniscule portion of the overall historic property, an indirect change to the setting of this segment would not change the overall eligibility of the historic property. Therefore, impacts associated with historic resources would be considered less than significant, and no mitigation measures would be required.

- b) **Less Than Significant With Mitigation Incorporated.** A pedestrian archaeological survey, designed to identify and evaluate archaeological sites to the extent possible from observed surface conditions, was conducted by AECOM between June 7 and June 9, 2011. The surveys were conducted to identify possible cultural resources that may be impacted by the Proposed Project's construction activities. Five archaeological resource sites consisting of historical dumping or refuse (i.e., SM-TC-H-002; SM-TC-H-004, SM-TC-H-005, SM-TC-H-006, and SM-TC-H-007) were located. The five newly recorded refuse scatter sites were mostly in fair condition, although the condition of portions of some sites in washes was poor due to erosion. In most instances, these sites were extremely unlikely to have subsurface extensions due to their relatively recent age. While most of these sites did retain integrity of location and setting and could be associated with a particular historical period, the mid-twentieth century, their content was limited and they could not be meaningfully associated with a particular historic activity or theme. In addition, none of the refuse scatters holds substantive research potential beyond its already recorded cultural constituents. Thus, none of the five refuse scatters was recommended as significant or eligible to the CRHR or NRHP.

However, although not anticipated, unknown artifacts, features, site components, or even sites have the potential to be encountered during construction activities. Impacts would be less than significant with the implementation of Mitigation Measure CUL-1.

- c) **Less Than Significant With Mitigation Incorporated.** Construction of the Proposed Project would involve ground-disturbing activities, such as pile driving for bridge footings. As such, sub-surface paleontological resources have potential to be encountered. Impacts would be less than significant with the implementation of Mitigation Measure CUL-1.

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- d) **Less Than Significant With Mitigation Incorporated.** No known historic or prehistoric burial sites have been associated with this Project Site. According to County of San Bernardino standard policies, if any human remains are discovered during construction, the developer is required to contact the County Coroner and the County Museum for determination of appropriate mitigation measures. If the remains are determined to be of Native American origin, a Native American representative will also be contacted. Impacts would be less than significant with the implementation of Mitigation Measure CUL-1.

**Potentially significant impacts have been identified or anticipated, and the mitigation measures that follow are required as conditions of Project approval to reduce these impacts to a level below significant.**

### Mitigation Measures

**CUL-1. Monitoring Plan** – A monitoring plan shall be prepared prior to the start of construction/sub-surface ground-disturbing activities, and all ground disturbing activities shall be monitored by a qualified archaeologist and paleontologist. The Monitoring Plan should include stop-work protocols in the unanticipated event resources are discovered to allow for evaluation. In the event of discovery, the qualified archaeologist or paleontologist will coordinate with the Project construction manager and environmental compliance manager to stop all work in the vicinity of the find until the find can be assessed. For archaeological resources, the resource will be documented on Department of Parks and Recreation (DPR) 523 Forms. If the discovery is determined to be not eligible for listing on CRHR or NRHP, work will be allowed to continue. For paleontological resources, the resources will be examined by the paleontologist to determine the extent of the find and proper actions to be taken. All recovered paleontologic specimens will be prepared to a point of identification and permanent preservation, including washing of sediments to recover small specimens. Identification and full curation of all specimens into an established, accredited museum repository with permanent retrievable paleontological storage is required. A Monitoring Report documenting the monitoring efforts should be prepared and submitted when construction is completed.

## VI. GEOLOGY AND SOILS - Would the project:

- a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:
- i. Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map Issued by the State Geologist for the area or based on other substantial evidence of a

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| Issues                                                                                                                                                                                                                            | Potentially<br>Significant<br>Impact | Less than<br>Significant<br>with Mitigation<br>Incorporated | Less than<br>Significant<br>Impact  | No<br>Impact                        |
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| known fault? Refer to Division of Mines and Geology Special Publication 42.                                                                                                                                                       |                                      |                                                             |                                     |                                     |
| ii. Strong seismic ground shaking?                                                                                                                                                                                                | <input type="checkbox"/>             | <input type="checkbox"/>                                    | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| iii. Seismic-related ground failure, including liquefaction?                                                                                                                                                                      | <input type="checkbox"/>             | <input checked="" type="checkbox"/>                         | <input type="checkbox"/>            | <input type="checkbox"/>            |
| iv. Landslides?                                                                                                                                                                                                                   | <input type="checkbox"/>             | <input type="checkbox"/>                                    | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| b) Result in substantial soil erosion or the loss of topsoil?                                                                                                                                                                     | <input type="checkbox"/>             | <input type="checkbox"/>                                    | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on or off site landslide, lateral spreading, subsidence, liquefaction or collapse? | <input type="checkbox"/>             | <input checked="" type="checkbox"/>                         | <input type="checkbox"/>            | <input type="checkbox"/>            |
| d) Be located on expansive soil, as defined in Table 18-1-B of the California Building Code (2001) creating substantial risks to life or property?                                                                                | <input type="checkbox"/>             | <input type="checkbox"/>                                    | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?                                                | <input type="checkbox"/>             | <input type="checkbox"/>                                    | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |

**SUBSTANTIATION:** (Check ☐ if project is located in the Geologic Hazards Overlay District):

The analysis and information in the following section is primarily derived from the *Geotechnical Design and Foundation Report* prepared for the Proposed Project. This document is included as Appendix D of this Initial Study.

- a) (i) **Less Than Significant Impact.** The Project Site is not located in an Alquist-Priolo Earthquake Fault Special Studies Zone. The Project Site is located within an area source known as the Eastern California Shear Zone, which is an apparent zone of distributed shear, treated by Caltrans as having the potential for a maximum earthquake magnitude ( $M_{max}$ ) of 7.6 on a strike-slip fault at a distance of 10 km. The closest known active fault is the Helendale-South Lockhart Fault Zone at a distance of 4.8 km (3 mi) to the northeast. No active faults are known to cross or project towards the Project Site; therefore, fault rupture hazard is considered remote. Impacts associated with fault rupture would be considered less than significant, and no mitigation measures would be required.

| <i>Issues</i> | <i>Potentially<br/>Significant<br/>Impact</i> | <i>Less than<br/>Significant<br/>with Mitigation<br/>Incorporated</i> | <i>Less than<br/>Significant<br/>Impact</i> | <i>No<br/>Impact</i> |
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(ii) **Less Than Significant Impact.** The Project Site is located in the seismically active southern California region which is prone to earthquakes that may result in hazardous conditions to people within the region. Earthquakes and ground motion can affect a widespread area. The Proposed Project will be designed and constructed in accordance with applicable State requirements, including the California Building Code seismic safety requirements. Therefore, impacts associated with seismic ground shaking would be considered less than significant, and no mitigation measures would be required.

(iii) **Less Than Significant Impact With Mitigation Incorporated.** Liquefaction involves the sudden loss in strength of a saturated, cohesionless soil caused by the build-up of pore water pressure during cyclic loading, such as produced by an earthquake; and where it occurs its effects can include vertical and lateral ground displacements, slope instability and lateral spreading, and bearing failure.

Analyses performed for the Proposed Project indicate that limited layers of silty and sandy soils below the design groundwater level will liquefy in the design earthquake (7.6 M<sub>max</sub>). For the Mojave River Bridge, the piles caps for bents within the channel are located at a depth of about 25 feet below the channel bottom and below the depth of any liquefiable soils; therefore, piers will not be subjected to liquefaction-induced downdrag. However, the abutments are about 30 feet higher than the bent piles and will be subjected to downdrag and loss of strength and reduction of lateral capacity from liquefaction. As such, a potentially significant impact related to liquefaction could occur.

Impacts would be less than significant with the implementation of Mitigation Measure GEO-1.

(iv) **Less Than Significant Impact.** Slope instability, in the form of landslides and mudslides, is a potential adverse impact associated with seismic shaking. No landslide-prone formations are known in the vicinity of the Project Site. Existing slopes along the alignment are globally stable under static conditions, and no significant cuts are proposed for the Proposed Project. Impacts associated with slope instability would be considered less than significant, and no mitigation measures would be required.

b) **Less Than Significant Impact.** To avoid impacts caused by soil erosion or the loss of topsoil, and according to standard County policy, construction BMPs will be approved as part of the Storm Water Pollution Prevention Plan (SWPPP) required prior to the start of construction. (See discussion under Biological Resources Section IV(b) above and Hydrology and Water Quality Section IX(a) below.) The Project design also includes that post-construction all denuded slopes would be hydroseeded with a specially formulated mix of native grass seeds. (See Mitigation Measure BIO-2.) With these standards and Mitigation Measures in place, impacts would be considered less than significant.

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- c) **Less Than Significant Impact With Mitigation Incorporated.** The Project Site has no known history of subsidence. The site is relatively level with channel slopes less than about 10 feet high. Settlement ("seismic compaction") of loose to medium dense, clean, dry sands can occur during seismic shaking; however, due to density and fines content of sandy soils at the Project Site, calculated seismic compaction settlements are less than ¼ inch, which is not considered significant.

Slope instability, in the form of landslides and mudslides, is a potential adverse impact associated with seismic shaking. No landslide-prone formations are known in the vicinity of the Project Site. Existing slopes along the alignment are globally stable under static conditions, and no significant cuts are proposed for the Proposed Project.

The proposed fill slopes along the alignment are anticipated to be stable under seismic shaking. Pseudo-static analyses indicate a factor of at least 1.1 using 1/3 of PGA or  $K_h=0.14$  to 0.15 for embankment slopes. Shallow surface sloughing of mechanically-stabilized earth (MSE) embankments or natural slopes could occur in a major seismic event. As such, a potentially significant impact related to the seismic stability of MSE embankments could occur.

Impacts would be less than significant with the implementation of Mitigation Measure GEO-1.

- d) **No Impact.** The Project Site is not located in an area that has been identified as having the potential for expansive soils. Therefore, no impacts would occur, and no mitigation measures would be required.
- e) **No Impact.** The Proposed Project does not include septic tanks or other alternative wastewater disposal systems. No impact would occur, and no mitigation measures would be required.

**Potentially significant impacts have been identified or anticipated, and the mitigation measures that follow are required as conditions of Project approval to reduce these impacts to a level below significant.**

### **Mitigation Measures**

**GEO-1. Geotechnical Report Recommendations** – The Proposed Project shall be designed and constructed in accordance with the geotechnical recommendations identified in the Draft Geotechnical Design and Foundation Report, dated May 29, 2012, related to bridge foundation and mechanically-stabilized earth (MSE) Walls.

| Issues                                                                                                                           | Potentially<br>Significant<br>Impact | Less than<br>Significant<br>with Mitigation<br>Incorporated | Less than<br>Significant<br>Impact  | No<br>Impact             |
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| <b>VII. GREENHOUSE GAS EMISSIONS</b> - Would the project:                                                                        |                                      |                                                             |                                     |                          |
| a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?      | <input type="checkbox"/>             | <input type="checkbox"/>                                    | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases? | <input type="checkbox"/>             | <input type="checkbox"/>                                    | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

#### **SUBSTANTIATION:**

The analysis and information in the following section is primarily derived from the *Shadow Mountain Railroad Grade Separation – Air Quality and Climate Change Technical Report* prepared for the Proposed Project. This document is included as Appendix A of this Initial Study.

Local agencies, including the County and MDAQMD, have not established standards or significance thresholds for evaluation of project-level or cumulative climate change impacts under CEQA. Jurisdictional and lead agencies such as the California Air Resources Board (CARB), the California Air Pollution Control Officers Association (CAPCOA), and other AQMD's including the South Coast Air Quality Management District (SCAQMD) and the Bay Area Air Quality Management District (BAAQMD), have developed both quantitative and qualitative interim significance thresholds for project-level Greenhouse Gas (GHG) emissions. Proposed and adopted significance thresholds which are currently available are briefly described below.

In 2008, CARB released a Preliminary Draft Staff Proposal, *Recommended Approaches for Setting Interim Significance Thresholds for Greenhouse Gases under CEQA*, which recommended a tiered approach for both the industrial and residential/commercial sectors. The proposed interim threshold for the industrial sector is 7,000 MTCO<sub>2</sub>e/yr for stationary, non-transportation (or operational) emissions; construction and transportation-related GHG emissions are recommended to be evaluated based on performance standards, which have yet to be developed. The proposed interim threshold for residential/commercial projects is based on performance standards, which have yet to be developed.

In 2008, the California Air Pollution Control Officers Association (CAPCOA) published a white paper entitled *CEQA and Climate Change, Evaluating and Addressing GHG Emissions from Projects Subject to the CEQA*. Although a 900-MTCO<sub>2</sub>e/yr threshold is presented as an option for evaluation of project-level impacts from non-industrial and industrial projects, it does not account for emissions generated during construction and has not been adopted by a lead agency.

| <i>Issues</i> | <i>Potentially<br/>Significant<br/>Impact</i> | <i>Less than<br/>Significant<br/>with Mitigation<br/>Incorporated</i> | <i>Less than<br/>Significant<br/>Impact</i> | <i>No<br/>Impact</i> |
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In 2008, SCAQMD adopted a numerical GHG significance threshold of 10,000 metric tons of carbon dioxide equivalent (MTCO<sub>2</sub>e) for industrial projects. The interim threshold accounts for emissions generated during both construction and operation and allows for a 30-year amortization of construction emissions based on a projected project lifetime. In 2009, SCAQMD recommended options for evaluating non-industrial projects including thresholds for residential, commercial, and mixed use projects of 3,500, 1,400, and 3,000 MTCO<sub>2</sub>e/yr, respectively; however, these thresholds were never adopted. An additional option has been recommended for establishing a single numerical threshold of 3,000 MTCO<sub>2</sub>e/yr for all non-industrial projects. These options do not account for construction emissions and have not yet been adopted.

In 2010, BAAQMD adopted numerical GHG significance thresholds established at 1,100 MTCO<sub>2</sub>e/yr for projects other than stationary sources and 10,000 MTCO<sub>2</sub>e/yr for stationary sources. Projects other than stationary sources can also be evaluated based on compliance with a qualified GHG reduction strategy. These threshold options are specific to operational impacts and are not intended to evaluate construction impacts.

For this analysis, GHG emissions and climate change impacts have been evaluated in comparison to SCAQMD's interim threshold of 10,000 MTCO<sub>2</sub>e/yr. Although the threshold is applicable to industrial projects predominantly in the form of stationary (or permitted) sources, it is the only currently available threshold that includes a numerical baseline for evaluating construction impacts. The Proposed Project is considered a "construction-only" project; and, therefore, the best available threshold is 10,000 MTCO<sub>2</sub>e/yr, which accounts for amortized construction emissions over the life of the project, or a 30-year projected timeframe, as described above.

- a) **Less Than Significant Impact.** Construction activities would not result in increased GHG emissions resulting from indirect sources, such as offsite electricity generation required to power electric tools or equipment. Construction-related GHG emissions characterized as "direct" would predominantly be in the form of carbon dioxide (CO<sub>2</sub>) as a result of fossil fuel combustion. During construction, combustion would result from equipment operation and on- and off-road vehicle trips. Construction activities will include site grading and demolition, aerial bridge construction, and roadway improvements.

While any increase in GHG emissions would add CO<sub>2</sub> to the atmosphere and therefore may contribute to global climate change, it is important for the purpose of evaluating impacts from construction activities to consider that construction-related emissions will occur only over a finite period of time (14 to 16 months), which is accounted for through SCAQMD's allowance of short-term construction-related GHG emissions to be amortized over the expected (long-term) operational life of a project, which is assumed to be 30 years, based on SCAQMD guidance.

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Table 3 presents project-level GHG emissions, based on amortized construction emissions, and compares them to the SCAQMD interim significance threshold of 10,000 metric tons of carbon dioxide equivalent (MTCO<sub>2e</sub>)/yr.

**Table 3: Annual GHG Emissions Summary - Construction**

| <b>Source1</b>                                                                                                                                                                                                                                                                                       | <b>MTCO<sub>2e</sub> /YR</b> |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|
| Roadway Clearing and Grading (1 month)                                                                                                                                                                                                                                                               | 22                           |
| Aerial Bridge Construction (8 months)                                                                                                                                                                                                                                                                | 187                          |
| Site Grading/Excavation (4 months)                                                                                                                                                                                                                                                                   | 303                          |
| Drainage Work/Utilize Relocation (1 month)                                                                                                                                                                                                                                                           | 17                           |
| Roadway Improvements (6 months)                                                                                                                                                                                                                                                                      | 125                          |
| Architectural Coatings (1 month)                                                                                                                                                                                                                                                                     | --                           |
| On-Road Mobile Source                                                                                                                                                                                                                                                                                |                              |
| Haul Trucks                                                                                                                                                                                                                                                                                          | 1,382                        |
| Employee Trips                                                                                                                                                                                                                                                                                       | 278                          |
| <b>Annual GHG Emissions Summary =</b>                                                                                                                                                                                                                                                                | <b>2,314</b>                 |
| <b>Amortized Construction-related GHG Emissions</b>                                                                                                                                                                                                                                                  | <b>77</b>                    |
| <b>SCAQMD's Interim GHG Threshold</b>                                                                                                                                                                                                                                                                | <b>10,000</b>                |
| <b>Exceed SCAQMD's Interim GHG Threshold (Y/N)?</b>                                                                                                                                                                                                                                                  | <b>No</b>                    |
| <p>Notes: "—" indicates source would not generate GHG emissions.<br/>Values have been rounded to the nearest ten.</p> <p>1. All sources are categorized as "direct" emission sources; no additional indirect GHG sources are proposed during construction.</p> <p>Source: Modeled by AECOM, 2012</p> |                              |

As presented in Table 3, GHG emissions generated during construction activities would not exceed SCAQMD's interim threshold.

Construction activities would also involve removal of up to five trees within the footprint of the Proposed Project. Tree brush removal, as well as mulching associated with disposal of this material, would cause some of the accumulated carbon in the woodland biomass ("carbon stock") to be released into the atmosphere. An estimate of the total biomass accumulation in trees within the Proposed Project footprint has been performed to evaluate how much sequestered carbon dioxide equivalent (CO<sub>2e</sub>) would be released during removal and post-processing activities. The average quantity of carbon contained in a given acre of forested area is 29.5 metric tons of carbon per acre (MT C/acre), or 108.3 MT of carbon dioxide per acre (MTCO<sub>2</sub>/acre) (EPA 2010). The estimated existing carbon stock within the

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Proposed Project footprint is presented in Table 4 below.

**Table 4: Estimated Carbon Stock**

| <b>Acres<sup>1</sup></b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | <b>Metric Tons of Carbon Stock<br/>(MT C)<sup>2</sup></b> | <b>Metric Tons of CO<sub>2</sub><br/>(MTCO<sub>2</sub>)<sup>3</sup></b> |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------|-------------------------------------------------------------------------|
| 0.04                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 0.8                                                       | 2.9                                                                     |
| <p>Notes:</p> <p>Acronyms: C = carbon; CO<sub>2</sub> = carbon dioxide; MT = metric tons</p> <p>1 Total impacted area assumed to be 0.04 acre based on removal of up to 5 trees (assuming a tree canopy diameter of 20 feet per tree).</p> <p>2 Metric tons of C calculated using the following equation: Acres x Carbon Stock (29.55 MT C/acre).</p> <p>3 Metric tons of CO<sub>2</sub> calculated using the following equation: MT C x Molecular Weight Ratio of CO<sub>2</sub>:C (44/12).</p> <p>Sources: EPA 2010</p> |                                                           |                                                                         |

The total potential carbon stock that could be released if the live trees, standing dead trees, or downed-woody debris are removed and disposed (through mulching or other Project-approved process) is 2.9 MTCO<sub>2</sub>, as shown in Table 4. This is a one-time loss of carbon stock (not an annual loss). When added to the GHG emissions generated during construction activities, total emissions would not exceed SCAQMD's interim threshold. Therefore, impacts associated with construction-related greenhouse gas emissions would be considered less than significant, and no mitigation measure would be required.

The Proposed Project would not generate new vehicle trips but would only alter the travel route. Therefore, the Proposed Project would not result in a net increase in direct operational GHG emissions. Indirect GHG emissions would be generated through the installation and operation of street lighting associated with roadway improvements. As presented in Table 5, annual emissions from indirect sources would not exceed SCAQMD's GHG threshold of 10,000 MTCO<sub>2</sub>e/yr established for stationary sources.

**Table 5: Annual GHG Emissions Summary – Operation**

| <b>Source</b>                                       | <b>MTCO<sub>2</sub>e/Yr</b> |
|-----------------------------------------------------|-----------------------------|
| Annual Indirect GHG Emissions Summary =             | 4.61E-03                    |
| <b>SCAQMD's Interim GHG Threshold</b>               | <b>10,000</b>               |
| <b>Exceed SCAQMD's Interim GHG Threshold (Y/N)?</b> | <b>No</b>                   |
| Source: Modeled by AECOM, 2012                      |                             |

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Additionally, carbon sequestration is the process by which atmospheric carbon dioxide is absorbed by trees (plants) through photosynthesis and stored as carbon in biomass and soils. Sequestration rates for the trees are based on an estimated average factor drawn from EPA's guidance on Best Practices for Including Carbon Sinks in GHG Inventories (Ravin and Raine 2007). Table 6 lists the sequestration rate assumptions and total annual sequestration calculations.

**Table 6: Total Impact on Carbon Stock and Sequestration within the Project Impact Area**

| <b>Affected Area<br/>(acres)</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <b>Estimated Existing<br/>Carbon Stock<br/>(MT CO<sub>2</sub>)<sup>1</sup></b> | <b>Sequestration Rate<sup>2</sup><br/>(MT CO<sub>2</sub>/acre/year)</b> | <b>Total Annual Sequestration<br/>(MT CO<sub>2</sub>/Yr)<sup>3</sup></b> |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------|-------------------------------------------------------------------------|--------------------------------------------------------------------------|
| 0.04                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 2.9                                                                            | 0.8                                                                     | 0.03                                                                     |
| <p>Notes: Acronyms: MT = metric tons; MT CO<sub>2</sub>/yr = metric tons of carbon dioxide per year</p> <p>1 Carbon stock obtained from Table 4.</p> <p>2 Sequestration rate based on general forest management practices, obtained from Best Practices for Including Carbon Sinks in Greenhouse Gas Inventories (cited below).</p> <p>3 Annual sequestration calculated based on sequestration rate (0.8 MT CO<sub>2</sub>/acre/year) x total affected acres.</p> <p>Source: Ravin and Raine 2007</p> |                                                                                |                                                                         |                                                                          |

The loss of annual carbon sequestration potential is estimated to be approximately 0.03 MTCO<sub>2</sub>/yr. The annual emissions from indirect sources combined with this loss of annual carbon sequestration, as well as combined with the amortized construction-related emissions, would not exceed SCAQMD's GHG threshold of 10,000 MTCO<sub>2</sub>e/yr established for stationary sources. Therefore, impacts associated with operation-related greenhouse gas emissions would be considered less than significant.

- b) **Less Than Significant Impact.** Currently, GHGs are not required under law to be included in Air Quality Management Plans and are not currently regulated by local Air Quality Management Districts. Statewide GHG emissions are regulated through AB 32, which codifies the State's GHG emissions target by requiring the State's GHG emissions be reduced to 1990 levels by 2020 and directs CARB to enforce the statewide cap that would begin phasing in by 2012. As shown in Tables 3 and 5 above, the Proposed Project is below the SCAQMD interim threshold and therefore would not conflict with any local or state targets for GHG emission reductions. Therefore, impacts related to conflicts with GHG plans, policies, or regulations would be considered less than significant and no mitigation measures would be required.

**No significant adverse impacts are identified or anticipated, and no mitigation measures would be required.**

| <i>Issues</i>                                                                                                                                                                                                                                                    | <i>Potentially<br/>Significant<br/>Impact</i> | <i>Less than<br/>Significant<br/>with Mitigation<br/>Incorporated</i> | <i>Less than<br/>Significant<br/>Impact</i> | <i>No<br/>Impact</i>                |
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| <b>VIII. HAZARDS AND HAZARDOUS MATERIALS - Would the project:</b>                                                                                                                                                                                                |                                               |                                                                       |                                             |                                     |
| a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?                                                                                                                          | <input type="checkbox"/>                      | <input type="checkbox"/>                                              | <input checked="" type="checkbox"/>         | <input type="checkbox"/>            |
| b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?                                                                  | <input type="checkbox"/>                      | <input type="checkbox"/>                                              | <input checked="" type="checkbox"/>         | <input type="checkbox"/>            |
| c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?                                                                                                  | <input type="checkbox"/>                      | <input type="checkbox"/>                                              | <input type="checkbox"/>                    | <input checked="" type="checkbox"/> |
| d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?                                   | <input type="checkbox"/>                      | <input type="checkbox"/>                                              | <input type="checkbox"/>                    | <input checked="" type="checkbox"/> |
| e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area? | <input type="checkbox"/>                      | <input type="checkbox"/>                                              | <input type="checkbox"/>                    | <input checked="" type="checkbox"/> |
| f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?                                                                                                      | <input type="checkbox"/>                      | <input type="checkbox"/>                                              | <input type="checkbox"/>                    | <input checked="" type="checkbox"/> |
| g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?                                                                                                                                        | <input type="checkbox"/>                      | <input type="checkbox"/>                                              | <input checked="" type="checkbox"/>         | <input type="checkbox"/>            |
| h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?                                             | <input type="checkbox"/>                      | <input type="checkbox"/>                                              | <input checked="" type="checkbox"/>         | <input type="checkbox"/>            |

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### ***SUBSTANTIATION:***

The analysis and information in the following section is primarily derived from the *Hazards and Hazardous Materials Technical Report* prepared for the Proposed Project. This document is included as Appendix E of this Initial Study.

- a) **Less Than Significant Impact.** Potential public health hazards posed by transportation projects such as the Proposed Project include disturbance of pre-existing contaminated or impacted materials (e.g., soil), the use of hazardous materials during construction, and the presence or usage of hazardous materials during operation of the completed project. Because construction of the Proposed Project would primarily be performed at or above existing grade (except for limited areas where excavation/driving for bridge pilings and similar structures is to occur), disturbance of existing soils is anticipated to be minimal. In principle, pesticide residues have a minor potential to be present in soils in the fallow agricultural areas east of the Mojave River; and aurally-deposited lead (ADL)<sup>1</sup> could be present in soils along National Trails Highway. An ADL survey of the Project Site was performed which included the installation of 16 hand auger borings in accordance with Caltrans guidance for ADL. The analytical results indicated lead concentration from below detection limits (<2.5 milligrams per kilogram [mg/kg]) to 16.3 mg/kg. The mean was calculated to be 6.3 mg/kg. Soil pH ranged from 8.24 to 9.33. The mean and maximum lead concentrations were below the concentration of 50 mg/kg that would trigger a requirement for additional analysis for solubility. As such, the soils qualify as not being ADL-impacted and are nonhazardous. In addition, above-grade road construction would entail the use of imported fill material which would be required in the Project specifications to be clean, qualified fill material. Operation of the Proposed Project would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials, as the Project does not involve the construction of any facilities that would generate, utilize, or dispose of any hazardous substances. In addition, as the Proposed Project does not involve the building of structures used for living or working, it would not result in the exposure of individuals to such activities. Therefore, impacts associated with hazards to the public or the environment through the routine transport, use, or disposal of hazardous materials would be considered less than significant; and no mitigation measures would be required.
- b) **Less Than Significant Impact.** Construction of the Proposed Project would entail the use of typical construction equipment, including graders, loaders, bulldozers, and support equipment. No unusual or extremely hazardous substances are planned to be used. Construction would be performed under site-specific health and safety plans and procedures to be provided by the construction contractor and approved by the San

<sup>1</sup> Aerially-deposited lead results from lead-containing particulates being emitted by vehicles using leaded gasoline as a fuel. Because leaded gasoline was banned in the late 1970s, concerns regarding aerially deposited lead apply to older highways. Although traffic along National Trails Highway is very light, it has been part of the interstate highway system since the 1920s.

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Bernardino County Highway Department. Therefore, no construction-related upset or accident conditions that might pose a potential impact are anticipated. During operation, the extended Shadow Mountain Road and Vista Road would be classified as Secondary Roads in accordance with San Bernardino County transportation standards. Traffic on these roads is anticipated to be relatively light due to the low population in the area. Truck weight and cargo limits would be as specified by San Bernardino County regulations. No nearby facilities that are likely to require the transport of unusually hazardous materials are present. Therefore, impacts associated with hazards to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment would be considered less than significant, and no mitigation measures would be required.

- c) **No Impact.** The nearest school to the study area is Riverview Middle School, 15350 Riverview Road, approximately one-half mile north of the northern end of the Project Site along Vista Road. This location is one mile north of the northernmost end of the disturbance limits for the Proposed Project and therefore not within one-quarter mile of any part of the Proposed Project. Therefore, no impacts associated with the emission or handling of hazardous materials within one-quarter mile of a school would occur, and no mitigation measures would be required.
- d) **No Impact.** The Project Site is not included on or near a site listed on the Environmental Protection Agency's National Priorities List (NPL) database, and no sites appear on the regulatory databases within the Environmental Data Resources (EDR) search radii required by ASTM Standard Practice E1527-05 for Phase I Environmental Site Assessments. Therefore no impacts would occur, and no mitigation measures would be required.
- e) **No Impact.** The Project Site is not located within two miles of a public airport or public use airport. Therefore, no impacts associated with the safety hazard for people residing or working in the Project area would occur, and no mitigation measures would be required.
- f) **No Impact.** The Project Site is not within the vicinity of a private airstrip. Therefore, no impacts associated with the safety hazard for people residing or working in the Project area would occur, and no mitigation measures would be required.
- g) **Less Than Significant Impact.** Fire and police services are currently provided to the Community of Helendale by the San Bernardino County Fire and Sherriff's departments. Due to the low population density of the area, neither fire department has prepared an emergency response plan for the Helendale community. Because construction of the Proposed Project would only entail extending existing roadways (with the exception of the creation of the Vista Road cul-de-sac) rather than requiring temporary closures, no significant impacts to emergency response would occur. In addition, with the extension of Shadow Mountain Road and grade separation, movement of traffic from the south end of the Helendale community to National Trails Highway would be better facilitated after Project

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completion and would allow for emergency vehicles to cross the BNSF railroad without any delays. Therefore, impacts associated with emergency response would be considered less than significant, and no mitigation measures would be required.

- h) **Less Than Significant Impact.** The vicinity of the Proposed Site is fallow agricultural land or pasture, or open desert land with sparse scrub vegetation, except for the area in the immediate vicinity of the Mojave River, where denser but generally light vegetation is present. The Helendale area is depicted as an area of Moderate fire potential on the California Department of Forestry and Fire Protection's Fire Hazard Severity Zone (FHSZ) map for San Bernardino County. No Wildland-Urban Interface (WUI) zones have been mapped in the area or were observed in the field. The nearest developed area, the residences around Silver Lake in the Helendale community, are not within the disturbance limits of the Proposed Project and are not adjacent to the vegetated areas along the Mojave River. Therefore, impacts associated with exposing people to a significant risk of loss, injury, or death involving wildland fires would be considered less than significant; and no mitigation measures would be required.

**No significant adverse impacts are identified or anticipated, and no mitigation measures would be required.**

**IX. HYDROLOGY AND WATER QUALITY -** Would the project:

- |                                                                                                                                                                                                                                                                                                                                                                                                |                          |                          |                                     |                          |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|
| a) Violate any water quality standards or waste discharge requirements?                                                                                                                                                                                                                                                                                                                        | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level, which would not support existing land uses or planned uses for which permits have been granted)? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation on- or off-site?                                                                                                                                                              | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the                                                                                                                                                                                                                                                                              | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

| Issues                                                                                                                                                                                 | Potentially<br>Significant<br>Impact | Less than<br>Significant<br>with Mitigation<br>Incorporated | Less than<br>Significant<br>Impact  | No<br>Impact             |
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| course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?                                |                                      |                                                             |                                     |                          |
| e) Create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff? | <input type="checkbox"/>             | <input type="checkbox"/>                                    | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| f) Otherwise substantially degrade water quality?                                                                                                                                      | <input type="checkbox"/>             | <input type="checkbox"/>                                    | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| g) Place housing within a 100-year flood hazard area as mapped on a Federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?                   | <input type="checkbox"/>             | <input type="checkbox"/>                                    | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?                                                                                    | <input type="checkbox"/>             | <input type="checkbox"/>                                    | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?                     | <input type="checkbox"/>             | <input type="checkbox"/>                                    | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| j) Inundation by seiche, tsunami, or mudflow?                                                                                                                                          | <input type="checkbox"/>             | <input type="checkbox"/>                                    | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

#### ***SUBSTANTIATION:***

The analysis and information in the following section is primarily derived from the *Water Quality Management Plan* and the *Bridge Hydraulic Analyses for Shadow Mountain Road Bridge at Mojave River* prepared for the Proposed Project. These documents are included as Appendix F and Appendix G, respectively, of this Initial Study.

- a) **Less Than Significant Impact.** The Project Site is located within the Upper Mojave Hydrologic Area (HAS 628.20). This area falls within the jurisdiction of the Lahontan Regional Water Quality Control Board (RWQCB). To avoid the violation of any water quality standards or waste discharge requirements, the Proposed Project would require the implementation of appropriate BMPs that would be approved as part of a Storm Water Pollution Prevention Plan (SWPPP). Examples of protection policies in such plans may include, but not be limited to, the following:

All debris, bark, slash, sawdust, rubbish, silt, cement or concrete or washings thereof, asphalt, paint or other coating materials, oil or other petroleum products, or any other substance resulting from project related activities which would be hazardous to aquatic life or water of the state, shall be prevented

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from contaminating the soil and/or entering the waters of the state. None of these materials shall be allowed to enter into or be placed within or where they may be washed by rainfall or runoff into waters of the state. When operations are completed, any excess materials or debris shall be removed from the work area. No rubbish shall be deposited within 150 feet of the high water mark of any stream.

In addition, as construction would take place within an ephemeral stream channel identified as “waters of the United States,” a Clean Water Act Section 401 Water Quality Certification would be required from the Lahontan RWQCB prior to Project implementation. This permit process is specifically designed to avoid, minimize, and/or mitigate water quality and waste discharge impacts. Therefore, impacts are considered to be less than significant, and no mitigation measures would be required. (See additional discussion under Biological Resources Section IV(b) above.)

- b) **Less Than Significant Impact.** The Proposed Project would not result in an increase in the demand for water production because the Proposed Project consists of an extension to Shadow Mountain Road and associated road improvements. The Proposed Project would result in an increase of approximately 35.5 acres of new, impermeable surfaces; however, these surfaces would be designed to collect and convey stormwater to the Mojave River, which currently receives all sheet flow as part of the regional drainage pattern. The Proposed Project would not substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that a net deficit in aquifer volume or a lowering of the local groundwater table level would occur. Therefore, impacts would be considered less than significant, and no mitigation measures would be required.
- c) **Less Than Significant Impact.** The Project Site is located within a watershed that has a high soil loss rate with poor land cover. The regional drainage pattern of all tributary areas around the Project Site currently drain to the Mojave River, which would not be changed with implementation of the Proposed Project. The proposed road embankment would intercept local surface flow only from the south, and the intercepted flows would eventually drain towards Mojave River. The east Mojave River Bridge abutment, which is within the 100-year floodplain, could cause local backwater effect to the upstream; however, this would be controlled with drainage features located within the proposed right-of-way.

Five discharge locations (Nodes 190, 280, 290, 390, and 490) will provide roadway drainage. For Nodes 290 and 390, the post construction flow rates and volumes for 1-year, 2-years, and 5-years are less than the preconstruction conditions. The flows would eventually discharge to the Mojave River by means of surface flow, which would be the same as the preconstruction conditions. The surface flow that currently drains to Node 290 would be routed to Node 280, then discharged to the Mojave River without commingling with any untreated street flow from the Proposed Project.

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At Node 490, the increase in flow rates and volumes would be intercepted by the proposed retention basin, which would be designed to handle a 100-year storm event. Therefore, all flows coming from the new Vista Road would be retained and percolate into the ground and thus would not cause adverse impact to the downstream private properties during storm events equal or smaller than a 100-year return period.

An increase in flows and volumes would occur at Node 190; however, compared with the mainstream time of concentration within the Mojave River, the time of concentration at Node 190 is much shorter. Therefore, the slight increase of the local surface runoff amount would not substantially impact the hydrologic and hydraulic conditions in the Mojave River, as the two streams would reach peak flow condition at different time intervals (i.e., confluence effect).

Implementation of the Proposed Project would cause a 0.35-foot rise in water surface elevation and up to 100 feet of “backwater” effect. Changes in water surface elevation and mean velocity would be reduced to less than significant with the incorporation of a basin east of the river bank. The piers and east bank bridge abutment have the potential to cause some scouring (i.e., scour depths of up to 15 feet and 25 feet, respectively); however, the incorporation of rock slope protection would eliminate these impacts.

Overall, the Proposed Project may cause a minor “backwater” effect and a minor water surface elevation increase during peak flow conditions but would not adversely impact drainage areas or result in substantial erosion or siltation on or off site. Therefore, impacts would be considered less than significant and no mitigation measures would be required.

- d) **Less Than Significant Impact.** As discussed in the response to IX(c), above, the Proposed Project may cause minor water surface elevation increase during peak flow conditions but would not adversely impact drainage areas or result in flooding on or off site. Therefore, impacts would be considered less than significant, and no mitigation measures would be required.
- e) **Less Than Significant Impact.** As discussed in the response to IX(c), above, the Proposed Project may cause minor water surface elevation increase during peak flow conditions but would not adversely impact drainage areas or result in flooding. Also, all proposed storm drain systems would drain to water-quality Best Management Practices devices, such as a vegetated swale or retention basin, prior to discharge to the Mojave River. Therefore, impacts related to runoff/water quality would be considered less than significant, and no mitigation measures would be required.
- f) **Less Than Significant Impact.** As discussed in the response to question IX(a), above, implementation of appropriate Best Management Practices would be approved as part of a SWPPP. Therefore, impacts to groundwater and water quality would be considered less

| <i>Issues</i> | <i>Potentially<br/>Significant<br/>Impact</i> | <i>Less than<br/>Significant<br/>with Mitigation<br/>Incorporated</i> | <i>Less than<br/>Significant<br/>Impact</i> | <i>No<br/>Impact</i> |
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than significant, and no mitigation measures would be required.

- g, h) **Less Than Significant Impact.** While the extension of Shadow Mountain Road would introduce new structures within the 100-year floodplain, such as the bridge embankment on the eastern side of the Mojave River, these structures are related to roads and are not habitable structures. Although the proposed eastern bridge embankment could intercept local surface flow and cause a local backwater effect, sufficient right-of-way along this embankment would be used for drainage improvements. Therefore, impacts would be considered less than significant, and no mitigation measures would be required.
- i) **Less Than Significant Impact.** The Project Site is located within a Dam Inundation – Area of Inundation Overlay; however, the Proposed Project would not expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam, as the Proposed Project consists of an extension to Shadow Mountain Road and associated road improvements. Therefore, impacts would be considered less than significant, and no mitigation measures would be required.
- j) **Less Than Significant Impact.** Seiches are extensive wave actions on lakes, reservoirs, or other enclosed bodies of water caused by meteorological or seismic activity, such as earthquakes. Tsunamis are seismically induced sea waves generated by offshore earthquake, submarine landslide, or volcanic activity. The Project Site is located more than 130 km from the coast and is situated at elevations greater than 2,400 feet above mean sea level (MSL). Impacts related to tsunamis are not anticipated. The Project Site is located near two enclosed bodies of water (i.e., North Lake and South Lake) and, therefore, is subject to seiches. However, because the Proposed Project consists of an extension to Shadow Mountain Road and associated road improvements, risks associated with seiches would not increase and would be the same as under existing conditions. Similarly, risks associated with mudflows would be the same as under existing conditions. Therefore, impacts related to seiches, tsunamis, and mudflow would be considered less than significant; and no mitigation measures would be required.

**No significant adverse impacts are identified or anticipated, and no mitigation measures would be required.**

**X. LAND USE AND PLANNING - Would the project:**

- |                                                                                                                                                                                                                                                                         |                          |                          |                          |                                     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|
| a) Physically divide an established community?                                                                                                                                                                                                                          | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

| <i>Issues</i> | <i>Potentially<br/>Significant<br/>Impact</i> | <i>Less than<br/>Significant<br/>with Mitigation<br/>Incorporated</i> | <i>Less than<br/>Significant<br/>Impact</i> | <i>No<br/>Impact</i> |
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mitigating an environmental effect?

- c) Conflict with any applicable habitat conservation plan or natural community conservation plan? ☐ ☐ ☒ ☐

#### ***SUBSTANTIATION:***

- a) **No Impact.** The Proposed Project consists of an extension to Shadow Mountain Road and associated road improvements. The Proposed Project is a public works project intending to improve local traffic and safety by eliminating the existing at-grade crossing of the BNSF railroad. While the use of eminent domain would be required to secure the needed land for the Proposed Project, takes would be minimal and would not physically divide an established community. Therefore, no impacts related to physically dividing an established community would occur, and no mitigation measures would be required.
- b) **No Impact.** The Proposed Project consists of an extension to Shadow Mountain Road and associated road improvements. It would not conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the Proposed Project and would not conflict with the land use zoning designations identified for the Project Site (i.e., RS – Single Residential, FW – Floodway, RL-5 – Rural Living (min. lot size 5 ac.), IC – Community Industrial). Implementation of the Proposed Project would not conflict with either the existing land use or zoning designations. Therefore, no impacts related to conflicts with any applicable land use plan, policy, or regulation would occur; and no mitigation measures would be required.
- c) **Less Than Significant Impact.** The West Mojave Plan is a Habitat Conservation Plan and federal land use plan amendment that (1) presents a comprehensive strategy to conserve and protect the desert tortoise, the Mohave ground squirrel, and nearly 100 other sensitive plants and animals and the natural communities of which they are a part and (2) provides a streamlined program for complying with the requirements of the California and federal Endangered Species Acts (CESA and FESA, respectively). Although the Proposed Project is located within the West Mojave Plan, it is not anticipated to have an adverse effect on those species identified in the plan, as the desert tortoise and Mohave ground squirrel were not found at or adjacent to the Project Site. Therefore, impacts would be considered less than significant, and no mitigation measures would be required.

**No significant adverse impacts are identified or anticipated; and no mitigation measures would be required**

| <i>Issues</i> | <i>Potentially<br/>Significant<br/>Impact</i> | <i>Less than<br/>Significant<br/>with Mitigation<br/>Incorporated</i> | <i>Less than<br/>Significant<br/>Impact</i> | <i>No<br/>Impact</i> |
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**XI. MINERAL RESOURCES** - Would the project:

- |                                                                                                                                                                       |                          |                          |                          |                                     |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|
| a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?                                | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| b) Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

**SUBSTANTIATION:** (Check ☐ if project is located within the Mineral Resource Zone Overlay):  
MRZ-3a

- a) **No Impact.** The Proposed Project would not result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state because no important mineral resources are identified on the Project Site, and the site is not within a designated Mineral Resource Zone Overlay. Therefore, no impacts related to the loss of a known mineral would occur, and no mitigation measures would be required.
- b) **No Impact.** The Proposed Project would not result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan because no locally important mineral resources are identified on the Project Site. Therefore, no impacts to related locally important mineral resources would occur, and no mitigation measures would be required.

**No significant adverse impacts are identified or anticipated, and no mitigation measures would be required.**

**XII. NOISE** - Would the project result in:

- |                                                                                                                                                                                     |                          |                                     |                                     |                          |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|-------------------------------------|-------------------------------------|--------------------------|
| a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies? | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> |
| b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?                                                                             | <input type="checkbox"/> | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?                                                      | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> |
| d) A substantial temporary or periodic increase in                                                                                                                                  | <input type="checkbox"/> | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

| Issues                                                                                                                                                                                                                                                              | Potentially<br>Significant<br>Impact | Less than<br>Significant<br>with Mitigation<br>Incorporated | Less than<br>Significant<br>Impact | No<br>Impact                        |
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| ambient noise levels in the project vicinity above levels existing without the project?                                                                                                                                                                             |                                      |                                                             |                                    |                                     |
| e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels? | <input type="checkbox"/>             | <input type="checkbox"/>                                    | <input type="checkbox"/>           | <input checked="" type="checkbox"/> |
| f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?                                                                                                      | <input type="checkbox"/>             | <input type="checkbox"/>                                    | <input type="checkbox"/>           | <input checked="" type="checkbox"/> |

**SUBSTANTIATION:** (Check if the project is located in the Noise Hazard Overlay District ☐ or is subject to severe noise levels according to the General Plan Noise Element ☐):

The analysis and information in the following section is primarily derived from the *Noise Study Report* prepared for the Proposed Project. This document is included as Appendix H of this Initial Study.

- a) **Less Than Significant With Mitigation Incorporated.** Construction noise would be generated by diesel engine-driven construction equipment used for site preparation and grading; removal of existing pavement; loading, unloading, and placing materials; and paving. Diesel engine-driven trucks also would bring materials to the Project Site and remove the spoils from excavation. Under load conditions, diesel engine noise levels may be 85 to 90 A-weighted decibel(s) (dBA) at a distance of 50 feet from the equipment (Federal Highway Administration [FHWA] 2006). Occasional pile driving may be performed, which would generate noise levels of 95 dBA at 50 feet from the equipment (FHWA 2006). Construction equipment noise is considered a "point source" and is attenuated over distance at a rate of 6 dBA for each doubling of distance. Thus, a noise level of 85 dBA at 50 feet would be 79 dBA at 100 feet and 73 dBA at 200 feet from the source. During excavating, grading, and paving operations, equipment moves to different locations and goes through varying load cycles, with breaks for the operators and for non-equipment tasks such as measurement. Although maximum noise levels may be 85 to 90 dBA at a distance of 50 feet during most construction activities, hourly average noise levels near the edge of the Project Site at locations where the excavation, grading, and paving occur would be anticipated to be 75 dBA Equivalent Sound Level ( $L_{eq}$ ). Maximum noise levels during these activities would be approximately 85 dBA Maximum Sound Level ( $L_{max}$ ).

The nearest residential receivers are located approximately 50 feet or greater from the center of proposed construction and pavement-breaking activities. Hourly construction noise levels at this distance would be approximately 75 dBA  $L_{eq}$  and would take place

| <i>Issues</i> | <i>Potentially<br/>Significant<br/>Impact</i> | <i>Less than<br/>Significant<br/>with Mitigation<br/>Incorporated</i> | <i>Less than<br/>Significant<br/>Impact</i> | <i>No<br/>Impact</i> |
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during daytime hours as exempted by the County noise ordinance. Noises at this level would be noticeable and may even be considered annoying; however, they would not be considered adverse or harmful for the period of construction. Therefore, construction-related noise impacts from diesel engine noise or pavement-breaking activities would be considered less than significant.

Pile driving would be required during construction of new bridge footings. Because construction would occur during the daytime, it is important to note that no pile driving would occur during nighttime hours; and therefore pile driving noise would be exempt from the County ordinance. Pile-driving activities would generate maximum noise levels of 95 dBA at 50 feet each time the hammer head strikes the pile (Federal Transit Authority [FTA] 2006). It is estimated that the actual strike of an impact pile driver accounts for 20 percent of an hour, which results in an average hourly noise level of 88 dBA  $L_{eq}$  at 50 feet from the pile. The nearest residential receiver to the bridge would be approximately 750 feet from the nearest pile-driving activities. At this distance, noise levels would average 64 dBA  $L_{eq}$ ; and maximum noise levels would be about 71 dBA  $L_{max}$ . These noise levels would be temporary and would cease at the end of construction on the bridge. Therefore, construction-related noise impacts from pile driving activities would be considered less than significant.

To summarize, construction noise would be heard at nearby residential receivers and may cause occasional speech disruption, principally during times of pavement breaking. Pile driving would generate higher noise levels than standard construction but, as with all construction, would occur during daytime hours and would not result in adverse noise levels at local properties. Thus, construction-related noise impacts would be considered less than significant. Even though construction noise impacts would be exempt by the County noise ordinance, implementation of Mitigation Measures NOI-1 through NOI-4 have been recommended as project enhancement measures to minimize noise generated during the construction phase of the Proposed Project.

During operation, increases in noise levels under the Proposed Project would be caused by the realignment of Shadow Mountain Road and the introduction of increased traffic noise in areas that do not currently have a thoroughfare roadway. Under the Proposed Project, noise levels would change, ranging from -6 to 22 dBA. The traffic noise level decreases would be the result of traffic being rerouted onto the new Shadow Mountain Road and no longer using the retired Vista Road alignment. The changes in noise levels would result in increases of 12 dBA or more at nine residences. Seven of the nine residences would not experience noise levels that exceed the County noise standards of 60 dBA Day-Night Level ( $L_{dn}$ ). However, two of the nine residences would experience increased noise levels, due to the rerouting of traffic that would exceed 60 dBA  $L_{dn}$ . Impacts would be less than significant with the implementation of Mitigation Measure NOI-5.

| Issues | Potentially<br>Significant<br>Impact | Less than<br>Significant<br>with Mitigation<br>Incorporated | Less than<br>Significant<br>Impact | No<br>Impact |
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- b) **Less Than Significant Impact.** Although it is possible for vibrations from construction projects to cause building damage, the vibrations from construction activities are almost never of sufficient amplitude to cause more than minor cosmetic damage to buildings (FTA 2006). Groundborne vibration generated by construction projects is usually highest during pile driving, soil compacting, jackhammering, and demolition-related activities.

The nearest sensitive receptors would be the residences along the existing alignment of Shadow Mountain Road, approximately 50 feet from the nearest point of construction. At this distance, receptors would be exposed to approximately 0.03 in/sec peak particle velocity (ppv) during pavement removal, grading, or scarifying operations. Vibration levels of this magnitude would not be perceivable. Additionally, while construction activity occurring between the hours of 7:00 a.m. and 7:00 p.m. is exempt, construction vibration would not exceed the County standard of 0.2 in/sec ppv. All other receptors are farther away; thus, vibrations at those locations would be less. It should be noted that at 500 feet, sensitive receptors would be exposed to approximately 0.02 in/sec ppv (below County standard of 0.2 in/sec ppv) during pile driving operations. Because no sensitive receptors are within 500 feet of pile driving locations, vibration impacts associated with pile driving would be considered less than significant. For operation of the Proposed Project, studies conducted to assess the impact of operational traffic-induced vibrations have shown that both measured and predicted vibration levels are less than any known criteria for structural damage to buildings (FHWA 2011). In addition, normal living activities (e.g., closing doors, walking across floors, operating appliances) within a building have been shown to create greater levels of vibration than highway traffic (FHWA 2011). Thus, the primary vibration sources for the Proposed Project would be construction equipment. Therefore, impacts would be considered less than significant, and no mitigation measures would be required.

- c) **Less Than Significant With Mitigation Incorporated.** As discussed in the response to question XII(a), above, two residences would experience increased noise levels, due to the rerouting of traffic, that would exceed 60 dBA L<sub>dn</sub>. Impacts would be less than significant with the implementation of Mitigation Measure NOI-5.
- d) **Less Than Significant Impact.** As discussed in the response to question XII(a), above, construction of the Proposed Project would generate noise impacts, but this noise impact would be temporary and exempt by the County noise ordinance and would be considered less than significant. Therefore, impacts would be considered less than significant, and no mitigation measures would be required.
- e) **No Impact.** The Project Site is not located within an airport land use plan or within two miles of a public airport or public use airport. Therefore, no impacts associated with exposure of persons residing or working in the Project area to excessive noise levels would occur, and no mitigation measures would be required.

| Issues | Potentially<br>Significant<br>Impact | Less than<br>Significant<br>with Mitigation<br>Incorporated | Less than<br>Significant<br>Impact | No<br>Impact |
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- f) **No Impact.** The Project Site is not within the vicinity of a private airstrip. Therefore, no impacts associated with exposure of persons residing or working in the Project area to excessive noise levels would occur and no mitigation measures would be required.

**Potentially significant impacts have been identified or anticipated, and the mitigation measures that follow are required as conditions of Project approval to reduce these impacts to a level below significant.**

### Mitigation Measures

**NOI-1. Mufflers** – Each internal combustion engine should be equipped with a muffler of a type recommended by the manufacturer. No internal combustion engine should be operated on the Project Site without said muffler.

**NOI-2. Staging Areas** – Within staging areas, stationary equipment should be located as far from occupied residential units as possible. Whenever possible, material stockpiles should be used to block the line of sight from local residences to the staging areas. Work in staging areas that generate loud noises, such as equipment maintenance, should not occur during the hours prohibited for construction work.

**NOI-3. Traffic Control and Construction Signs** – If traffic control and construction signs that require power for lighting or flashing are located near residential units, the source of power should be batteries, solar cells, or another quiet source. Gas- or diesel-fueled internal combustion engines should not be used.

**NOI-4. Pile Drivers** – Pile driving should be restricted to the hours of 8:00 a.m. to 5:00 p.m. Monday through Friday and should not be allowed on Saturdays, Sundays, or holidays.

**NOI-5. Noise Barrier** – For the two residences that would experience increased noise levels exceeding 60 dBA L<sub>dn</sub>, the County shall construct a noise barrier in the form of increasing the height of the existing backyard walls to 8 feet above the yard's grade.

### XIII. POPULATION AND HOUSING - Would the project:

- |                                                                                                                                                                                                           |                          |                          |                                     |                          |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|
| a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?                                                                                     | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

| <i>Issues</i>                                                                                               | <i>Potentially<br/>Significant<br/>Impact</i> | <i>Less than<br/>Significant<br/>with Mitigation<br/>Incorporated</i> | <i>Less than<br/>Significant<br/>Impact</i> | <i>No<br/>Impact</i>     |
|-------------------------------------------------------------------------------------------------------------|-----------------------------------------------|-----------------------------------------------------------------------|---------------------------------------------|--------------------------|
| c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere? | <input type="checkbox"/>                      | <input type="checkbox"/>                                              | <input checked="" type="checkbox"/>         | <input type="checkbox"/> |

***SUBSTANTIATION:***

- a) **Less Than Significant Impact.** The Proposed Project consists of an extension to Shadow Mountain Road and associated road improvements; however, it is a public works project intending to improve local traffic and safety by eliminating the existing at-grade crossing of the BNSF railroad. Although the extension of roads can indirectly foster population growth, the extension of Shadow Mountain Road improves local circulation through the provision of a more direct access over the BNSF railroad and the Mojave River. The Proposed Project does not provide new access to an isolated or previously undeveloped area. Therefore, impacts associated with the inducement of substantial population growth would be considered less than significant, and no mitigation measures would be required.
- b-c) **Less Than Significant Impact.** The Proposed Project consists of an extension to Shadow Mountain Road and associated road improvements. The Proposed Project is a public works project intending to improve local traffic and safety by eliminating the existing at-grade crossing of the BNSF railroad. While the use of eminent domain would be required to secure the needed land for the Proposed Project, takes would be minimal and would not displace any existing housing or people. Therefore, impacts associated the displacement of substantial numbers of housing or people would be considered less than significant, and no mitigation measures would be required.

**No significant adverse impacts are identified or anticipated, and no mitigation measures would be required.**

**XIV. PUBLIC SERVICES**

- a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:

|                    |                          |                          |                          |                                     |
|--------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|
| Fire Protection?   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| Police Protection? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| Schools?           | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

| <i>Issues</i>            | <i>Potentially<br/>Significant<br/>Impact</i> | <i>Less than<br/>Significant<br/>with Mitigation<br/>Incorporated</i> | <i>Less than<br/>Significant<br/>Impact</i> | <i>No<br/>Impact</i>                |
|--------------------------|-----------------------------------------------|-----------------------------------------------------------------------|---------------------------------------------|-------------------------------------|
| Parks?                   | <input type="checkbox"/>                      | <input type="checkbox"/>                                              | <input type="checkbox"/>                    | <input checked="" type="checkbox"/> |
| Other Public Facilities? | <input type="checkbox"/>                      | <input type="checkbox"/>                                              | <input type="checkbox"/>                    | <input checked="" type="checkbox"/> |

***SUBSTANTIATION:***

- a) **No Impact.** The Proposed Project consists of an extension to Shadow Mountain Road and associated road improvements. The Proposed Project is a public works project intending to improve local traffic and safety by eliminating the existing at-grade crossing of the BNSF railroad. As such, the Proposed Project would have no adverse impacts to public services/facilities such as fire and police protection, schools, or parks or increase the need for new such services. It should be noted that traffic flow would be better facilitated, which would allow for emergency vehicles to cross the BNSF railroad without any delays. Therefore, no impacts related to public services would occur, and no mitigation measures would be required.

**No significant adverse impacts are identified or anticipated, and no mitigation measures would be required.**

**XV. RECREATION**

- |                                                                                                                                                                                                                |                          |                          |                          |                                     |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|
| a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?                        | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

***SUBSTANTIATION:***

- a, b) **No Impact.** No new residences or recreational facilities would be constructed as part of the Proposed Project. The Proposed Project consists of an extension to Shadow Mountain Road and associated road improvements. Although the extension of roads can indirectly foster population growth, the extension of Shadow Mountain Road improves local circulation through the provision of a more direct access over the BNSF railroad and the Mojave River. The Proposed Project does not provide new access to an isolated or previously undeveloped area and, therefore, would not induce population growth that could increase the use of recreational facilities in surrounding neighborhoods. Therefore, no impacts related to recreational facilities would occur, and no mitigation measures would be required.

| <i>Issues</i> | <i>Potentially<br/>Significant<br/>Impact</i> | <i>Less than<br/>Significant<br/>with Mitigation<br/>Incorporated</i> | <i>Less than<br/>Significant<br/>Impact</i> | <i>No<br/>Impact</i> |
|---------------|-----------------------------------------------|-----------------------------------------------------------------------|---------------------------------------------|----------------------|
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**No significant adverse impacts are identified or anticipated, and no mitigation measures would be required.**

**XVI. TRANSPORTATION/TRAFFIC - Would the project:**

- |                                                                                                                                                                                                                                                                                                                                                                                                                               |                          |                          |                                     |                                     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|
| a) Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| b) Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?                                                                                                                                                                | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?                                                                                                                                                                                                                                                               | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?                                                                                                                                                                                                                                                                        | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| e) Result in inadequate emergency access?                                                                                                                                                                                                                                                                                                                                                                                     | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| f) Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?                                                                                                                                                                                                                                        | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |

***SUBSTANTIATION:***

The analysis and information in the following section is primarily derived from the *Shadow Mountain Road Grade Separation Traffic Impact Analysis* prepared for the Proposed Project. This document is included as Appendix I of this Initial Study.

| <i>Issues</i> | <i>Potentially<br/>Significant<br/>Impact</i> | <i>Less than<br/>Significant<br/>with Mitigation<br/>Incorporated</i> | <i>Less than<br/>Significant<br/>Impact</i> | <i>No<br/>Impact</i> |
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- a) **No Impact.** The purpose of the Proposed Project is to improve local traffic and safety by eliminating the existing at-grade crossing of the BNSF railroad. Operation would not result in increased vehicular, pedestrian, or bicycle traffic because the Proposed Project consists of an extension to Shadow Mountain Road and associated road improvements. No new residences would be constructed as part of the Proposed Project. As such, implementation of the Proposed Project would not conflict with an applicable plan, ordinance, or policy establishing measures of effectiveness for the performance of the circulation system. Therefore, no impacts associated with traffic-related plans, ordinance, or policy for the performance of the circulation system would occur; and no mitigation measures would be required.
- b) **Less Than Significant Impact.** Construction of the Proposed Project would result in the generation of minor amounts of traffic from construction worker trips and the transport of materials and equipment. Therefore, impacts associated with construction traffic would be considered less than significant, and no mitigation measures would be required. The purpose of the Proposed Project is to improve local traffic and safety by eliminating the existing at-grade crossing of the BNSF railroad. As such, implementation of the Proposed Project would not result in any new vehicle trips.

The Traffic Impact Analysis that was prepared for the Proposed Project analyzed future conditions for the years 2020 (interim) and 2040 (long-range). As indicated in the Traffic Impact Analysis, the daily traffic volume roadway capacity analysis for 2020 (interim) With Project conditions indicates that all of the study area roadways are projected to achieve LOS "C" (or better) volume-to-capacity (V/C) operations except for National Trails Highway, south of Shadow Mountain Road; however, this identified road segment is an existing deficiency. With implementation of the Proposed Project, the length of the deficient segment would be reduced, as the partial segment between Vista Road and Shadow Mountain Road would no longer experience deficient daily operating conditions. Implementation of the Proposed Project would also eliminate the need to widen Vista Road between Helendale Road and National Trails Highway, as the Project would provide relief from this road segment. Finally, in 2020, all of the study area intersections are anticipated to operate at LOS "C" (or better) during the peak hours with the installation of warranted traffic signals, constructing additional lanes, and providing two (2) through lanes in each direction along Shadow Mountain Road.

The daily traffic volume roadway capacity analysis for 2040 (long-range) With Project conditions indicates all of the study area roadways are projected to achieve LOS "C" (or better) volume-to-capacity (V/C) operations except for (1) Helendale Road north of Shadow Mountain Road, (2) Shadow Mountain Road west of Helendale Road, and (3) National Trails Highway south of Shadow Mountain Road. The Proposed Project would not result in any new deficiencies that are not already expected in 2040 without the Proposed Project. Additionally, implementation of the Proposed Project would reduce the length of existing

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deficiencies and would eliminate the needs for additional widening of road segments. Finally, in 2040, all of the study area intersections are anticipated to operate at LOS “C” (or better) during the peak hours with the installation of recommended improvements, such as the installation of warranted traffic signals, constructing additional turn lanes, reconstructing existing intersections and intersection approaches, and providing one (1) through lane along Shadow Mountain Road.

Since the Proposed Project would not result in the generation of any new vehicle trips, and it would not result in any new deficiencies that are not already expected in either 2020 or 2040 without the Proposed Project, it would not conflict with an applicable congestion management program, level of service standard, travel demand measure, or other standard. Therefore, impacts would be considered less than significant, and no mitigation measures would be required.

- c) **No Impact.** The Proposed Project consists of an extension to Shadow Mountain Road and associated road improvements. It would not have the potential to affect air traffic. Therefore, no impacts related to air traffic would occur, and no mitigation measures would be required.
- d) **No Impact.** The Proposed Project does not include any hazardous design features such as sharp curves or dangerous intersections and does not introduce incompatible uses. The purpose of the Proposed Project is to provide a safe and efficient crossing over the BNSF railroad. Increased traffic and train movement have resulted in an increase in delays at the existing at-grade crossings of Vista Road and BNSF mainline double-track. Several accidents have occurred in the immediate vicinity of Vista Road at the BNSF at-grade railroad crossing. The Proposed Project would not result in increased hazards due to Project design features. Therefore, no impacts related to hazardous design features would occur, and no mitigation measures would be required.
- e) **Less Than Significant Impact.** As discussed in the response to question XVI(d), above, increased traffic and train movement have resulted in an increase in delays at the existing at-grade crossings of Vista Road and BNSF mainline double-track. These delays have not only affected traffic but also have impacted the access by emergency vehicles to/from National Trails Highway. With implementation of the Shadow Mountain Road extension, movement of traffic from the south end of the Helendale community to National Trails Highway would be better facilitated during emergencies. Because construction of the Proposed Project would entail extending only existing roadways (with the exception of the creation of the Vista Road cul-de-sac) rather than requiring temporary closures, no significant temporary impacts to emergency response would occur. Therefore, impacts associated with emergency access would be considered less than significant, and no mitigation measures would be required.
- f) **No Impact.** The Proposed Project consists of an extension to Shadow Mountain Road and

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associated road improvements. It would not conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities or otherwise decrease the performance or safety of such facilities. Therefore, no impacts would occur, and no mitigation measures would be required.

**No significant adverse impacts are identified or anticipated, and no mitigation measures would be required.**

**XVI. UTILITIES AND SERVICE SYSTEMS** - Would the project:

- |                                                                                                                                                                                                                                     |                          |                          |                                     |                                     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|
| a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?                                                                                                                                 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?                              | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?                                       | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded, entitlements needed?                                                                             | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| e) Result in a determination by the wastewater treatment provider, which serves or may serve the project, that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| f) Be served by a landfill(s) with sufficient permitted capacity to accommodate the project's solid waste disposal needs?                                                                                                           | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| g) Comply with federal, state, and local statutes and regulations related to solid waste?                                                                                                                                           | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |

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***SUBSTANTIATION:***

- a-b) **No Impact.** The Proposed Project consists of an extension to Shadow Mountain Road and associated road improvements. It does not include any modifications to existing wastewater treatment facilities and would not require the construction of any new wastewater treatment facilities. The Proposed Project would not need to connect to any existing sewer lines and would not exceed treatment requirements pursuant to the Regional Water Quality Control Board. Therefore, no impacts related to wastewater treatment would occur, and no mitigation measures would be required.
- c) **Less Than Significant Impact.** The Proposed Project consists of an extension to Shadow Mountain Road and associated road improvements, requiring the construction of stormwater drainage facilities. As discussed throughout this Initial Study, the construction and operation of the Proposed Project would not result in any significant environmental effects that cannot be mitigated to a level that is less than significant. Issues specifically regarding impacts resulting from these new facilities are discussed in Section IX, Hydrology and Water Quality, above. Therefore, impacts related to new stormwater drainage facilities or expansion of existing facilities would be considered less than significant, and no mitigation measures would be required.
- d) **No Impact.** Water supplies would be unaffected by the Proposed Project, as the only water use is anticipated to occur during construction. Groundwater resources were also evaluated in the Hydrology and Water Quality Section above. Therefore, no impacts related to water supply would occur, and no mitigation measures would be required.
- e) **No Impact.** The Proposed Project consists of an extension to Shadow Mountain Road and associated road improvements. Because the Proposed Project does not need to treat wastewater, current wastewater treatment capacity would not be affected. Therefore, no impacts related to wastewater treatment would occur, and no mitigation measures would be required.
- f-g) **No Impact.** Construction of the Proposed Project would increase the generation of solid waste; however, the construction contractor would be required to implement Best Management Practices to reduce, reuse, and/or recycle solid waste generated during construction of the Proposed Project to the maximum extent feasible. The construction contractor would comply with all federal, state, and local statutes and regulations to reduce and recycle solid waste. Operation of the Proposed Project is not anticipated to increase the generation of solid waste. Therefore, no impacts related to landfills and solid waste would occur, and no mitigation measures would be required.

**No significant adverse impacts are identified or anticipated, and no mitigation measures would be required.**

| Issues                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Potentially<br>Significant<br>Impact | Less than<br>Significant<br>with Mitigation<br>Incorporated | Less than<br>Significant<br>Impact  | No<br>Impact             |
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| <b>XVII. MANDATORY FINDINGS OF SIGNIFICANCE:</b>                                                                                                                                                                                                                                                                                                                                                                                                         |                                      |                                                             |                                     |                          |
| a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory? | <input type="checkbox"/>             | <input checked="" type="checkbox"/>                         | <input type="checkbox"/>            | <input type="checkbox"/> |
| b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?                                                                                                           | <input type="checkbox"/>             | <input type="checkbox"/>                                    | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| c) Does the project have environmental effects, which will cause substantial adverse effects on human beings, either directly or indirectly?                                                                                                                                                                                                                                                                                                             | <input type="checkbox"/>             | <input type="checkbox"/>                                    | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

**SUBSTANTIATION:**

- a) **Less than Significant with Mitigation Incorporated.** As described in this Initial Study, implementation of the Proposed Project would not degrade the quality of the environment, substantially reduce the habitat of fish or wildlife species, cause a fish or wildlife population to drop below self sustaining levels, threaten to eliminate a plant or animal, or eliminate important examples of major periods of California history or prehistory once mitigation measures pertaining to Biological Resources and Cultural Resources have been implemented. Impacts are less than significant with mitigation incorporated. (See Mitigation Measures below.)
- b) **Less Than Significant Impact.** As described in this Initial Study, the Proposed Project would not result in any operational environmental impacts. Therefore, no cumulative operational impacts associated with the Proposed Project would occur. The Proposed Project would result in some minor short-term impacts related to construction, all of which would be below a level of significance or reduced to below a level of significance once mitigation measures pertaining to Biological Resources and Cultural Resources have been implemented. The minor construction impacts associated with the Proposed Project would not be cumulatively considerable, even for the typically furthest reaching environmental factor, air quality, because the Proposed Project is very small in scale and scope and

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impacts would be localized. The Proposed Project would result in cumulative impacts that would be less than significant. No mitigation measures are required.

- c) **Less Than Significant Impact.** As described in this Initial Study, construction and operation of the Proposed Project would not cause substantial adverse effects on human beings, either directly or indirectly. Impacts would be considered less than significant and no mitigation measures would be required.

**Potentially significant impacts have been identified or anticipated, and the mitigation measures that follow are required as conditions of Project approval to reduce these impacts to a level below significant.**

**XVIII. MITIGATION MEASURES:** (Condition compliance will be verified by the County through the implementation of a Project-specific CEQA Mitigation and Monitoring Report.)

**BIO-1. Contractor Education Program** – Prior to construction, the County or its designee will retain the services of a qualified biological monitor. The biological monitor will conduct a contractor education program for all personnel regarding the avoidance, as much as is practicable, of harm, harassment, injury, or death of wildlife. This program will emphasize the conservation of the wetlands/riparian systems, native habitats, and associative wildlife during Project construction and include: (a) the purpose of resource protection, (b) a description of the onsite sensitive habitats (e.g., wetland/riparian habitat), (c) the conservation measures that will be implemented in conjunction with Project construction, and (d) any special site issues. This instruction will be given as often as necessary to ensure that all personnel working on site are adequately briefed as to these matters.

**BIO-2. Construction Work Limits and Hydroseeding** - Prior to construction/site preparation, the County or its designee shall confirm that the construction work limits, including temporary staging areas, are surveyed, staked, and marked (i.e., by caution tape, temporary fencing, etc.) by qualified personnel. No vegetation removal or grading will occur outside the designated work limits. All fencing or other markers will be clearly visible to construction personnel and verified by the biological monitor. Parking; stockpiling and storage of equipment; all equipment maintenance; dispensing of fuel, oil, or coolant; or other similar activities will be restricted to designated areas within the fenced work limits. Additional measures will include erosion and siltation control measures, protective fencing guidelines, dust control measures, grading techniques, construction area limits, and biological monitoring requirements.

After Project construction, the County or its Contractor will use fiber rolls and hydroseeding for the side slopes along the edge of the road. The hydroseeding will occur using a native seed mix of locally endemic plant species adapted to the desert environment.

**BIO-3. Erosion Control** – The County or its designee will ensure that the fenced impact limits include erosion control measures to minimize erosion and siltation during initial vegetation

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clearing/removal and Project construction through the use of silt fencing, siltation basins, sand bags, or other controls necessary to stabilize the soil in cleared or graded areas. Erosion control measures will be installed prior to the onset of vegetation clearing/removal. These measures will be maintained in good repair until the completion of Project construction.

**BIO-4. Burrowing Owl Avoidance** – As suitable burrowing owl habitat is present on portions of the Proposed Project Site, a preconstruction presence/absence survey should be conducted if grading or other soil disturbance activities are proposed in areas of suitable habitat. This would minimize the potential for the Proposed Project to impact burrows and habitat that might be occupied by burrowing owls at the time of construction. The preconstruction surveys should be completed no more than 30 days prior to initial ground-disturbing activity to minimize the chance that owls might occupy burrows on the site in the interim period between the surveys and initial ground-disturbing activity.

The following burrowing owl avoidance measures are adapted from recommendations provided by CDFG and the California Burrowing Owl Consortium. If a burrowing owl is observed and it is possible for the Proposed Project to avoid the area of the active burrow, no disturbance should occur within about 50 meters of the burrow during the non-breeding season (September 1 through January 31) or within about 75 meters during the breeding season (February 1 through August 31). Avoidance of an active burrow also requires that a minimum of 6.5 acres of foraging habitat be permanently preserved contiguous with the burrow site.

If burrowing owls are detected during the preconstruction surveys, and impacts to the site cannot be avoided, it is recommended that the birds be removed by implementing “passive relocation” techniques. In compliance with resource agency requirements, however, any form of owl relocation must be completed outside the owl’s breeding season to avoid impacts to active nests or dependent young. If burrowing owls are found, coordination with CDFG will be necessary.

**BIO-5. Mohave Ground Squirrel** – Mohave Ground Squirrel (MGS) focused surveys shall be conducted for the Proposed Project at least one year prior to construction in order to obtain a current determination as to the status of MGS on the site. Alternatively, development of the site can be mitigated by purchasing suitable or occupied MGS habitat in an accepted MGS habitat area.

**BIO-6. Desert Tortoise Monitoring** – A desert tortoise monitor shall be required during all grading and other construction operations. This individual may be the assigned biological monitor or another biologist that specializes in desert tortoise identification and relocation. If a tortoise is found, USFWS shall be notified to discuss protocol.

**BIO-7. Regulatory Permits and Authorizations** – Prior to the approval of Project plans and specifications, the County or its designee shall ensure that the plans and specifications stipulate that prior to undertaking ground-disturbing activities within any USACE- and CDFG-jurisdictional resources, the County shall coordinate with the appropriate regulatory agencies to verify wetland delineation and jurisdictional determination results and obtain all discretionary permits and

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authorizations. The County will also demonstrate compliance with applicable regulatory permits per the Clean Water Act, California Fish and Game Code, and the Porter-Cologne Act (if necessary). With the above action, it is the intent of County to mitigate for any impacts to wetland/riparian habitat, consistent with resource agency requirements and conditions presented in the following permits: Section 404 Nationwide Permit, Section 1602 Streambed Alteration Agreement, and Section 401 Water Quality Certification. Regulatory permitting may also involve waters of the state (isolated wetlands/waters not jurisdictional to USACE) which requires a waste discharge requirement (WDR) per the Porter-Cologne Act. The County shall comply with the regulatory permits.

As part of the regulatory permitting process, the County will prepare (if required by the permits) a Habitat Mitigation and Monitoring Plan (HMMP) in order to mitigate for any permanent and temporary impacts to potential wetland waters of the United States and riparian areas within the Project area. Details of a conceptual mitigation approach will be developed further during the subsequent permitting process and will include the preparation of a conceptual HMMP consistent with USACE's Mitigation Rule (Federal Register 2008). Mitigation shall include offsite (or onsite, if feasible) mitigation in the form of habitat creation, restoration, and/or enhancement and may include an agency-approved contribution to a mitigation bank or in-lieu fee mitigation program. The plan shall be prepared by a qualified restoration biologist familiar with the biology and ecology of southern California plant communities and that of the Project Site.

The HMMP shall include (but not be limited to) the following:

- (a) Sources of plant materials and methods of propagation.
- (b) Site preparation (clearing, grading, weed eradication, soil amendment, topsoil storage), irrigation, planting (container plantings, seeding), maintenance (weed control, irrigation system checks, replanting), and monitoring of the mitigation area.
- (c) Remedial measures to be taken if performance standards are not met.
- (d) Methods and requirements for monitoring.

**CUL-1. Monitoring Plan** – A monitoring plan shall be prepared prior to the start of construction/sub-surface ground-disturbing activities and all ground-disturbing activities shall be monitored by a qualified archaeologist and paleontologist. The Monitoring Plan should include stop-work protocols in the unanticipated event resources are discovered to allow for evaluation. In the event of discovery, the qualified archaeologist or paleontologist will coordinate with the Project construction manager and environmental compliance manager to stop all work in the vicinity of the find until the find can be assessed. For archaeological resources, the resource will be documented on DPR 523 Forms. If the discovery is determined to be not eligible for listing on CRHR or NRHP, work will be allowed to continue. For paleontological resources, the resources will be examined by the paleontologist to determine the extent of the find and proper actions to be taken. All recovered paleontologic specimens will be prepared to a point of identification and permanent preservation, including washing of sediments to recover small specimens. Identification and full curation of all specimens into an established, accredited museum repository with permanent retrievable paleontological storage is

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required. A Monitoring Report documenting the monitoring efforts should be prepared and submitted when construction is completed.

**GEO-1. Geotechnical Report Recommendations** – The Proposed Project shall be designed and constructed in accordance with the geotechnical recommendations identified in the Draft Geotechnical Design and Foundation Report, dated May 29, 2012, related to bridge foundation and mechanically-stabilized earth (MSE) Walls.

**NOI-1. Mufflers** – Each internal combustion engine should be equipped with a muffler of a type recommended by the manufacturer. No internal combustion engine should be operated on the Project Site without said muffler.

**NOI-2. Staging Areas** – Within staging areas, stationary equipment should be located as far from occupied residential units as possible. Whenever possible, material stock piles should be used to block the line of sight from local residences to the staging areas. Work in staging areas that generate loud noises, such as equipment maintenance, should not occur during the hours prohibited for construction work.

**NOI-3. Traffic Control and Construction Signs** – If traffic control and construction signs that require power for lighting or flashing are located near residential units, the source of power should be batteries, solar cells, or another quiet source. Gas- or diesel-fueled internal combustion engines should not be used.

**NOI-4. Pile Drivers** – Pile driving should be restricted to the hours of 8:00 a.m. to 5:00 p.m. Monday through Friday and should not be allowed on Saturdays, Sundays, or holidays.

**NOI-5. Noise Barrier** – For the two residences that would experience increased noise levels exceeding 60 dBA L<sub>dn</sub>, the County shall construct a noise barrier in the form of increasing the height of the existing backyard walls to 8 feet above the yard's grade.

### **Additional Mitigation Measures**

The Mojave River presents movement opportunities for free-ranging mammals, dispersal of bird populations, reptile movement, and dispersal and local and regional migration of butterfly/moth populations due partly to the presence of host plants and nectar. This resource can also attract insectivorous and nectar-loving bat species. Although the Proposed Project would not result in any significant impacts to bat species, regulatory agencies (i.e., CDFG) have requested that the bridge over the Mojave River be designed to accommodate bats. Mitigation Measure BIO-8 will be incorporated into the Project design to satisfy this request.

**BIO-8. Bat Boxes** – In order to decrease the potential for the new bridge structure to adversely affect bats that may use the new bridge for shelter, it is recommended that the County or its designee

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implement the use of “bat boxes” in the bridge design. As such, a specification may be included in the construction plans to ensure the proper type and placement of such bat boxes (e.g., Caltrans specifications for similar type projects).

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## **ATTACHMENTS**

Exhibit - 1 View Point Location Map

Exhibit - 2 View Point A

Exhibit - 3 View Point B

## **APPENDICES**

**Appendix A** *Air Quality and Climate Change Technical Report*

**Appendix B** *Biological Resources Technical Report For The Proposed Shadow Mountain Road Grade Separation Project*

**Appendix C** *Cultural Resources Survey Report for Shadow Mountain Road Grade Separation Project*

**Appendix D** *Draft Geotechnical Design and Foundation Report*

**Appendix E** *Hazards and Hazardous Materials Technical Report*

**Appendix F** *Water Quality Management Plan*

**Appendix G** *Bridge Hydraulic Analyses for Shadow Mountain Road Bridge at Mojave River*

**Appendix H** *Noise Study Report*

**Appendix I** *Shadow Mountain Road Grade Separation Traffic Impact Analysis*

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## **REFERENCES**

- California Air Pollution Control Officers Association (CAPCOA), Evaluating and Addressing GHG Emissions from Projects Subject to the CEQA (2008)
- California Air Resources Board (CARB), Recommended Approaches for Setting Interim Significance Thresholds for Greenhouse Gases under CEQA, 2008
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- California Department of Conservation, Farmland Monitoring and Mapping Program website, 2012.
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- California Native Plant Society (CNPS) website, 2011.
- CEQA Guidelines 2012, Appendix G.
- County of San Bernardino Development Code, 2007
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- Ravin, Amelia, Raine, Teresa, Best Practices for Including Carbon Sinks in Greenhouse Gas inventories, 2007.
- United States Environmental Protection Agency (USEPA), Carbon Sequestration in Agriculture and Forestry, 2010.
- United States Environmental Protection Agency (USEPA), National Priorities List (NPL) Database website, 2012.



# Vista Road Crossing Closure and Grade Separation Project

## Appendix F: Plans

Applicant:  
San Bernardino County



June 22, 2026





# COUNTY OF SAN BERNARDINO

## DEPARTMENT OF PUBLIC WORKS

### TRANSPORTATION

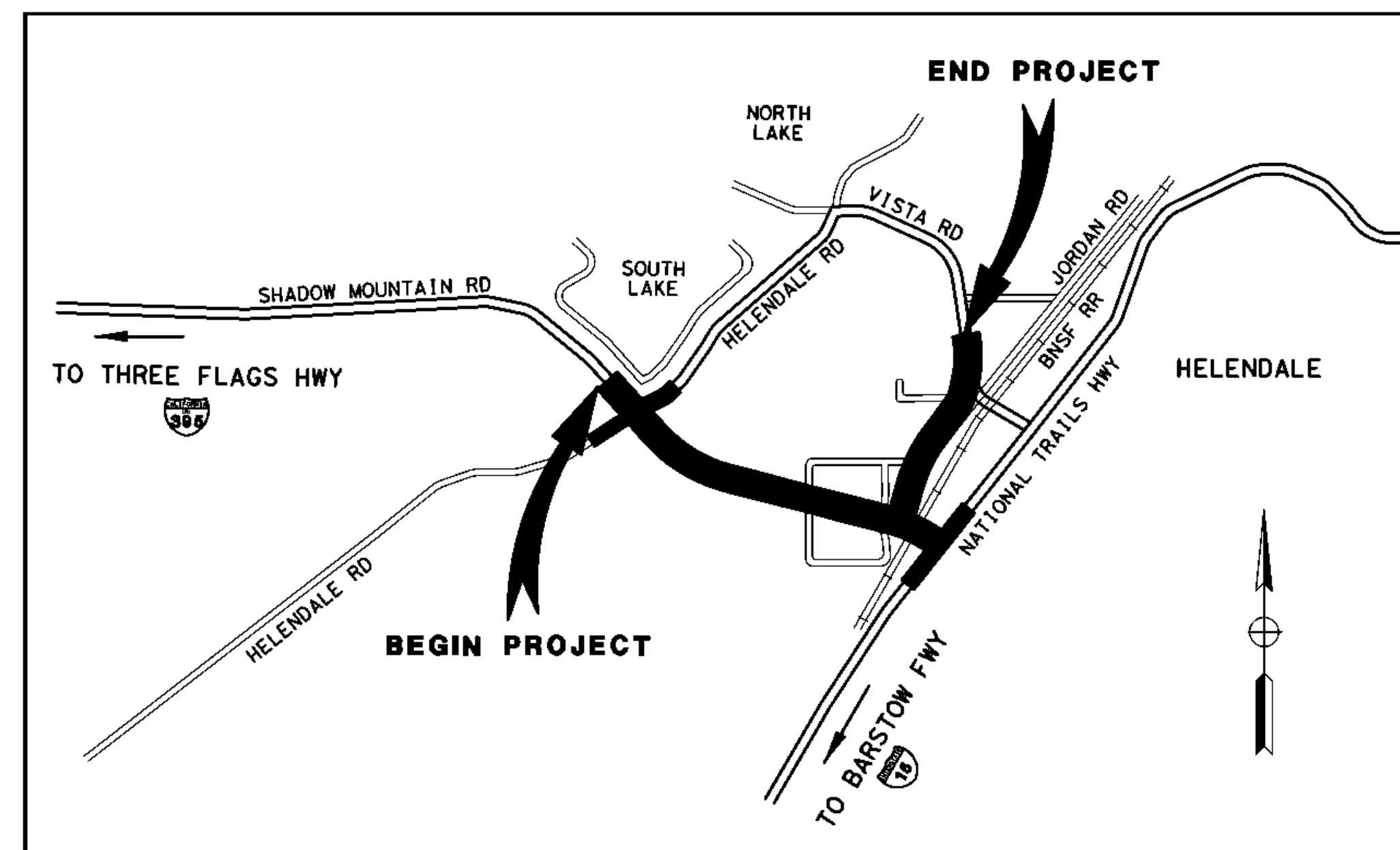
#### PLANS FOR CONSTRUCTION ON

# SHADOW MOUNTAIN ROAD

# NATIONAL TRAILS HIGHWAY

# VISTA ROAD

WORK ORDER NO. K00124 ROAD NO. 744900/ 030, 586600/ 030, 852550/ 020  
LENGTH = VARIES



**LOCATION MAP**  
NOT TO SCALE

80% SUBMITTAL  
2012-06-25

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PLANS PREPARED BY:  
**AECOM**  
999 W. TOWN AND COUNTRY ROAD  
ORANGE, CA 92668-4713  
(714) 567-2501

JAMES FABER R.C.E. 45668 EXPIRES 12-31-12

**COUNTY OF SAN BERNARDINO**

APPROVED BY:

XXXX XXXX DIRECTOR OF PUBLIC WORKS R.C.E. XXXX

DATE

| MARK | CHANGES | RESIDENT ENGINEER | DATE |
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| DWG NO. | TITLE                                                                                                                                                                | SHT NO. |
|---------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
| GENERAL |                                                                                                                                                                      |         |
| T-01    | TITLE SHEET                                                                                                                                                          | 1       |
| T-02    | INDEX OF DRAWINGS                                                                                                                                                    | 2       |
| T-03    | SHEET INDEX MAP                                                                                                                                                      | 3       |
| T-04    | CONSTRUCTION NOTES AND ABBREVIATIONS                                                                                                                                 | 4       |
| CIVIL   |                                                                                                                                                                      |         |
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| X-02    | TYPICAL SECTIONS                                                                                                                                                     | 6       |
| X-03    | TYPICAL SECTIONS                                                                                                                                                     | 7       |
| X-04    | TYPICAL SECTIONS                                                                                                                                                     | 8       |
| K-01    | GEOMETRIC CONTROL - STA 93+12.28 "A" LINE TO 124+00 "A" LINE<br>STA 32+83.41 "H" LINE TO 48+71.62 "H" LINE<br>STA 10+00 "C" LINE TO 21+00 "C" LINE                   | 9       |
| K-02    | GEOMETRIC CONTROL - STA 124+00 "A" LINE TO 148+29.24 "A" LINE                                                                                                        | 10      |
| K-03    | GEOMETRIC CONTROL - STA 10+00 "B" LINE TO 28+00 "B" LINE AND "DWY 03"<br>STA 187+74 "N" LINE TO 209+17 "N" LINE<br>AND "DWY 01", "DWY 02"                            | 11      |
| K-04    | GEOMETRIC CONTROL - STA 28+00 "B" LINE TO 48+22.65 "B" LINE AND "DWY 04"<br>STA 18+82.50 "J" LINE TO 23+37.25 "J" LINE<br>STA 39+86.45 "V" LINE TO 48+22.65 "V" LINE | 12      |
| L-01    | LAYOUT PLAN AND PROFILE - STA 92+36.48 "A" LINE TO 98+50 "A" LINE                                                                                                    | 13      |
| L-02    | LAYOUT PLAN AND PROFILE - STA 98+50 "A" LINE TO 107+00 "A" LINE                                                                                                      | 14      |
| L-03    | LAYOUT PLAN AND PROFILE - 107+00 "A" LINE TO 116+00 "A" LINE                                                                                                         | 15      |
| L-04    | LAYOUT PLAN AND PROFILE - STA 116+00 "A" LINE TO 125+00 "A" LINE                                                                                                     | 16      |
| L-05    | LAYOUT PLAN AND PROFILE - STA 125+00 "A" LINE" TO 134+00 "A" LINE                                                                                                    | 17      |
| L-06    | LAYOUT PLAN AND PROFILE - STA 134+00 "A" LINE" TO 143+00 "A" LINE                                                                                                    | 18      |
| L-07    | LAYOUT PLAN AND PROFILE - STA 143+00 "A" LINE TO 148+29.24 "A" LINE                                                                                                  | 19      |
| L-08    | LAYOUT PLAN AND PROFILE - STA 187+65.23 "N" LINE TO 198+00 "N" LINE,<br>"DWY 01 AND "DWY 02"                                                                         | 20      |
| L-09    | LAYOUT PLAN AND PROFILE - STA 198+00 "N" LINE TO 209+17 "N" LINE                                                                                                     | 21      |
| L-10    | LAYOUT PLAN AND PROFILE - STA 10+00 "B" LINE TO 18+00 "B" LINE                                                                                                       | 22      |
| L-11    | LAYOUT PLAN AND PROFILE - STA 18+00 "B" LINE TO 26+00 "B" LINE,<br>AND "DWY 03"                                                                                      | 23      |
| L-12    | LAYOUT PLAN AND PROFILE - STA 26+00 "B" LINE TO 35+00 "B" LINE                                                                                                       | 24      |
| L-13    | LAYOUT PLAN AND PROFILE - STA 35+00 "B" LINE TO 43+00 "B" LINE<br>AND "DWY 04"                                                                                       | 25      |
| L-14    | LAYOUT PLAN AND PROFILE - STA 43+00 "B" LINE TO 48+25.74 "B" LINE<br>STA 18+82.50 "J" LINE TO 23+37.25 "J" LINE                                                      | 26      |
| L-15    | LAYOUT PLAN AND PROFILE - STA 10+00 "C" LINE TO 19+00 "C" LINE                                                                                                       | 27      |
| L-16    | LAYOUT PLAN AND PROFILE - STA 31+40.92 "H" LINE TO 37+00 "H" LINE                                                                                                    | 28      |
| L-17    | LAYOUT PLAN AND PROFILE - STA 37+00 "H" LINE TO 45+00 "H" LINE                                                                                                       | 29      |
| L-18    | LAYOUT PLAN AND PROFILE - STA 45+00 "H" LINE TO 48+71.62 "H" LINE                                                                                                    | 30      |
| L-19    | LAYOUT PLAN AND PROFILE - STA 10+00 "DWY 03" TO 14+00 "DWY 03"                                                                                                       | 31      |
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| DWG NO.              | TITLE                                                                                                  | SHT NO. |
|----------------------|--------------------------------------------------------------------------------------------------------|---------|
| CIVIL CONT.          |                                                                                                        |         |
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| G-02                 | GRADING PLAN - STA 92+00 "A" LINE TO 107+00 "A" LINE<br>STA 37+50 "H" LINE TO STA 41+50 "H" LINE       | 50      |
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| G-04                 | GRADING PLAN - STA 119+00 "A" LINE TO 131+00 "A" LINE<br>STA 10+00 "C" LINE TO 20+00 "C" LINE          | 52      |
| G-05                 | GRADING PLAN - STA 131+00 "A" LINE" TO 143+00 "A" LINE<br>STA 10+00 "B" LINE TO 14+00 "B" LINE         | 53      |
| G-06                 | GRADING PLAN - STA 143+00 "A" LINE" TO 148+30 "A" LINE<br>STA 198+50 "N" LINE TO 201+50 "N" LINE       | 54      |
| G-07                 | GRADING PLAN - STA 189+00 "N" LINE TO 198+50 "N" LINE<br>STA 201+50 "N" LINE TO 210+00 "N" LINE        | 55      |
| G-08                 | GRADING PLAN - STA 14+00 "B" LINE TO 26+00 "B" LINE,<br>AND "DWY 03"                                   | 56      |
| G-09                 | GRADING PLAN - STA 26+00 "B" LINE TO 38+00 "B" LINE,<br>AND "DWY 04"                                   | 57      |
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| SS-03                | SIGNING & STRIPING - STA 107+00 "A" LINE TO 119+00 "A" LINE                                            | 66      |
| SS-04                | SIGNING & STRIPING - STA 119+00 "A" LINE TO 131+00 "A" LINE<br>STA 10+00 "C" LINE TO 20+00 "C" LINE    | 67      |
| SS-05                | SIGNING & STRIPING - STA 131+00 "A" LINE" TO 143+00 "A" LINE<br>STA 10+00 "B" LINE TO 14+00 "B" LINE   | 68      |
| SS-06                | SIGNING & STRIPING - STA 143+00 "A" LINE" TO 148+30 "A" LINE<br>STA 187+74 "N" LINE TO 209+17 "N" LINE | 69      |
| SS-07                | SIGNING & STRIPING - STA 14+00 "B" LINE TO 26+00 "B" LINE                                              | 70      |
| SS-08                | SIGNING & STRIPING - STA 26+00 "B" LINE TO 38+00 "B" LINE                                              | 71      |
| SS-09                | SIGNING & STRIPING - STA 38+00 "B" LINE TO 50+90 "B" LINE                                              | 72      |
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| DWG NO.                      | TITLE                                                         | SHT NO. |
|------------------------------|---------------------------------------------------------------|---------|
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| S-01                         | GENERAL PLAN                                                  |         |
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| S-03                         | DECK CONTOURS                                                 |         |
| S-04                         | FOUNDATION PLAN                                               |         |
| S-05                         | ABUTMENT LAYOUT                                               |         |
| S-06                         | ABUTMENT DETAILS NO. 1                                        |         |
| S-07                         | ABUTMENT DETAILS NO. 2                                        |         |
| S-08                         | ABUTMENT DETAILS NO. 3                                        |         |
| S-09                         | TYPICAL SECTION                                               |         |
| S-10                         | ABUTMENT DIAPHRAGM                                            |         |
| S-11                         | GIRDER LAYOUT                                                 |         |
| S-12                         | SLAB REINFORCEMENT                                            |         |
| S-13                         | PTFE/SPHERICAL EXPANSION BEARING DETAILS                      |         |
| S-14                         | STRUCTURE APPROACH TYPE N(30S)                                |         |
| S-15                         | STRUCTURE APPROACH DRAINAGE DETAILS                           |         |
| S-16                         | CHAIN LINK RAILING TYPE 3                                     |         |
| M-01                         | RETAINING WALL GENERAL PLAN                                   |         |
| M-02                         | RETAINING WALL NO. 1 WALL LAYOUT                              |         |
| M-03                         | RETAINING WALL NO. 1 STRUCTURE PLAN NO. 1                     |         |
| M-04                         | RETAINING WALL NO. 1 STRUCTURE PLAN NO. 2                     |         |
| M-05                         | RETAINING WALL NO. 2 WALL LAYOUT                              |         |
| M-06                         | RETAINING WALL NO. 2 STRUCTURE PLAN NO. 1                     |         |
| M-07                         | RETAINING WALL NO. 2 STRUCTURE PLAN NO. 2                     |         |
| M-08                         | MSE WALL DETAIL NO. 1                                         |         |
| M-09                         | MSE WALL DETAIL NO. 2                                         |         |
| M-10                         | MSE WALL DETAIL NO. 3                                         |         |
| M-11                         | MSE WALL DETAIL NO. 4                                         |         |
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| S-102                        | GENERAL NOTES & INDEX TO PLANS                                |         |
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| S-110                        | PIPE PILE DETAILS                                             |         |
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| S-113                        | PIER NOSING DETAILS                                           |         |
| S-114                        | TYPICAL SECTION                                               |         |
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| S-117                        | GIRDER DETAILS                                                |         |
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| S-126                        | CHAIN LINK RAILING TYPE 3                                     |         |

ALL DIMENSIONS ARE IN FEET  
UNLESS OTHERWISE SHOWN



|      |            |                                    |
|------|------------|------------------------------------|
| MARK | CHANGES    |                                    |
|      | NO CHANGES | RESIDENT ENGINEER _____ DATE _____ |

FIELD CHANGES

PLANS PREPARED BY:  
**AECOM**  
999 W. TOWN AND COUNTRY ROAD  
ORANGE, CA 92668-4713  
(714) 567-2501

JAMES FABER R.C.E. 45668 EXPIRES 12-31-12

X  
DATE

COUNTY OF SAN BERNARDINO  
DEPARTMENT OF PUBLIC WORKS

RECOMMENDED / APPROVED BY

XXXX XXXX P.E. DEPUTY DIRECTOR \_\_\_\_\_ DATE \_\_\_\_\_

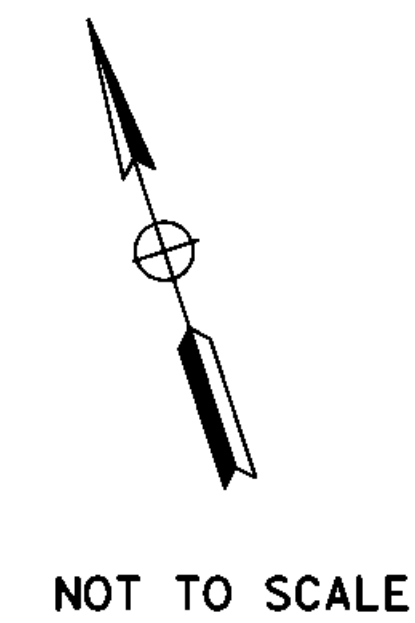
XXXX XXXX P.E. DIRECTOR OF PUBLIC WORKS \_\_\_\_\_ DATE \_\_\_\_\_

SHADOW MOUNTAIN ROAD

INDEX OF DRAWINGS

|                      |                       |                     |                |                   |
|----------------------|-----------------------|---------------------|----------------|-------------------|
| J.L. REF.<br>JL XXXX | W.O. NO.<br>XX XXXXXX | DRAWING NO.<br>T-02 | SHEET NO.<br>2 | TOTAL SHEETS<br>X |
|----------------------|-----------------------|---------------------|----------------|-------------------|

| MARK | REVISIONS | APPR. | DATE |
|------|-----------|-------|------|
|      |           |       |      |
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## SHEET INDEX MAP

|           |           |             |           |              |
|-----------|-----------|-------------|-----------|--------------|
| J.L. REF. | W.O. NO.  | DRAWING NO. | SHEET NO. | TOTAL SHEETS |
| JL XXXX   | XX XXXXXX | T-03        | 3         | X            |

|      |            |                   |      |
|------|------------|-------------------|------|
| MARK | CHANGES    |                   |      |
|      | NO CHANGES | RESIDENT ENGINEER | DATE |

FIELD CHANGES

**JAMES FABER R.C.E. 45668 EXPIRES 12-31-12**

XXXX XXXX P.E.      DIRECTOR OF PUBLIC WORKS      DATE

|      |           |  |       |      |  |  |
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| MARK | REVISIONS |  | APPR. | DATE |  |  |
|      |           |  |       |      |  |  |
| MARK | REVISIONS |  | APPR. | DATE |  |  |
|      |           |  |       |      |  |  |

ABBREVIATIONS LEGEND:

NOTE: ABBREVIATIONS ARE PER CALTRANS STANDARD A10A AND A10B UNLESS NOTED OTHERWISE.

|                             |                                       |
|-----------------------------|---------------------------------------|
| AB = AGGREGATE BASE         | MBGR = METAL BEAM GUARD RAIL          |
| AC = ASPHALT CONCRETE       | MB = MAILBOX                          |
| AP = ANGLE POINT            | MED = MEDIAN                          |
| BB = BEGINNING OF BRIDGE    | MH = MANHOLE                          |
| BEG = BEGIN                 | MIN = MINIMUM                         |
| BC = BEGIN CURVATURE        | MISC = MISCELLANEOUS                  |
| BCR = BEGIN CURB RETURN     | MOD = MODIFIED                        |
| BR = BRIDGE                 | MPH = MILES PER HOUR                  |
| BVC = BEGIN VERTICAL CURVE  | MVC = MIDDLE OF VERTICAL CURVE        |
| CLR = CLEAR                 | OD = OUTSIDE DIAMETER                 |
| C&G = CURB AND GUTTER       | OC = ON CENTER                        |
| CONC = CONCRETE             | OG = ORIGINAL GROUND                  |
| CONST = CONSTRUCT           | OH = OVERHEAD                         |
| CONT = CONTINUOUS           | PCC = PORTLAND CEMENT CONCRETE        |
| CB = CATCH BASIN            | PI = POINT OF INTERSECT               |
| CL = CENTER LINE            | PL = PROPERTY LINE                    |
| CSP = CORRUGATED STEEL PIPE | PG = PROFILE GRADE                    |
| DE = DRAINAGE EASEMENT      | PRC = POINT OF REVERSE CURVE          |
| DEG = DEGREES               | PSI = POUNDS PER SQUARE INCH          |
| DET = DETAIL                | RD = ROAD                             |
| DIA = DIAMETER              | POB = POINT OF BEGIN                  |
| DWG = DRAWING               | POCC = POINT OF COMPOUND CURVE        |
| DWY = DRIVEWAY              | POE = POINT OF END                    |
| EA = EACH                   | PROP = PROPOSED                       |
| EB = END OF BRIDGE          | R = RADIUS                            |
| EC = END CURVATURE          | RCP = REINFORCE CONCRETE PIPE         |
| ECR = END CURB RETURN       | RR = RAILROAD                         |
| EMB = EMBANKMENT            | RT = RIGHT                            |
| EP = EDGE OF PAVEMENT       | R/W = RIGHT OF WAY                    |
| ETW = EDGE OF TRAVELWAY     | S = SLOPE                             |
| ESMT = EASEMENT             | SE = SLOPE EASEMENT                   |
| EXC = EXCAVATION            | SHLD = SHOULDER                       |
| EXIST = EXISTING            | SHT = SHEET                           |
| EXP = EXPANSION             | ST = STREET                           |
| ELECT = ELECTRIC            | STA = STATION                         |
| ELEV = ELEVATION            | STD = STANDARD                        |
| FG = FINISH GROUND          | STR = STRUCTURAL                      |
| FL = FLOW LINE              | SYS = SYSTEM                          |
| FS = FINISHED SURFACE       | SW = SIDEWALK                         |
| FES = FLARED END SECTION    | TEMP = TEMPORARY                      |
| FWY = FREEWAY               | TC = TOP OF CURB                      |
| GB = GRADE BREAK            | TD = TOP OF DIKE                      |
| ID = INSIDE DIAMETER        | TOT = TOTAL                           |
| IMP = IMPROVEMENT           | TP = TOP OF PAVEMENT                  |
| INT = INTERSECTION          | TCE = TEMPORARY CONSTRUCTION EASEMENT |
| INV = INVERT                | TS = TERMINAL SYSTEM                  |
| JS = JUNCTION STRUCTURE     | TW = TOP OF WALL                      |
| LOL = LAYOUT LINE           | TYP = TYPICAL                         |
| LT = LEFT                   | VAR = VARIES                          |
| MA = MAST ARM               | UG = UNDER GROUND                     |
| MAX = MAXIMUM               |                                       |

CONSTRUCTION NOTES:

- ① CONST XX’ HMA OVER XX’ AB (CLASS 2)
- ② CONST 8" PCC CURB & GUTTER PER COUNTY STD NO. 115
- ③ CONST 8" PCC CURB ONLY TYPE A1 PER CALTRANS STD PLAN NO. A87A
- ④ CONST 4" PCC SIDEWALK PER COUNTY STD NO. 109 (WIDTH PER PLAN)
- ⑤ CONST DWY APPROACH PER COUNTY STD NO. 128
- ⑥ CONST CURB RAMP PER COUNTY STD NO. 110
- ⑦ CONST CROSS GUTTER PER COUNTY STD NO. 119
- ⑧ CONST CONC BARRIER (TYPE 26 MOD) PER DET 6, SHT C-12
- ⑨ CONST CONC BARRIER (TYPE 26 MOD) END TRANSITION PER DET 6, SHT C-12
- ⑩ CONST 8" HMA DIKE PER COUNTY STD NO. 117
- ⑪ CONST XX" AB ONLY (CLASS 2)
- ⑫ CONST METAL BEAM GUARD RAILING TRANSITION RAILING (TYPE WB) PER CALTRANS STD PLAN NO. A77J4
- ⑬ CONST FLARED END METAL BEAM GUARD RAILING TERMINAL SYSTEM PER DETAIL ON SHT C-13
- ⑭ CONST DWY APPROACH PER COUNTY STD NO. 128A
- ⑮ CONST ROCK SLOPE PROTECTION PER DET 7, SHT C-12
- ⑯ SAWCUT EXISTING PAVEMENT
- ⑰ XX’ MIN COLD PLANE EXIST PAVEMENT AND OVERLAY WITH XX’ MIN HMA FOR SMOOTH TRANSITION
- ⑱ CONST TRANSITION CURB PER DET 3 & 5, SHT C-10 & C-11
- ⑲ CONST XX’ HMA OVER XX’ AB (CLASS 2)
- ⑳ CONST TRANSITION CURB & GUTTER PER DET 8, SHT C-12

DEMOLITION NOTES:

- [A] PROTECT EXIST UNDERGROUND UTILITIES IN PLACE
- [B] PROTECT EXIST OVERHEAD UTILITIES IN PLACE
- [C] PROTECT EXIST MANHOLE IN PLACE
- [D] PROTECT EXIST BLOWOFF
- [E] PROTECT EXIST VALVE
- [F] PROTECT EXIST FLUSH OUT
- [G] PROTECT EXIST RISER
- [H] PROTECT EXIST STREET LIGHT
- [I] PROTECT EXIST SIGN/POST IN PLACE
- [J] PROTECT EXIST GUARD POST
- [K] PROTECT EXIST MONITORING WELL SITE IN PLACE
- [L] PROTECT EXIST CONC V-DITCH
- [M] PROTECT EXIST FENCING
- [N] PROTECT EXIST BUILDING STRUCTURE
- [O] PROTECT EXIST VAULT
- [P] REMOVE EXIST SIGN/POST
- [Q] REMOVE EXIST MANHOLE
- [R] REMOVE EXIST TREE/SHRUB AND ROOTS
- [S] REMOVE EXIST RISER
- [T] REMOVE EXIST FENCING
- [U] REMOVE EXIST GUARD POST
- [V] REMOVE EXIST AC PAVEMENT
- [W] REMOVE EXIST VAULT
- [X] RELOCATE EXIST POWER POLE AND OVERHEAD UTILITIES
- [Y] RELOCATE EXIST UNDERGROUND UTILITIES
- [Z] RELOCATE EXIST POWER POLE AND ELECT LINES BY SCE
- [A1] RELOCATE EXIST FIRE HYDRANT/LATERAL AND VALVE
- [B1] KEEP IN PLACE

DRAINAGE CONSTRUCTION NOTES:

- ① CONST 24" RCP
- ② CONST 24" CONCRETE FES PER CALTRANS STD PLAN NO. D94B
- ③ CONST RSP TYPE AND DIMENSIONS PER PLAN
- ④ CONST TYPE "A" CB PER COUNTY STD 206,"X" PER PLAN
- ⑤ CONST LOCAL DEPRESSION PER COUNTY STD 203B, TYPE PER PLAN
- ⑥ CONST 8" STEEL PIPE
- ⑦ CONST 8" - 90° ELBOW
- ⑧ CONST 8" - 45° ELBOW
- ⑨ CONST CLEANOUT PER DETAIL 1 SHOWN ON SHEET D-06
- ⑩ CONST TRAPEZOIDAL BIOSWALE PER DETAIL 2 SHOWN ON SHEET D-06, DIMENSIONS PER PLAN
- ⑪ CONST 8" STEEL PIPE PER BRIDGE PLAN
- ⑫ CONST TYPE "GCP" INLET PER CALTRANS STD PLAN NO. D75A
- ⑬ CONST TYPE "A" HEADWALL PER CALTRANS STD PLAN NO. D90
- ⑭ CONST 72" RCP
- ⑮ CONST MANHOLE PER SPPWC STD PLAN NO. 321-2
- ⑯ CONST MANHOLE PER SPPWC STD PLAN NO. 322-2
- ⑰ CONST TRANSITION STRUCTURE PER SPPWC STD PLAN NO. 340-2
- ⑱ CONST CATCH BASIN PER SPPWC STD PLAN NO. 307-3 (CASE A)
- ⑲ CONST 36" RCP

SIGNING AND STRIPING CONSTRUCTION NOTES:

- ① INSTALL NEW SIGN(S) AS SHOWN ON PLANS (NOTE: MAINTAIN 48" CLEAR SPACE AT SIGN POST PER ADA REQUIREMENT)
- ② PAINT TYPE IV ARROW PER CALTRANS STD PLAN A24A
- ③ PAINT DETAIL L26 STRIPING PER COUNTY STD PLAN 307d
- ④ PAINT DETAIL 22 STRIPING PER CALTRANS STD PLAN A20A
- ⑤ PAINT DETAIL L27 STRIPING PER COUNTY STD PLAN 307d
- ⑥ PAINT DETAIL 29 STRIPING PER CALTRANS STD PLAN A20B
- ⑦ PAINT DETAIL 37B STRIPING PER CALTRANS STD PLAN A20C
- ⑧ PAINT DETAIL 38 STRIPING PER CALTRANS STD PLAN A20D
- ⑨ PAINT 12" SOLID WHITE CROSSWALK LINE OR STOP LINE
- ⑩ PAINT 12" WHITE DIAGONAL STRIPING 40’ ON CENTER
- ⑪ PAINT 4" SOLID WHITE LINE APPROXIMATELY 100’ LONG
- ⑫ PAINT MEDIAN TAPER PER SPPWC STD PLAN 140-3
- ⑬ PAINT MEDIAN FLARE PER SPPWC STD PLAN 141-2
- ⑭ PAINT PAVEMENT MARKING AS SHOWN ON PLANS
- ⑮ PAINT DETAIL 41 STRIPING PER CALTRANS STD PLAN A20D
- ⑯ PAINT 8" SOLID WHITE CHEVRON MARKING 10’ ON CENTER
- ⑰ INSTALL STREET NAME MARKER PER COUNTY STD 303 SERIES

ALL DIMENSIONS ARE IN FEET  
UNLESS OTHERWISE SHOWN

SHADOW MOUNTAIN ROAD

CONSTRUCTION NOTES AND ABBREVIATIONS

|                                                        |      |
|--------------------------------------------------------|------|
| COUNTY OF SAN BERNARDINO<br>DEPARTMENT OF PUBLIC WORKS |      |
| RECOMMENDED / APPROVED BY                              |      |
| XXXX XXXX P.E. DEPUTY DIRECTOR                         | DATE |
| XXXX XXXX P.E. DIRECTOR OF PUBLIC WORKS                | DATE |

|                      |                       |                     |                |                   |
|----------------------|-----------------------|---------------------|----------------|-------------------|
| J.L. REF.<br>JL XXXX | W.O. NO.<br>XX XXXXXX | DRAWING NO.<br>T-04 | SHEET NO.<br>4 | TOTAL SHEETS<br>X |
|----------------------|-----------------------|---------------------|----------------|-------------------|



FIELD CHANGES

|      |            |                   |      |
|------|------------|-------------------|------|
| MARK | CHANGES    | RESIDENT ENGINEER | DATE |
|      | NO CHANGES |                   |      |

PLANS PREPARED BY:

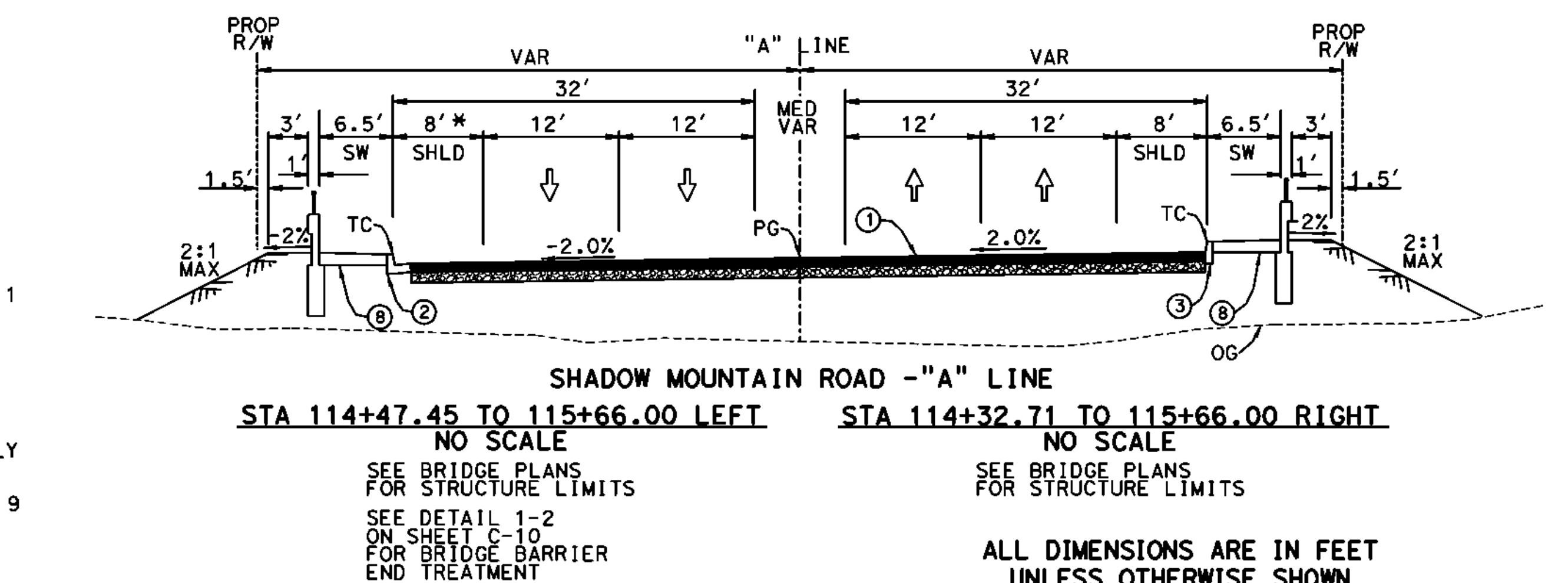
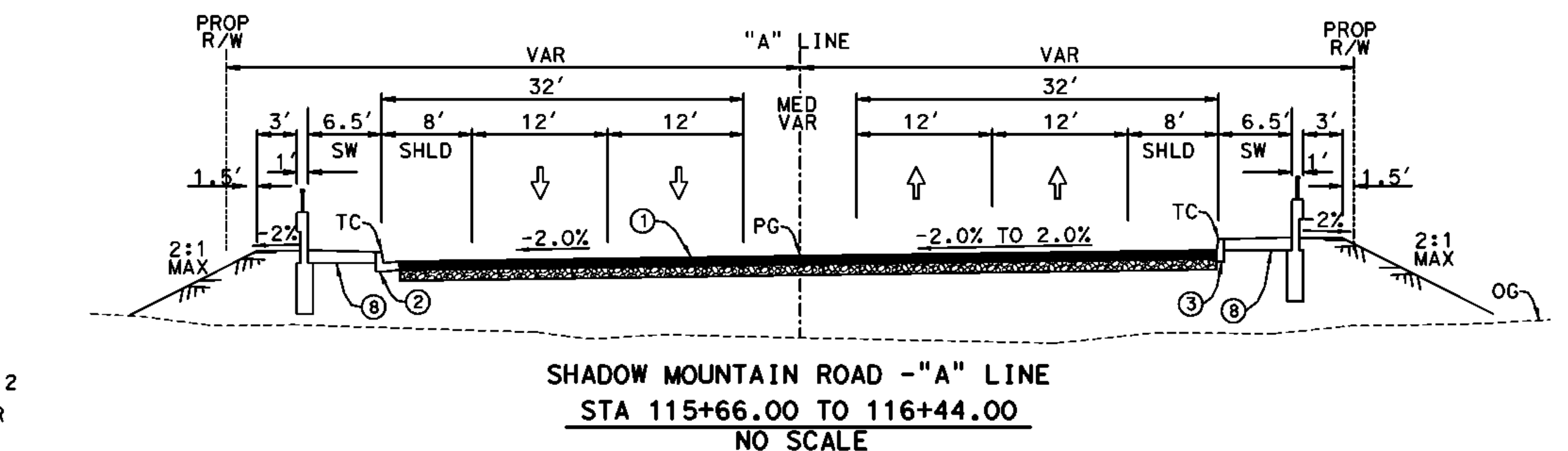
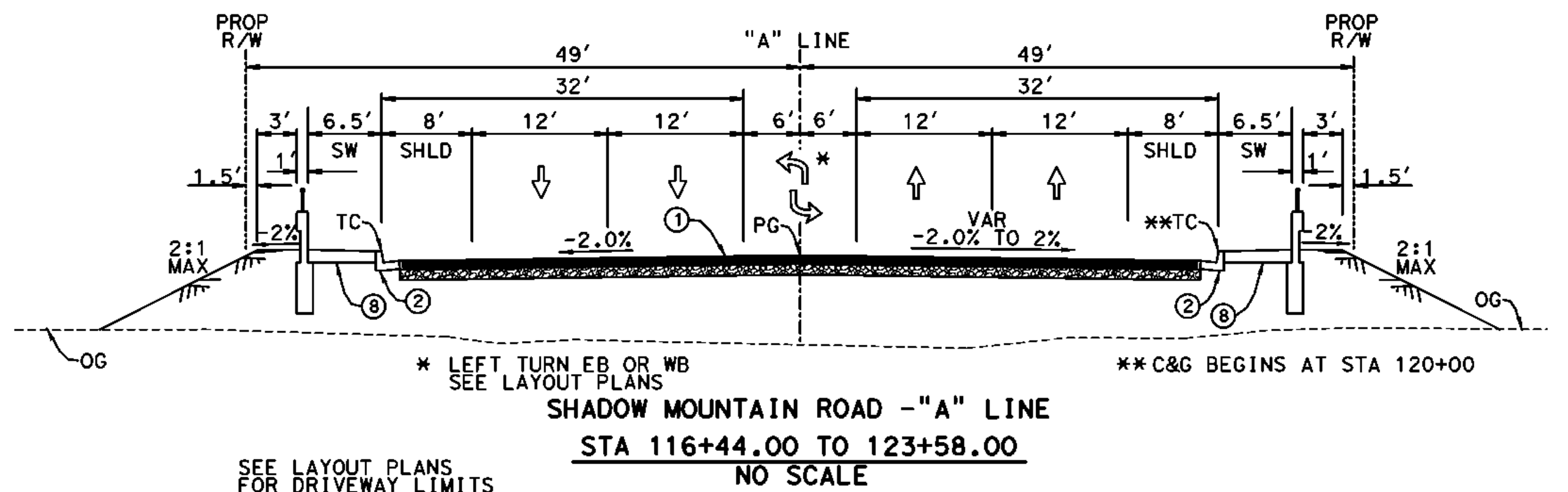
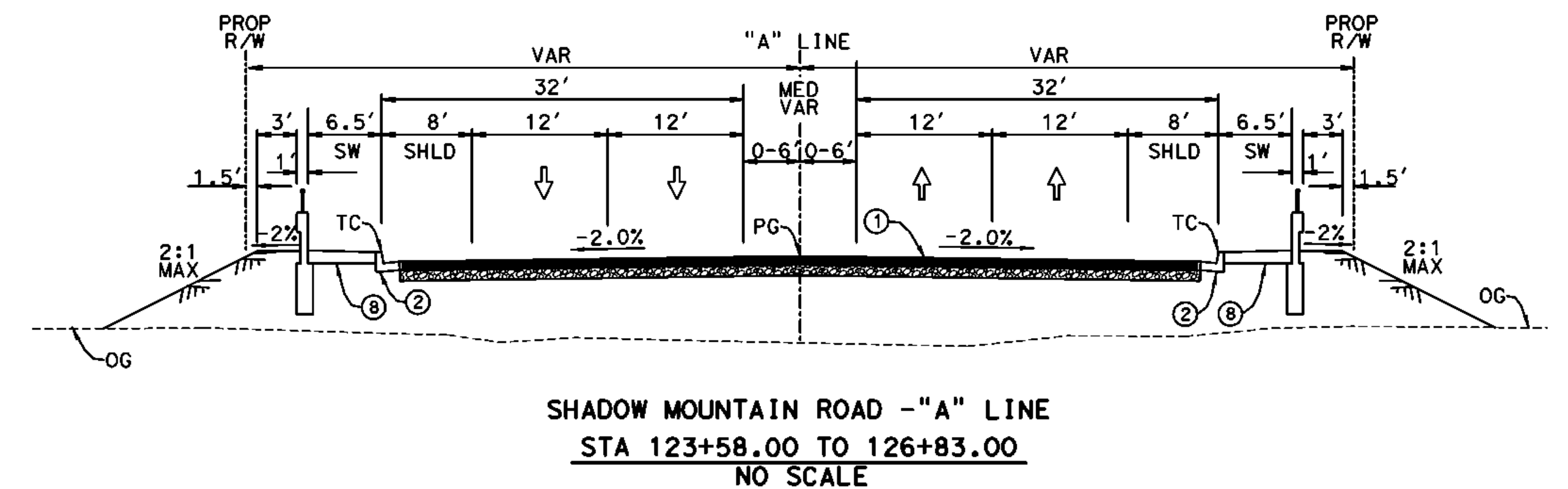
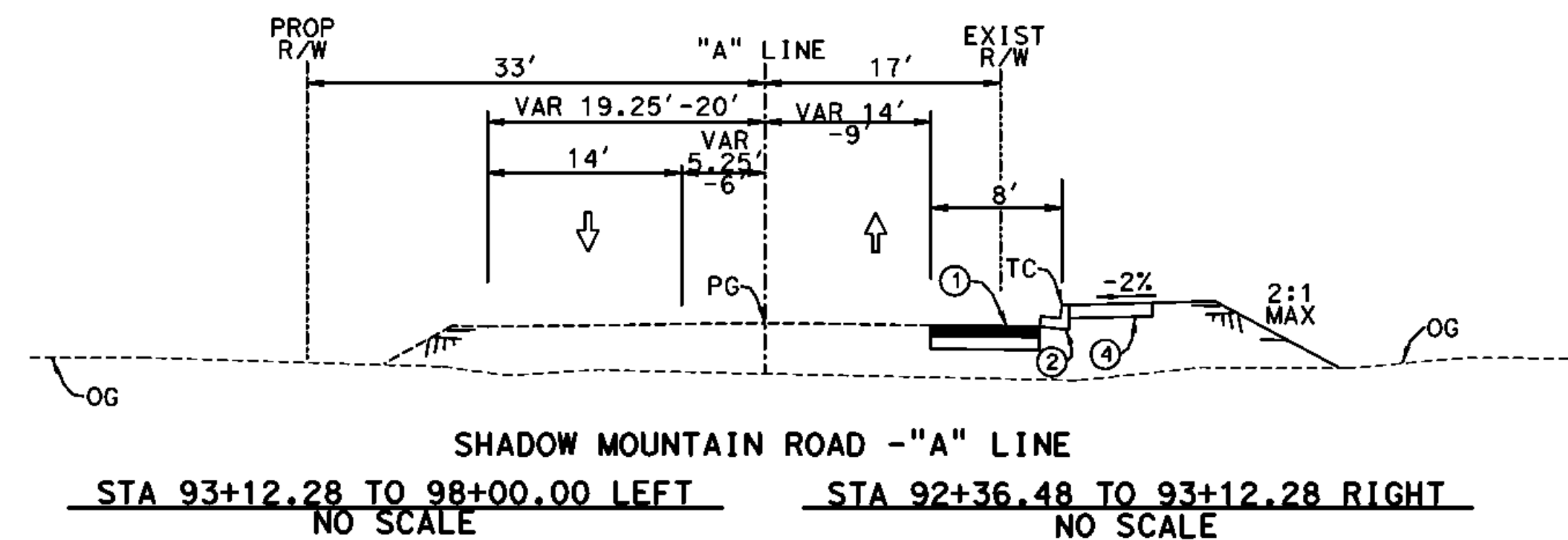
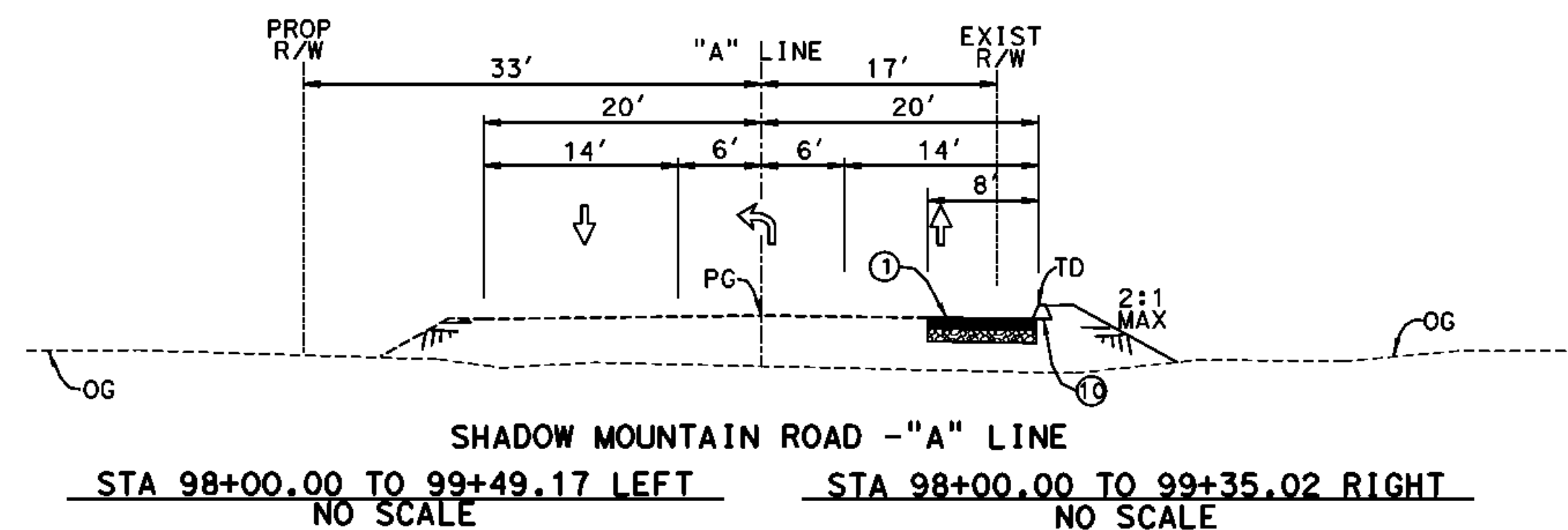
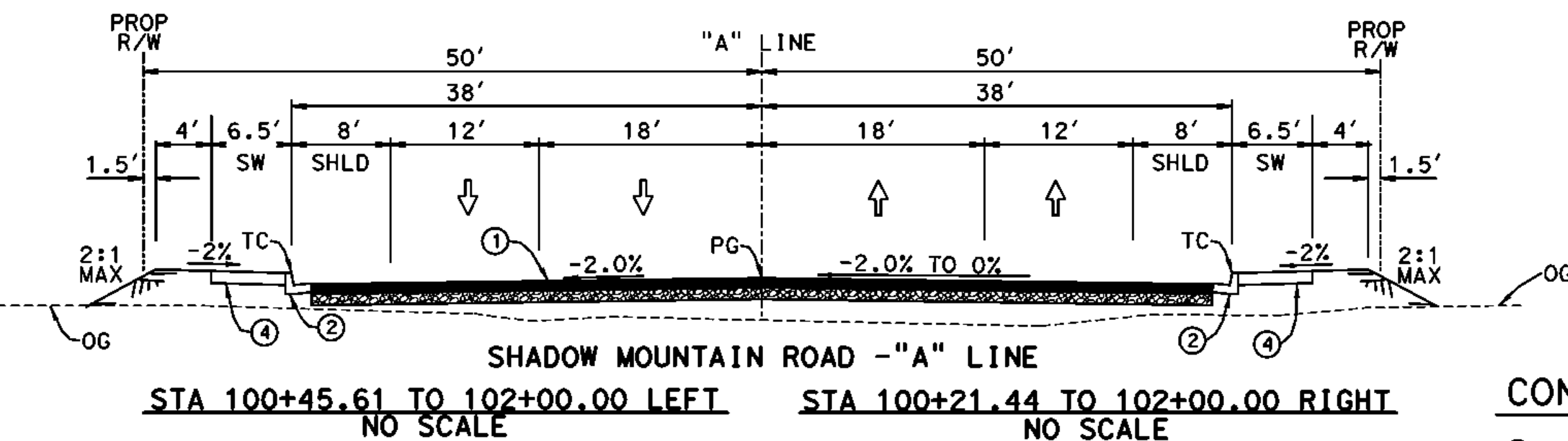
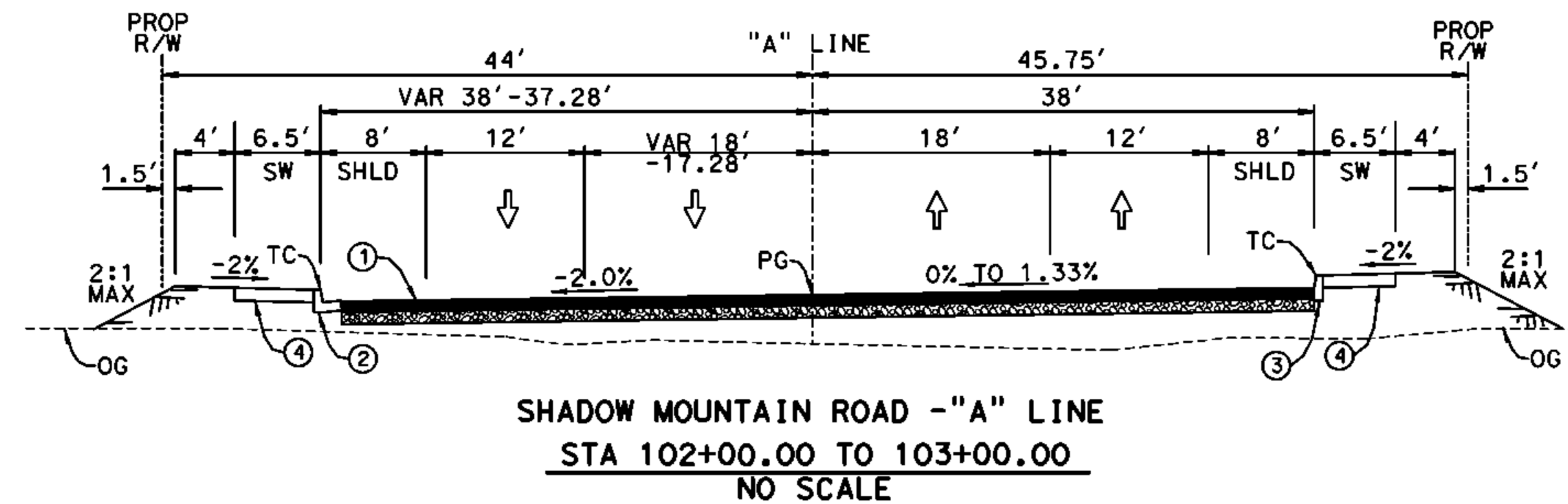
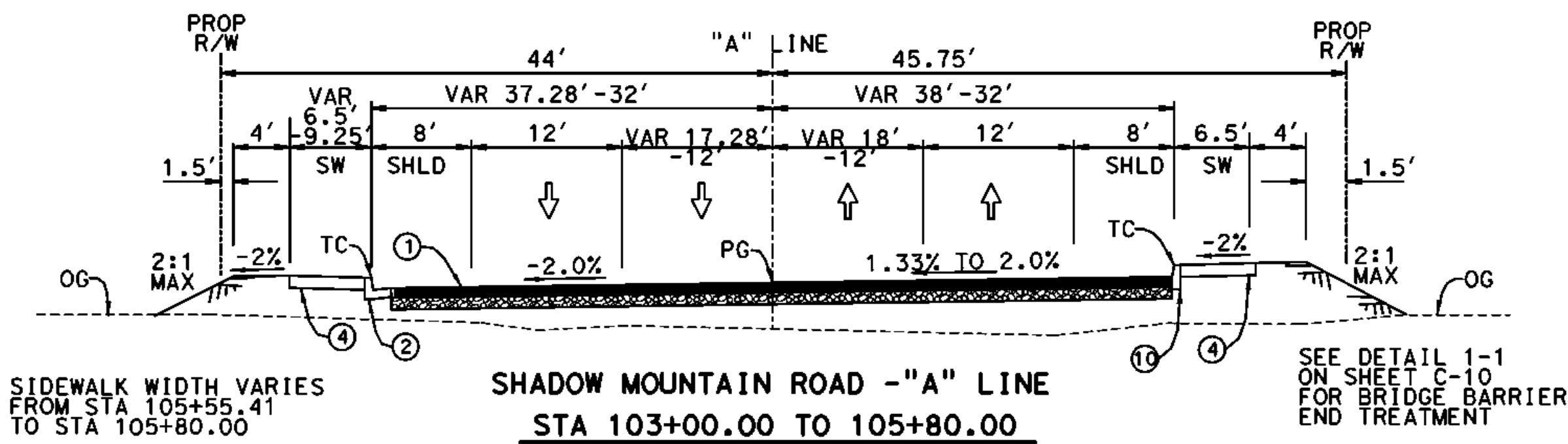
**AECOM**

995 W. TOWN AND COUNTRY ROAD  
ORANGE, CA 92868-4713  
(714) 567-2501

|             |              |                  |           |
|-------------|--------------|------------------|-----------|
| JAMES FABER | R.C.E. 45668 | EXPIRES 12-31-12 | X<br>DATE |
|-------------|--------------|------------------|-----------|

| REVISIONS | DATE | APPR. |
|-----------|------|-------|
|           |      |       |
|           |      |       |
|           |      |       |
|           |      |       |

| REVISIONS | DATE | APPR. |
|-----------|------|-------|
|           |      |       |
|           |      |       |
|           |      |       |
|           |      |       |



### CONSTRUCTION NOTES:

1. CONST XX' HMA OVER XX' AB (CLASS 2)
2. CONST 8" PCC CURB & GUTTER PER COUNTY STD NO. 115
3. CONST 8" PCC CURB ONLY TYPE A1 PER CALTRANS STD PLAN NO. A87A
4. CONST 4" PCC SIDEWALK PER COUNTY STD NO. 109 (WIDTH PER PLAN)
5. CONST DWY APPROACH PER COUNTY STD NO. 128
6. CONST CURB RAMP PER COUNTY STD NO. 110
7. CONST CROSS GUTTER PER COUNTY STD NO. 119
8. CONST CONC BARRIER (TYPE 26 MOD) PER DET 6, SHT C-12
9. CONST CONC BARRIER (TYPE 26 MOD) END TRANSITION PER DET 6, SHT C-12
10. CONST 8" HMA DIKE PER COUNTY STD NO. 117
11. CONST XX" AB ONLY (CLASS 2)
12. CONST METAL BEAM GUARD RAILING TRANSITION RAILING (TYPE WB) PER CALTRANS STD PLAN NO. A77J4
13. CONST FLARED END METAL BEAM GUARD RAILING TERMINAL SYSTEM PER DETAIL ON SHT C-13
14. CONST DWY APPROACH PER COUNTY STD NO. 128A
15. CONST ROCK SLOPE PROTECTION PER DET 7, SHT C-12
16. SAWCUT EXISTING PAVEMENT
17. XX' MIN COLD PLANE EXIST PAVEMENT AND OVERLAY WITH XX' MIN HMA FOR SMOOTH TRANSITION
18. CONST TRANSITION CURB PER DET 3 & 5, SHT C-10 & C-11
19. CONST XX' HMA OVER XX' AB (CLASS 2)
20. CONST TRANSITION CURB & GUTTER PER DET 8, SHT C-12
21. CONST METAL BEAM GUARD RAILING PER CALTRANS STD PLAN NO. A77A1
22. INSTALL METAL BEAM GUARD RAILING END ANCHOR ASSEMBLY (TYPE SFT) PER CALTRANS STD PLAN NO. A77H1
23. CONST CONC BARRIER WITH CHAIN LINK RAILING PER DET 9 SHT C-12



| MARK | CHANGES    | RESIDENT ENGINEER | DATE |
|------|------------|-------------------|------|
|      | NO CHANGES |                   |      |

FIELD CHANGES

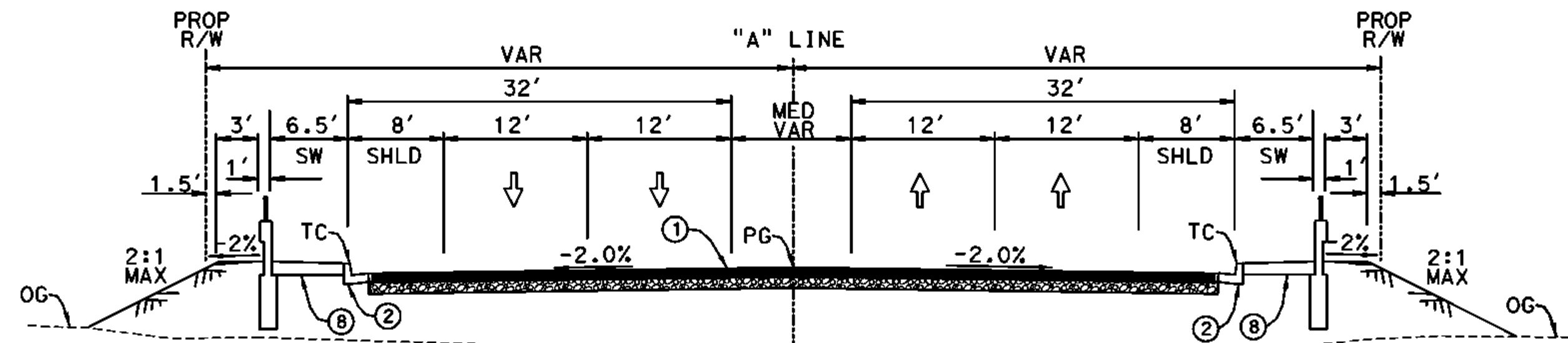
PLANS PREPARED BY:  
**AECOM**  
999 W. TOWN AND COUNTRY ROAD  
ORANGE, CA 92668-4713  
(714) 567-2501

JAMES FABER R.C.E. 45668 EXPIRES 12-31-12

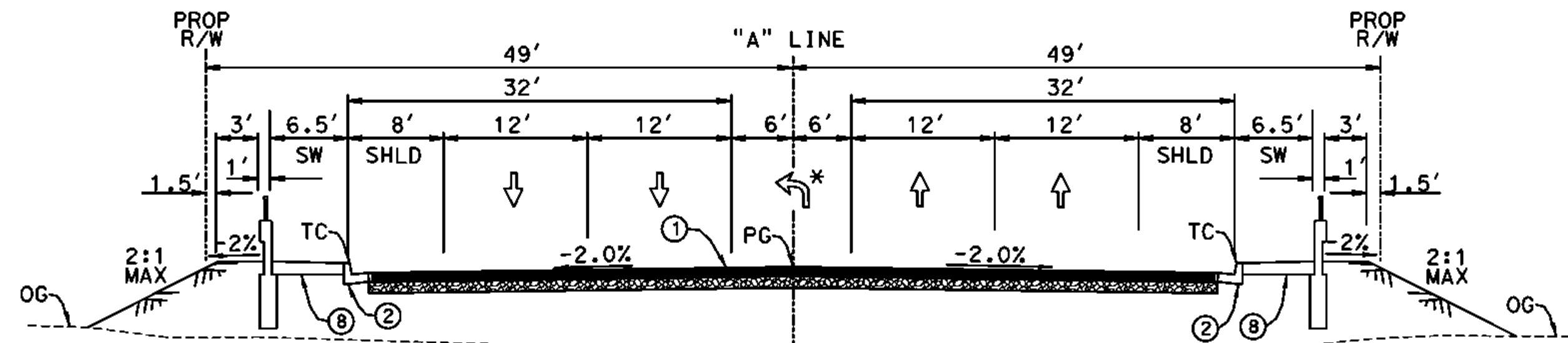
COUNTY OF SAN BERNARDINO  
DEPARTMENT OF PUBLIC WORKS  
RECOMMENDED / APPROVED BY  
XXXX XXXX P.E. DEPUTY DIRECTOR DATE  
XXXX XXXX P.E. DIRECTOR OF PUBLIC WORKS DATE

SHADOW MOUNTAIN ROAD  
TYPICAL SECTIONS

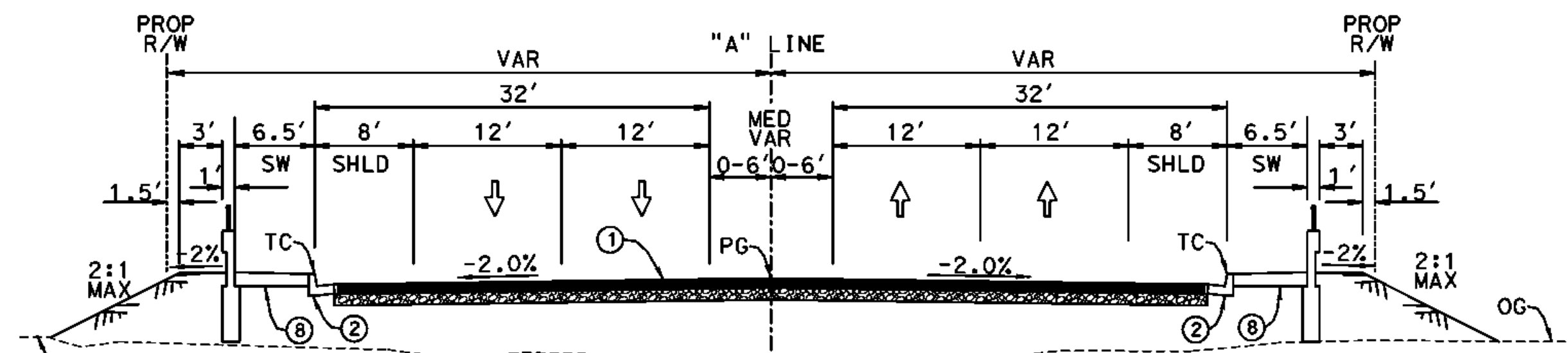
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|-----------|-----------|-------------|-----------|--------------|
| JL XXXX   | XX XXXXXX | X-01        | 5         | X            |



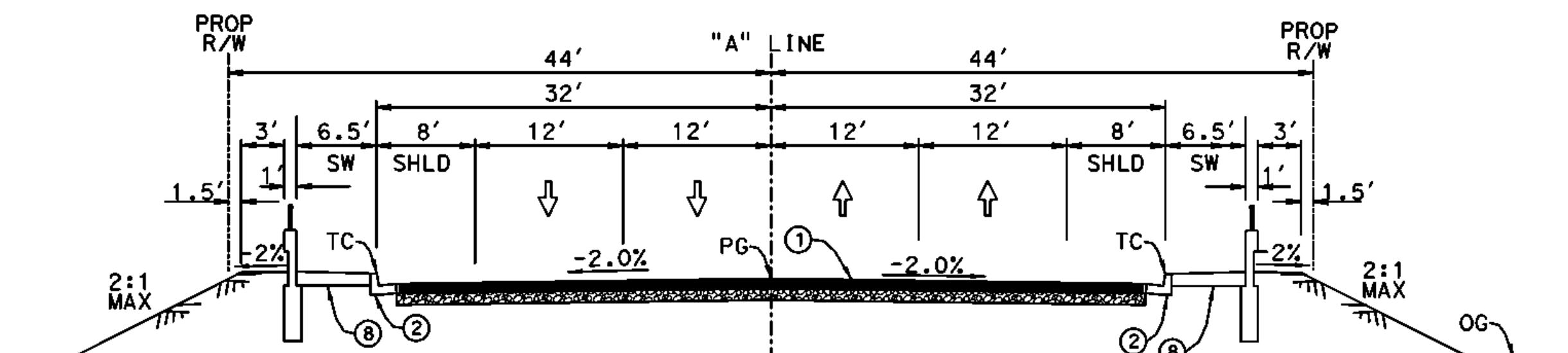
SHADOW MOUNTAIN ROAD - "A" LINE  
STA 137+52.72 TO 138+03.57 LEFT NO SCALE  
STA 137+52.72 TO 137+92.97 RIGHT NO SCALE



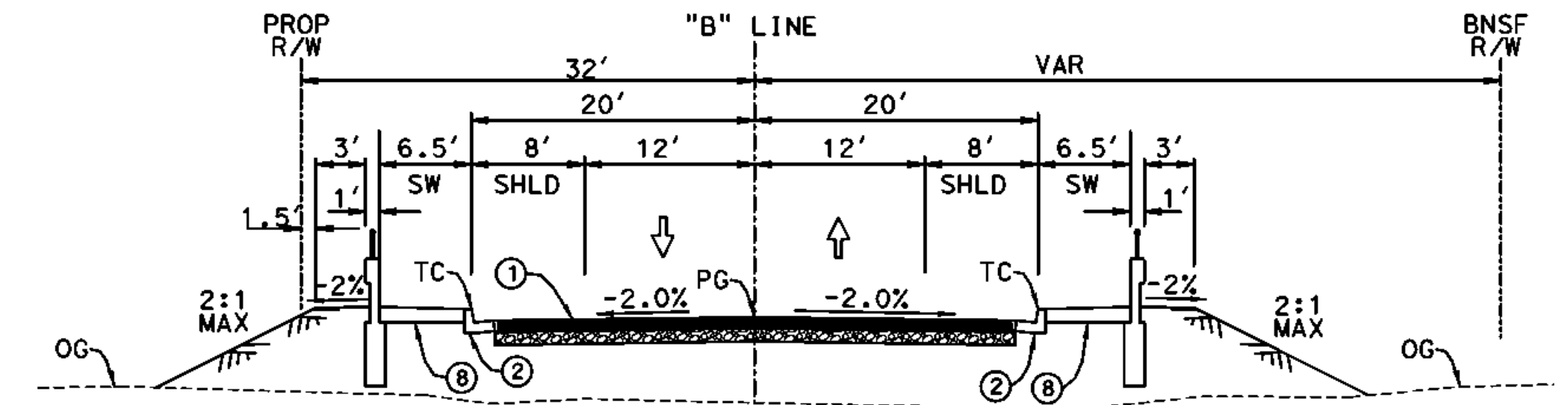
NOTE: STA 136+38.00 TO 137+90.00 LEFT SEE LAYOUT PLANS FOR CURB RETURN AND INTERSECTION  
\* LEFT TURN EB SEE LAYOUT PLANS  
FOR BRIDGE BARRIER END TREATMENT SEE DETAIL 4 ON SHEET C-11  
SHADOW MOUNTAIN ROAD - "A" LINE  
STA 133+54.00 TO 137+52.72 LEFT NO SCALE  
STA 133+54.00 TO 137+52.72 RIGHT NO SCALE



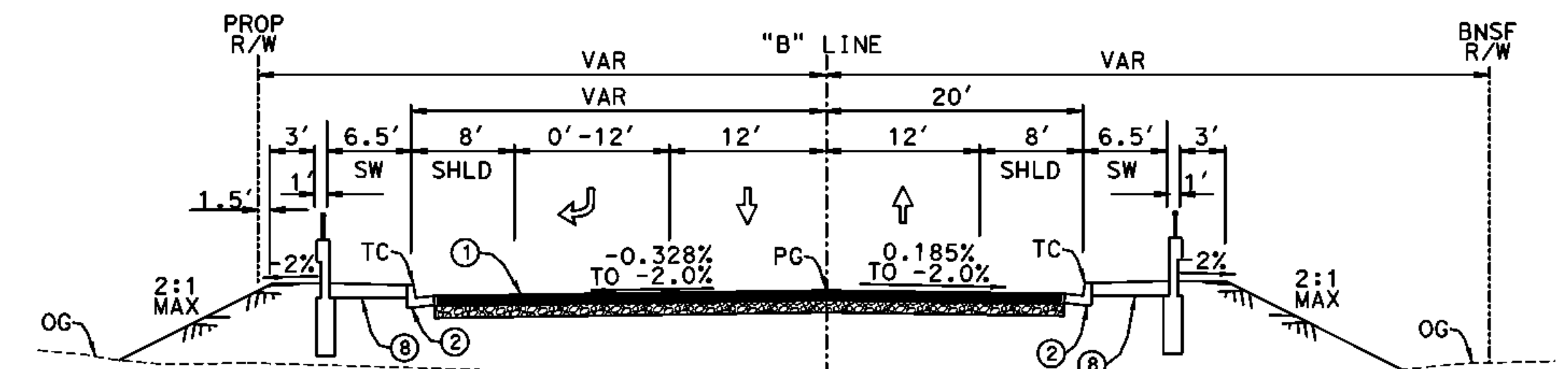
SHADOW MOUNTAIN ROAD - "A" LINE  
STA 130+29.00 TO 133+54.00 NO SCALE



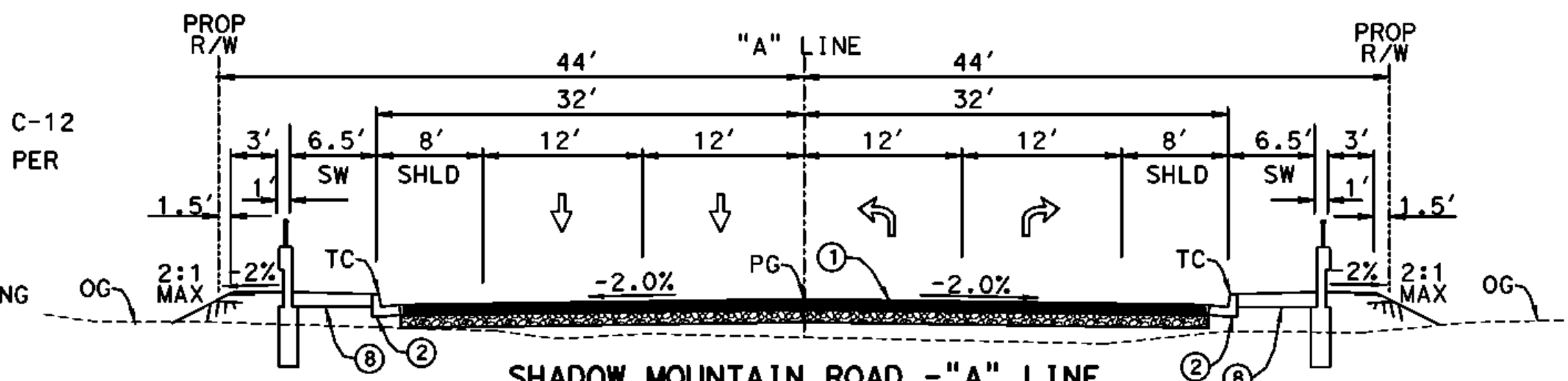
SHADOW MOUNTAIN ROAD - "A" LINE  
STA 126+83.00 TO 130+29.00 NO SCALE



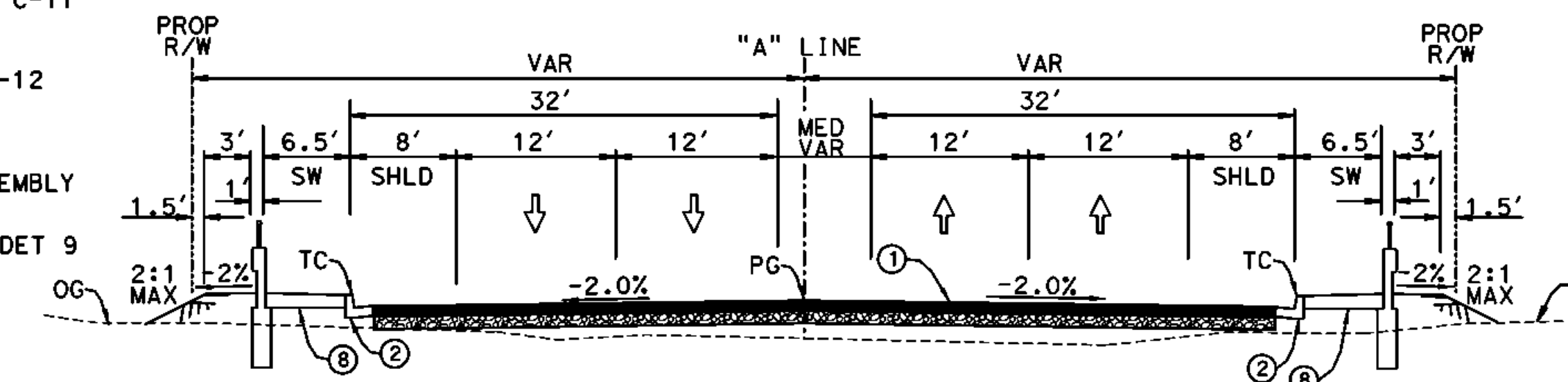
VISTA ROAD - "B" LINE  
STA 13+39.72 TO 19+88.00 NO SCALE



VISTA ROAD - "B" LINE  
STA 10+87.00 TO 13+39.72 NO SCALE



SHADOW MOUNTAIN ROAD - "A" LINE  
STA 145+16.11 TO 147+53.24 NO SCALE



SHADOW MOUNTAIN ROAD - "A" LINE  
STA 140+77.80 TO 145+16.11 LEFT NO SCALE  
STA 140+67.99 TO 145+16.11 RIGHT NO SCALE

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UNLESS OTHERWISE SHOWN

### CONSTRUCTION NOTES:

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- 7 CONST CROSS GUTTER PER COUNTY STD NO. 119
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- 9 CONST CONC BARRIER (TYPE 26 MOD) END TRANSITION PER DET 6, SHT C-12
- 10 CONST 8" HMA DIKE PER COUNTY STD NO. 117
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- 12 CONST METAL BEAM GUARD RAILING TRANSITION RAILING (TYPE WB) PER CALTRANS STD PLAN NO. A77J4
- 13 CONST FLARED END METAL BEAM GUARD RAILING TERMINAL SYSTEM PER DETAIL ON SHT C-13
- 14 CONST DWY APPROACH PER COUNTY STD NO. 128A
- 15 CONST ROCK SLOPE PROTECTION PER DET 7, SHT C-12
- 16 SAWCUT EXISTING PAVEMENT
- 17 XX' MIN COLD PLANE EXIST PAVEMENT AND OVERLAY WITH XX' MIN HMA FOR SMOOTH TRANSITION
- 18 CONST TRANSITION CURB PER DET 3 & 5, SHT C-10 & C-11
- 19 CONST XX' HMA OVER XX' AB (CLASS 2)
- 20 CONST TRANSITION CURB & GUTTER PER DET 8, SHT C-12
- 21 CONST METAL BEAM GUARD RAILING PER CALTRANS STD PLAN NO. A77A1
- 22 INSTALL METAL BEAM GUARD RAILING END ANCHOR ASSEMBLY (TYPE SFT) PER CALTRANS STD PLAN NO. A77H1
- 23 CONST CONC BARRIER WITH CHAIN LINK RAILING PER DET 9 SHT C-12

SEE BRIDGE PLANS  
FOR STRUCTURE LIMITS

SEE BRIDGE PLANS  
FOR STRUCTURE LIMITS



| MARK | CHANGES    | RESIDENT ENGINEER | DATE |
|------|------------|-------------------|------|
|      | NO CHANGES |                   |      |

### FIELD CHANGES

PLANS PREPARED BY:  
**AECOM**  
999 W. TOWN AND COUNTRY ROAD  
ORANGE, CA 92668-4713  
(714) 567-2501

JAMES FABER R.C.E. 45668 EXPIRES 12-31-12

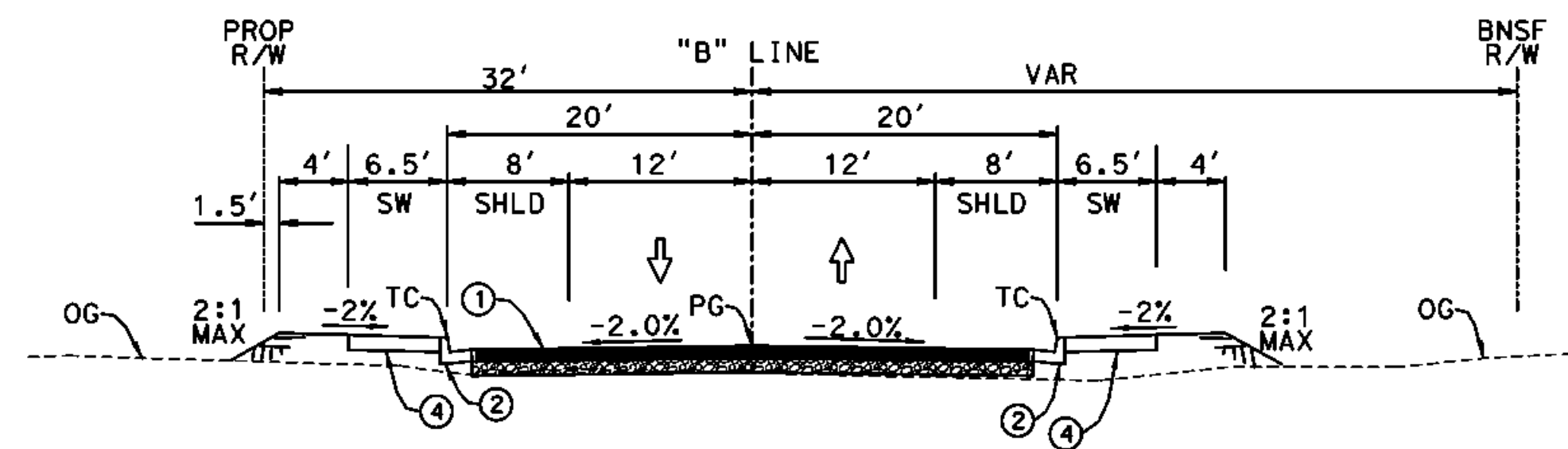
COUNTY OF SAN BERNARDINO  
DEPARTMENT OF PUBLIC WORKS

RECOMMENDED / APPROVED BY

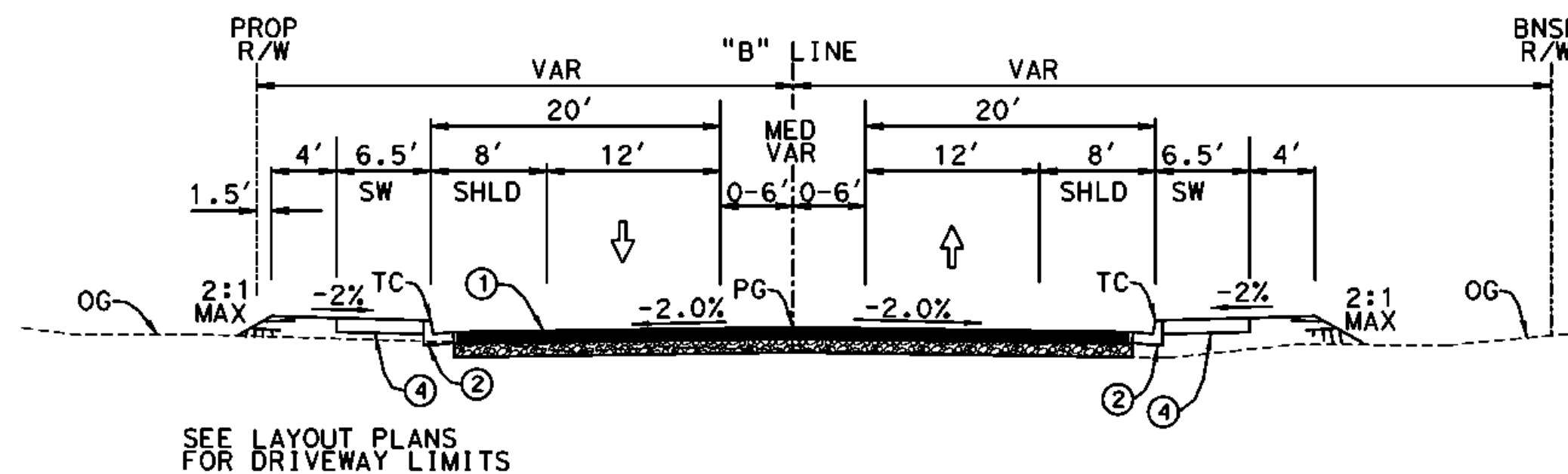
XXXX XXXX P.E. DEPUTY DIRECTOR DATE  
XXXX XXXX P.E. DIRECTOR OF PUBLIC WORKS DATE

SHADOW MOUNTAIN ROAD  
TYPICAL SECTIONS

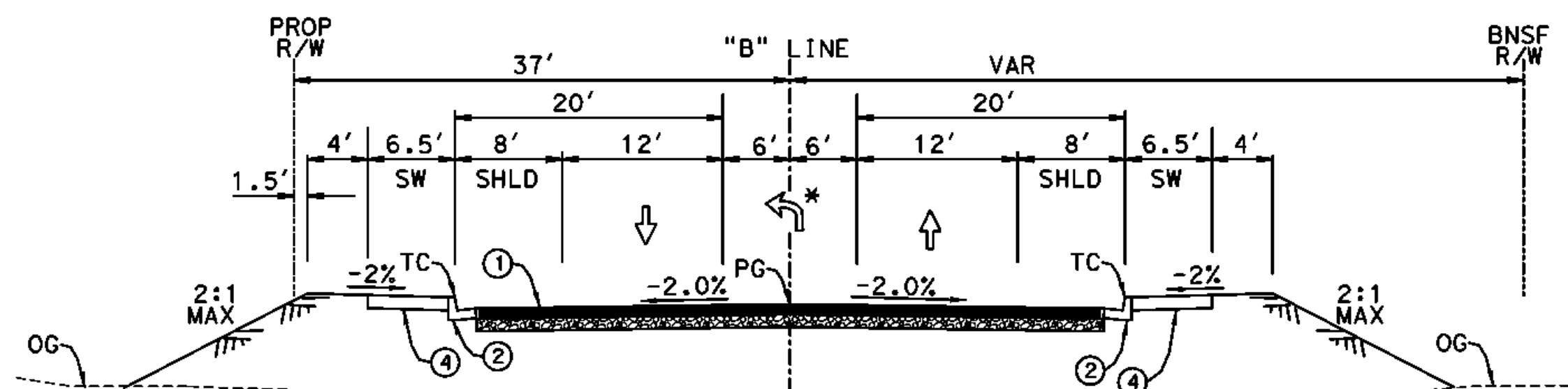
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|-----------|-----------|-------------|-----------|--------------|
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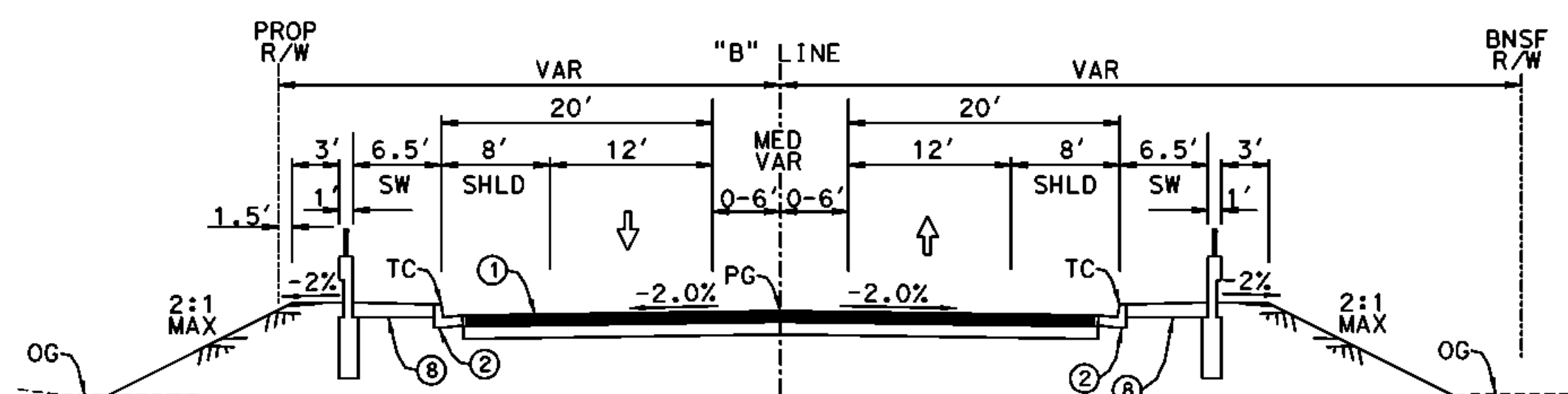
VISTA ROAD - "B" LINE  
STA 31+15.00 TO 37+05.00  
NO SCALE



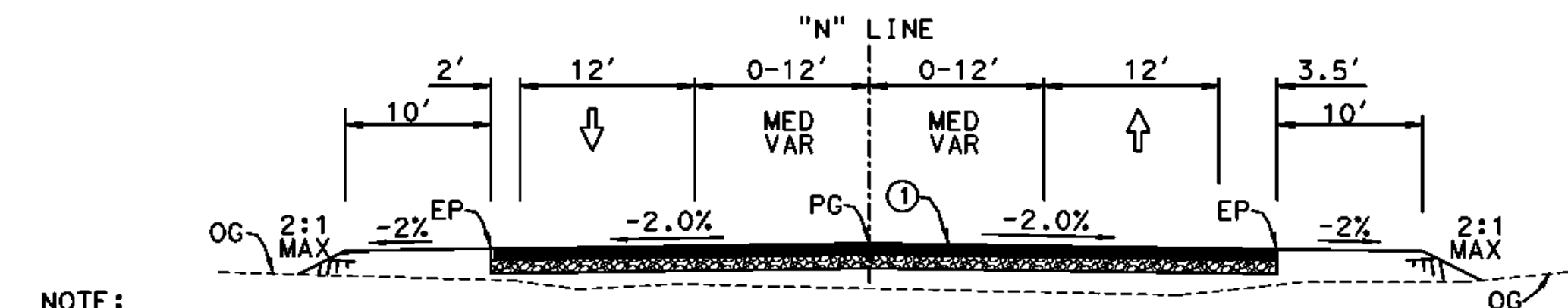
VISTA ROAD - "B" LINE  
STA 27+90.00 TO 31+15.00  
NO SCALE



VISTA ROAD - "B" LINE  
STA 23+63.00 TO 27+90.00  
NO SCALE

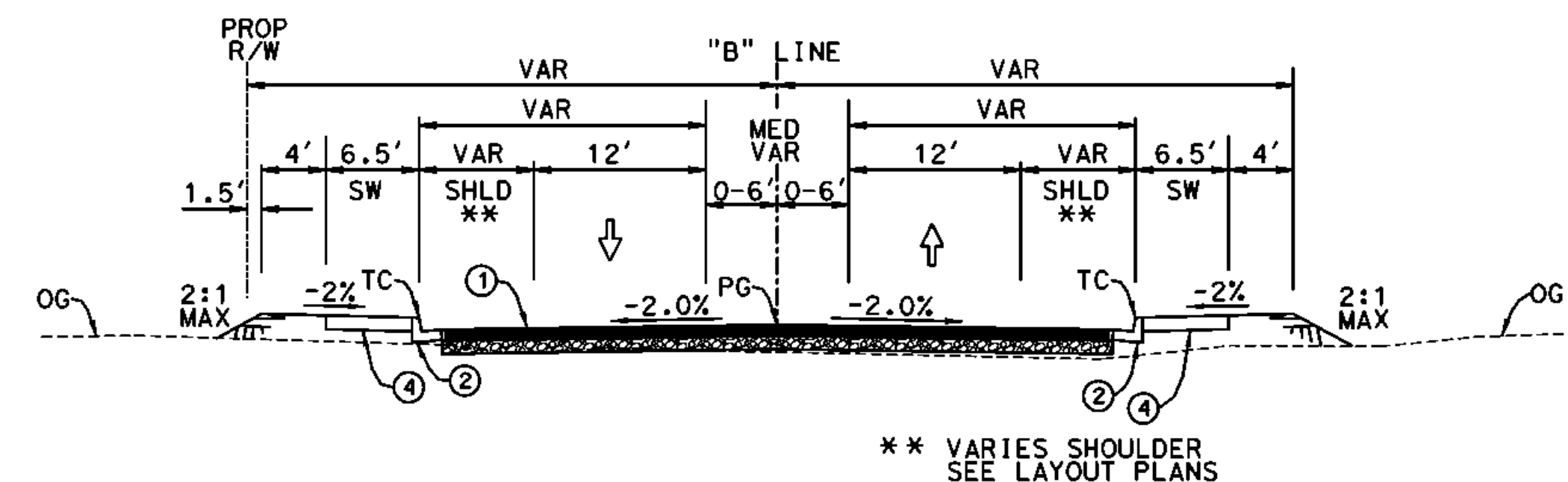


VISTA ROAD - "B" LINE  
STA 19+88.00 TO 23+63.00  
NO SCALE

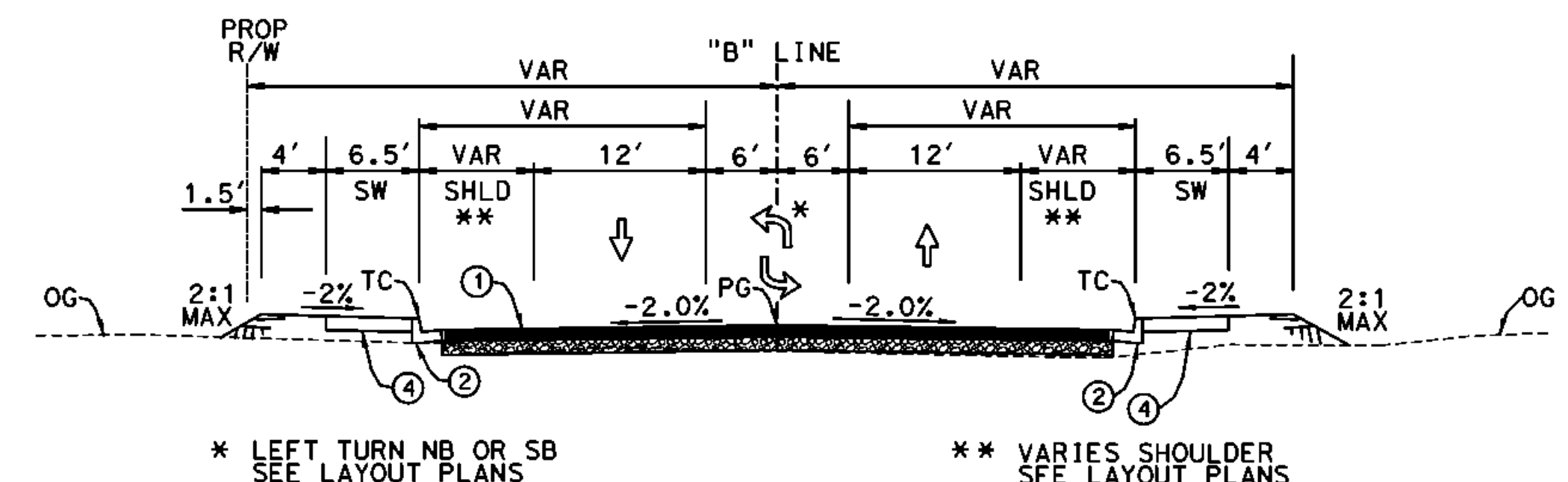


NOTE:  
FROM STA 187+54.00 TO 187+74.00  
XX' MIN COLD PLANE EXIST  
PAVEMENT AND OVERLAY  
WITH XX' MIN HMA FOR  
SMOOTH TRANSITION

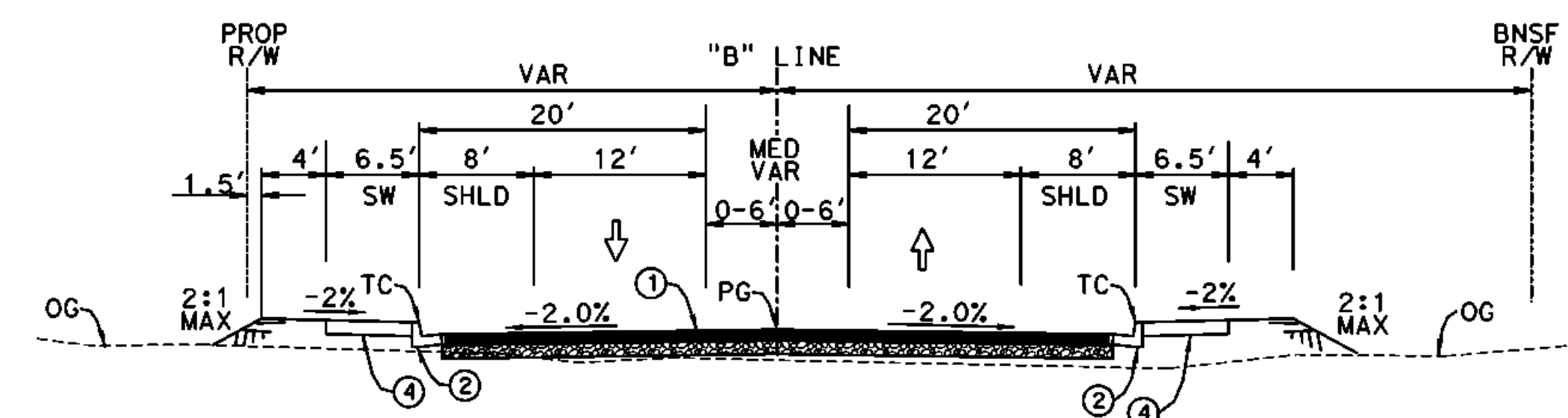
NATIONAL TRAILS HIGHWAY - "N" LINE  
STA 187+74.00 TO 195+54.00  
NO SCALE



VISTA ROAD - "B" LINE  
STA 47+25.00 TO 48+25.73  
NO SCALE



VISTA ROAD - "B" LINE  
STA 40+30.00 TO 47+25.00  
NO SCALE



VISTA ROAD - "B" LINE  
STA 37+05.00 TO 40+30.00  
NO SCALE

# CONSTRUCTION NOTES:

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ALL DIMENSIONS ARE IN FEET  
UNLESS OTHERWISE SHOWN



| MARK | CHANGES    | RESIDENT ENGINEER | DATE |
|------|------------|-------------------|------|
|      | NO CHANGES |                   |      |

## FIELD CHANGES

PLANS PREPARED BY:  
**AECOM**  
999 W. TOWN AND COUNTRY ROAD  
ORANGE, CA 92668-4713  
(714) 567-2501

JAMES FABER R.C.E. 45668 EXPIRES 12-31-12

COUNTY OF SAN BERNARDINO  
DEPARTMENT OF PUBLIC WORKS

RECOMMENDED / APPROVED BY

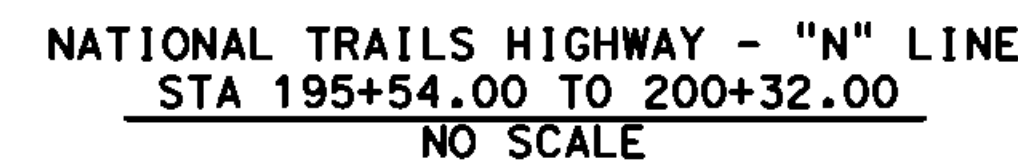
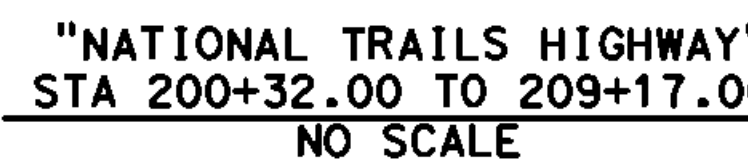
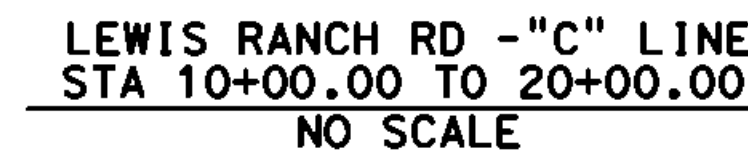
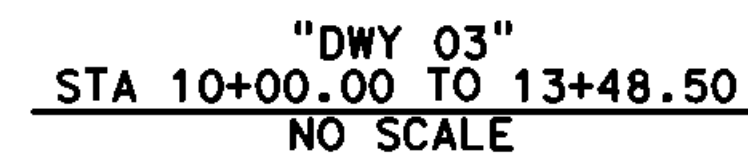
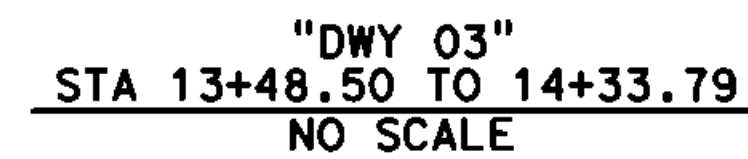
XXXX XXXX P.E. DEPUTY DIRECTOR DATE

XXXX XXXX P.E. DIRECTOR OF PUBLIC WORKS DATE

SHADOW MOUNTAIN ROAD

TYPICAL SECTIONS

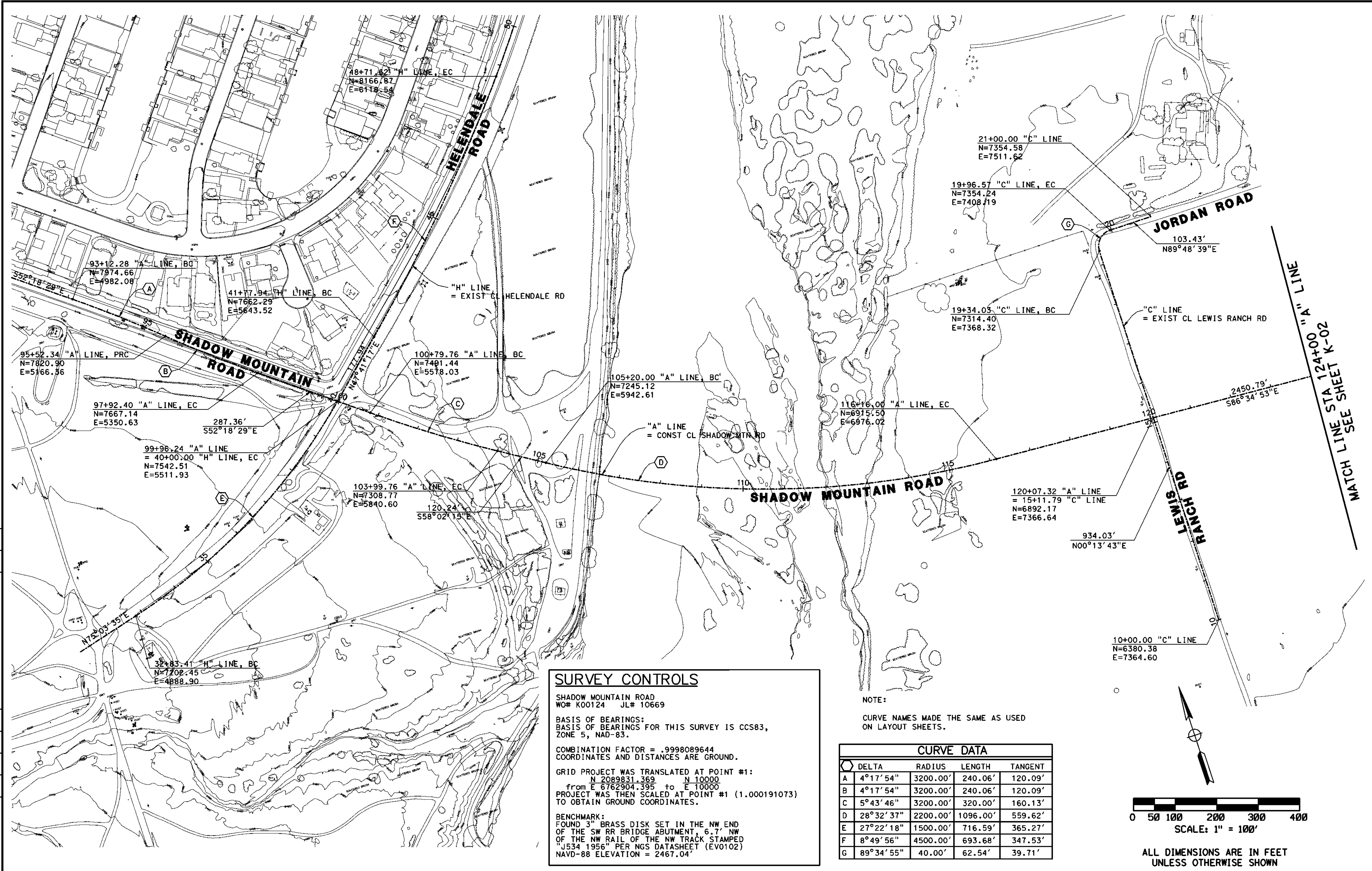
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|-----------|-----------|-------------|-----------|--------------|
| JL XXXX   | XX XXXXXX | X-03        | 7         | X            |



XXXX XXXX P.E.      DIRECTOR OF PUBLIC WORKS      DATE

| MARK | REVISIONS | DATE |
|------|-----------|------|
|      |           |      |

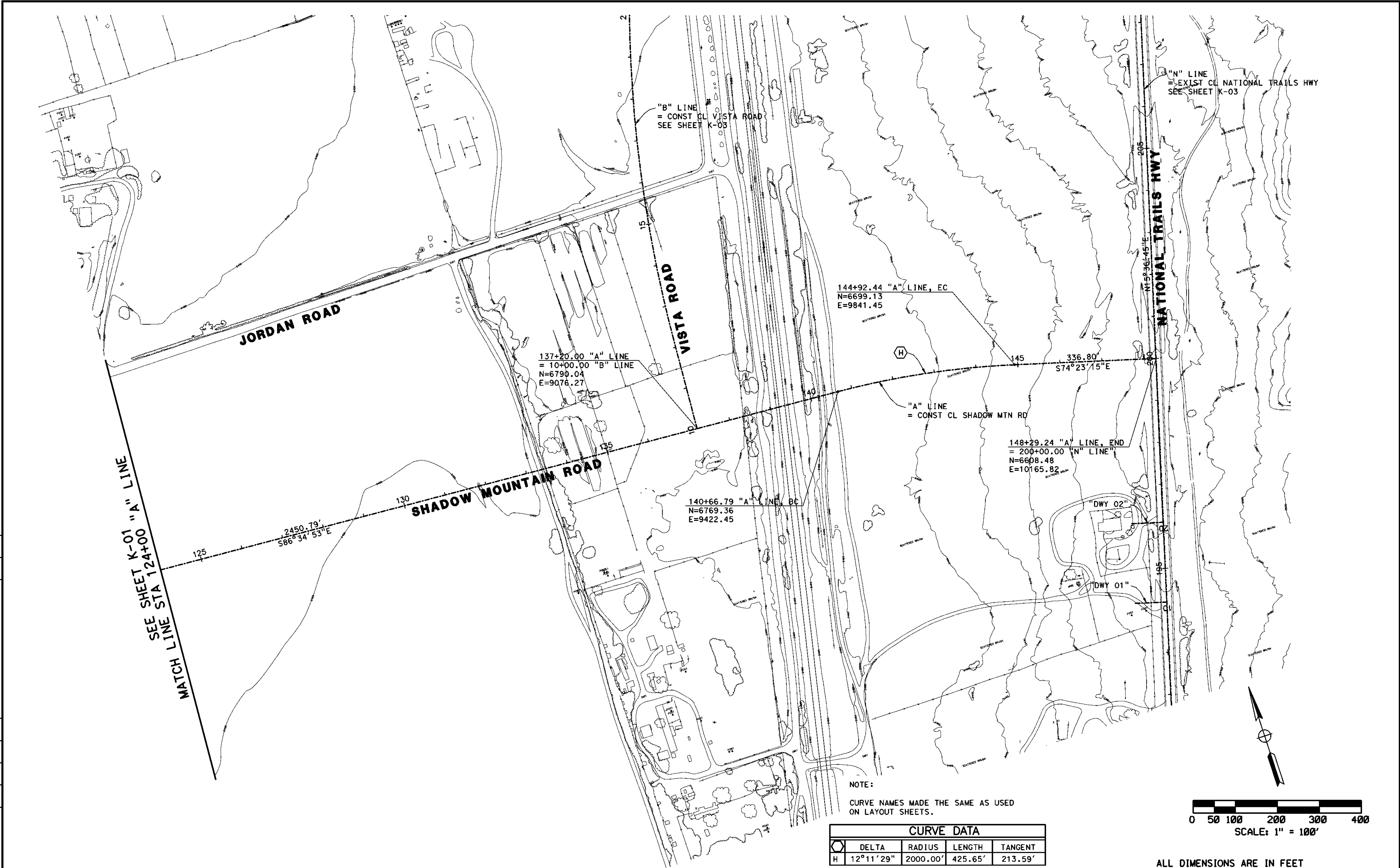
| MARK | REVISIONS | DATE |
|------|-----------|------|
|      |           |      |



|                                                                                                                                                                                    |                            |  |                           |                                                                                                               |                                                                                                                                                                            |                                                                                                                                                                             |  |  |                      |                       |                     |                |                   |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|--|---------------------------|---------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|----------------------|-----------------------|---------------------|----------------|-------------------|
| Don't Dig...Until You Call U.S.A. Toll Free<br>DIAL: 811<br>for the location<br>of buried<br>utility lines.<br>Don't disrupt<br>vital services.<br>TWO WORKING DAYS BEFORE YOU DIG | MARK CHANGES<br>NO CHANGES |  | RESIDENT ENGINEER<br>DATE | PLANS PREPARED BY:<br><b>AECOM</b><br>999 W. TOWN AND COUNTRY ROAD<br>ORANGE, CA 92668-4713<br>(714) 567-2501 | COUNTY OF SAN BERNARDINO<br>DEPARTMENT OF PUBLIC WORKS<br>RECOMMENDED / APPROVED BY<br>XXXX XXXX P.E. DEPUTY DIRECTOR DATE<br>XXXX XXXX P.E. DIRECTOR OF PUBLIC WORKS DATE | SHADOW MOUNTAIN ROAD<br>GEOMETRIC CONTROL<br>STA 93+12.28 "A" LINE TO 124+00 "A" LINE<br>STA 32+83.41 "H" LINE TO 48+71.62 "H" LINE<br>STA 10+00 "C" LINE TO 21+00 "C" LINE |  |  | J.L. REF.<br>JL XXXX | W.O. NO.<br>XX XXXXXX | DRAWING NO.<br>K-01 | SHEET NO.<br>9 | TOTAL SHEETS<br>X |
|                                                                                                                                                                                    | FIELD CHANGES              |  |                           |                                                                                                               | JAMES FABER R.C.E. 45668 EXPIRES 12-31-12                                                                                                                                  | X<br>DATE                                                                                                                                                                   |  |  |                      |                       |                     |                |                   |

| MARK | REVISIONS | APPR. | DATE |
|------|-----------|-------|------|
|      |           |       |      |
|      |           |       |      |

| MARK | REVISIONS | APPR. | DATE |
|------|-----------|-------|------|
|      |           |       |      |
|      |           |       |      |



| CURVE DATA  |          |         |         |
|-------------|----------|---------|---------|
| DELTA       | RADIUS   | LENGTH  | TANGENT |
| H 12°11'29" | 2000.00' | 425.65' | 213.59' |

Don't Dig...Until You Call U.S.A. Toll Free  
DIAL: 811  
for the location  
of buried  
utility lines.  
Don't disrupt  
vital services.  
TWO WORKING DAYS BEFORE YOU DIG

| MARK          | CHANGES    | RESIDENT ENGINEER | DATE |
|---------------|------------|-------------------|------|
|               | NO CHANGES |                   |      |
| FIELD CHANGES |            |                   |      |

PLANS PREPARED BY:  
**AECOM**  
999 W. TOWN AND COUNTRY ROAD  
ORANGE, CA 92668-4713  
(714) 567-2501

JAMES FABER R.C.E. 45668 EXPIRES 12-31-12

COUNTY OF SAN BERNARDINO  
DEPARTMENT OF PUBLIC WORKS

RECOMMENDED / APPROVED BY

XXXX XXXX P.E. DEPUTY DIRECTOR DATE

XXXX XXXX P.E. DIRECTOR OF PUBLIC WORKS DATE

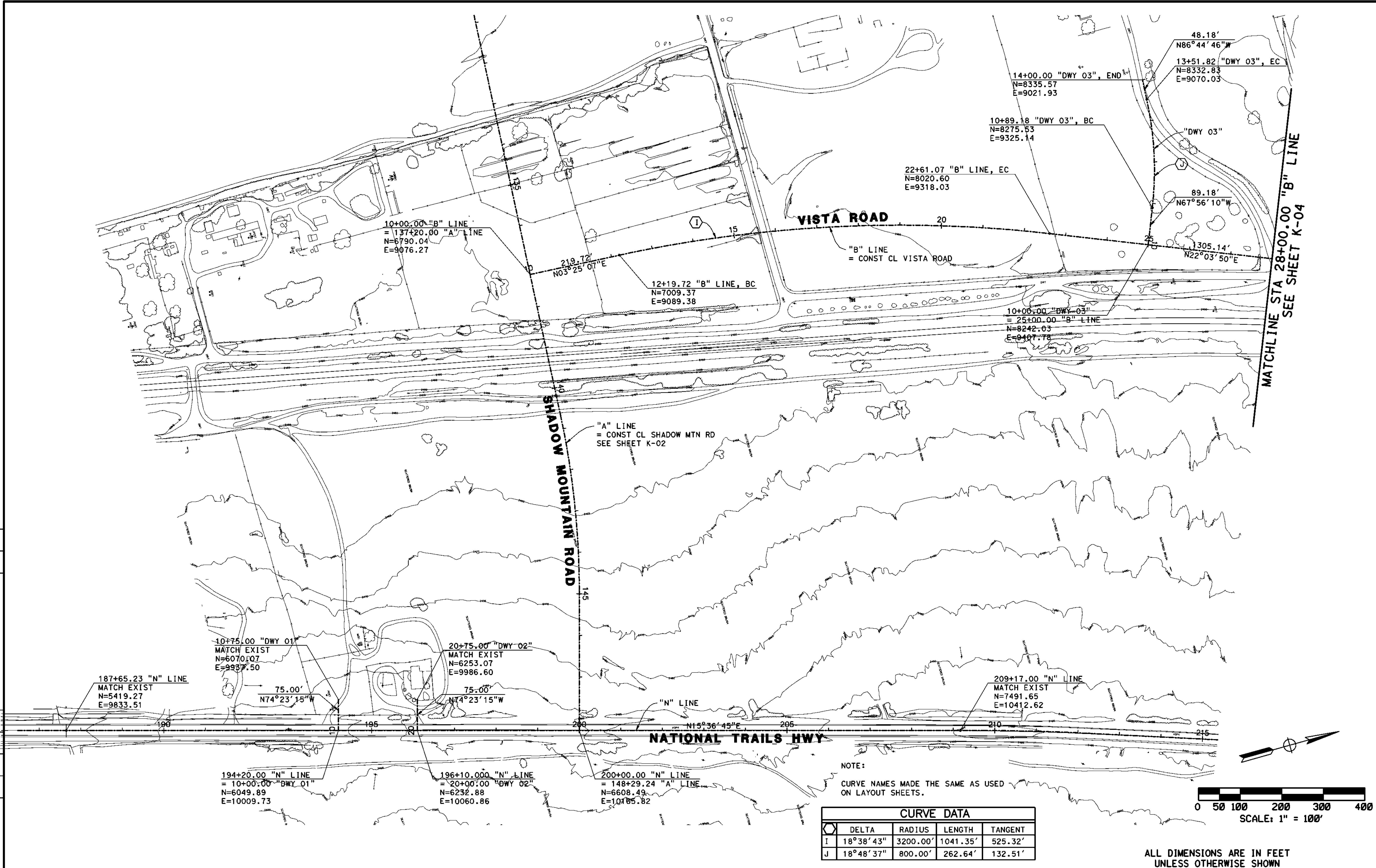
SHADOW MOUNTAIN ROAD

GEOMETRIC CONTROL  
STA 124+00 "A" LINE TO 148+29.24 "A" LINE

|                      |                       |                     |                 |                   |
|----------------------|-----------------------|---------------------|-----------------|-------------------|
| J.L. REF.<br>JL XXXX | W.O. NO.<br>XX XXXXXX | DRAWING NO.<br>K-02 | SHEET NO.<br>10 | TOTAL SHEETS<br>X |
|----------------------|-----------------------|---------------------|-----------------|-------------------|

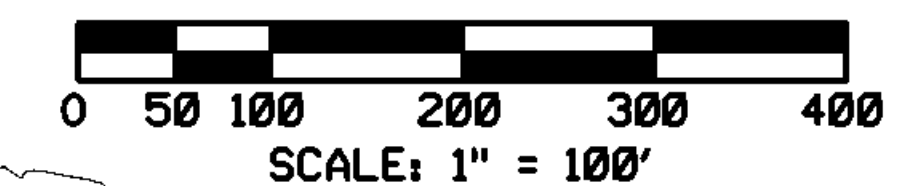
| MARK | REVISIONS | APPR. | DATE |
|------|-----------|-------|------|
|      |           |       |      |

| MARK | REVISIONS | APPR. | DATE |
|------|-----------|-------|------|
|      |           |       |      |



NOTE:  
CURVE NAMES MADE THE SAME AS USED  
ON LAYOUT SHEETS.

| CURVE DATA  |          |          |         |
|-------------|----------|----------|---------|
| DELTA       | RADIUS   | LENGTH   | TANGENT |
| I 18°38'43" | 3200.00' | 1041.35' | 525.32' |
| J 18°48'37" | 800.00'  | 262.64'  | 132.51' |



ALL DIMENSIONS ARE IN FEET  
UNLESS OTHERWISE SHOWN



| MARK | CHANGES    | RESIDENT ENGINEER | DATE |
|------|------------|-------------------|------|
|      | NO CHANGES |                   |      |

FIELD CHANGES

PLANS PREPARED BY:  
**AECOM**  
999 W. TOWN AND COUNTRY ROAD  
ORANGE, CA 92668-4713  
(714) 567-2501

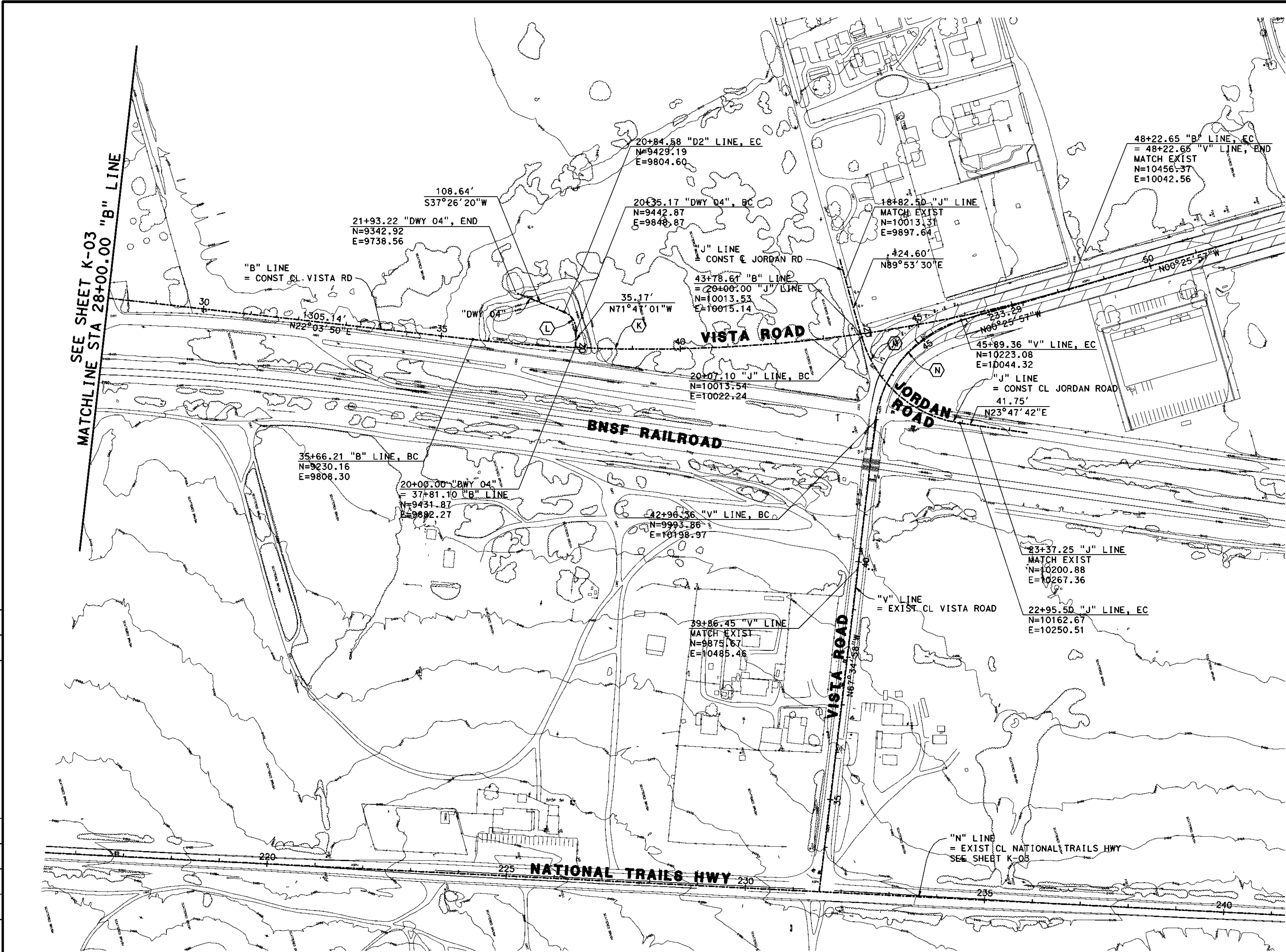
COUNTY OF SAN BERNARDINO  
DEPARTMENT OF PUBLIC WORKS  
RECOMMENDED / APPROVED BY  
XXXX XXXX P.E. DEPUTY DIRECTOR DATE  
XXXX XXXX P.E. DIRECTOR OF PUBLIC WORKS DATE

SHADOW MOUNTAIN ROAD  
GEOMETRIC CONTROL  
STA 10+00 "B" LINE TO 28+00 "B" LINE AND "DWY 03"  
STA 187+74 "N" LINE TO 209+17 "N" LINE  
AND "DWY 01", "DWY 02"

|                      |                       |                     |                 |                   |
|----------------------|-----------------------|---------------------|-----------------|-------------------|
| J.L. REF.<br>JL XXXX | W.O. NO.<br>XX XXXXXX | DRAWING NO.<br>K-03 | SHEET NO.<br>11 | TOTAL SHEETS<br>X |
|----------------------|-----------------------|---------------------|-----------------|-------------------|

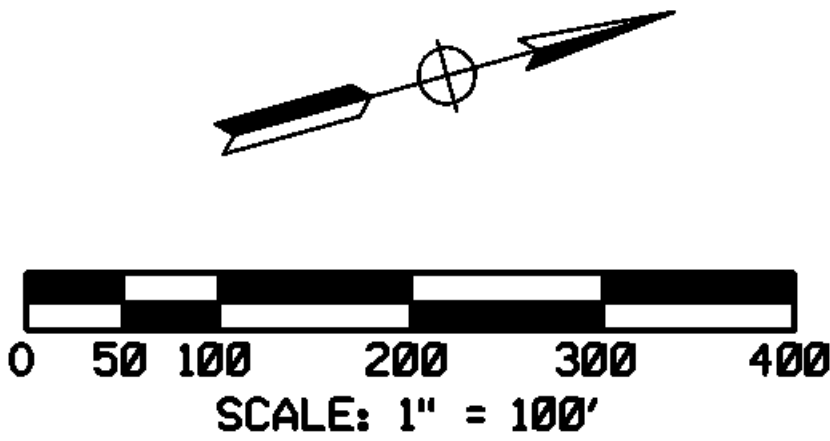
| APPR.     | DATE |
|-----------|------|
|           |      |
| REVISIONS |      |
|           |      |
| MARK      |      |
|           |      |

| APPR.     | DATE |
|-----------|------|
|           |      |
| REVISIONS |      |
|           |      |
| MARK      |      |
|           |      |



NOTE:  
CURVE NAMES MADE THE SAME AS USED  
ON LAYOUT SHEETS.

| CURVE DATA  |          |          |         |  |
|-------------|----------|----------|---------|--|
| DELTA       | RADIUS   | LENGTH   | TANGENT |  |
| K 22°29'47" | 3200.00' | 1256.44' | 636.42' |  |
| L 70°46'29" | 40.00'   | 49.41'   | 28.41'  |  |
| M 66°05'47" | 250.00'  | 288.40'  | 162.65' |  |
| N 67°09'02" | 250.00'  | 293.00'  | 165.94' |  |



ALL DIMENSIONS ARE IN FEET  
UNLESS OTHERWISE SHOWN



| MARK | CHANGES    | RESIDENT ENGINEER | DATE |
|------|------------|-------------------|------|
|      | NO CHANGES |                   |      |

FIELD CHANGES

PLANS PREPARED BY:  
**AECOM**  
999 W. TOWN AND COUNTRY ROAD  
ORANGE, CA 92668-4713  
(714) 567-2501

JAMES FABER R.C.E. 45668 EXPIRES 12-31-12

X  
DATE

COUNTY OF SAN BERNARDINO  
DEPARTMENT OF PUBLIC WORKS

RECOMMENDED / APPROVED BY

XXXX XXXX P.E. DEPUTY DIRECTOR DATE

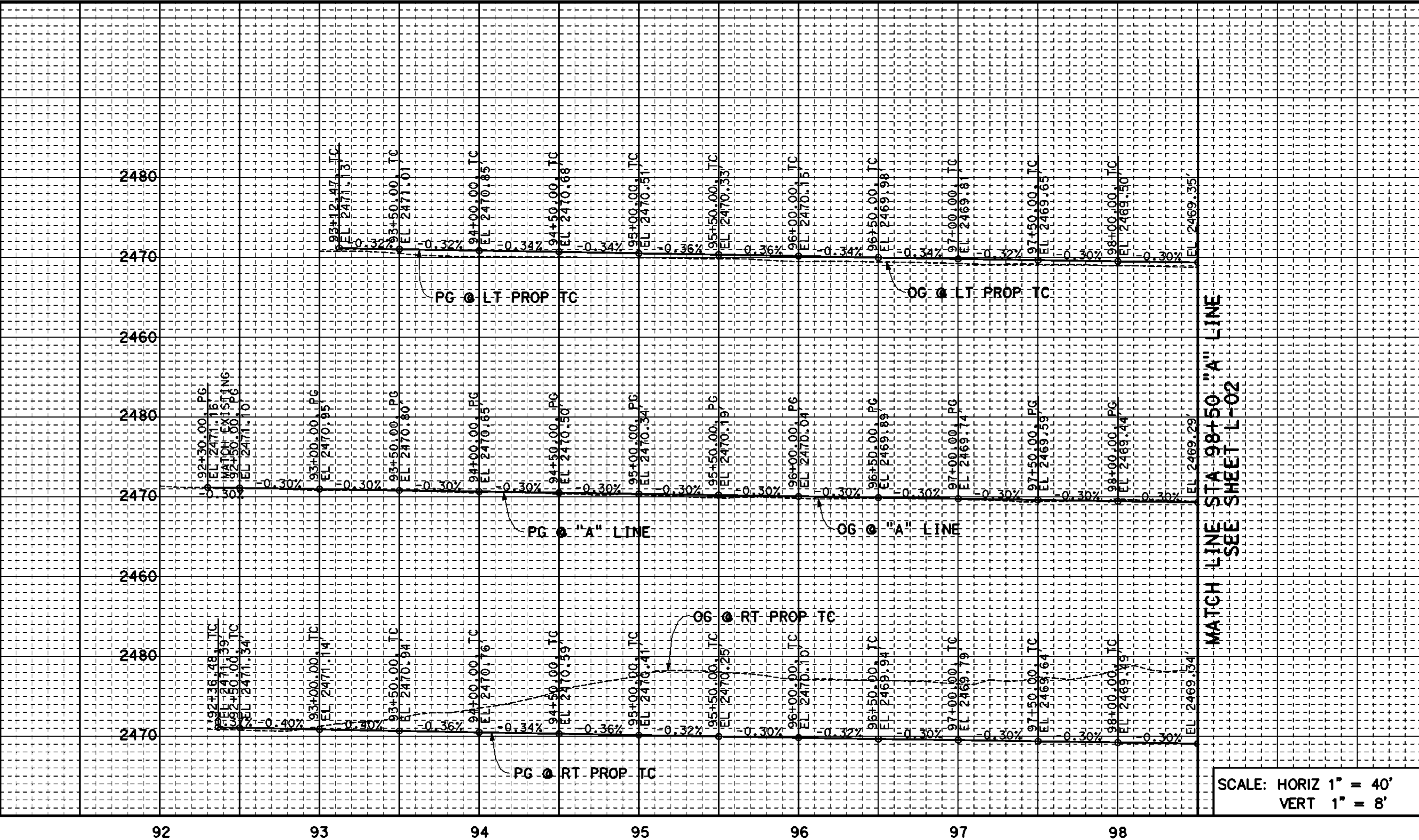
XXXX XXXX P.E. DIRECTOR OF PUBLIC WORKS DATE

SHADOW MOUNTAIN ROAD  
GEOMETRIC CONTROL  
STA 28+00 "B" LINE TO 48+22.65 "B" LINE AND "DWY 04"  
STA 18+82.50 "J" LINE TO 23+37.25 "J" LINE  
STA 39+86.45 "V" LINE TO 48+22.65 "V" LINE

| J.L. REF. | W.O. NO.  | DRAWING NO. | SHEET NO. | TOTAL SHEETS |
|-----------|-----------|-------------|-----------|--------------|
| JL XXXX   | XX XXXXXX | K-04        | 12        | X            |

CONSTRUCTION NOTES:

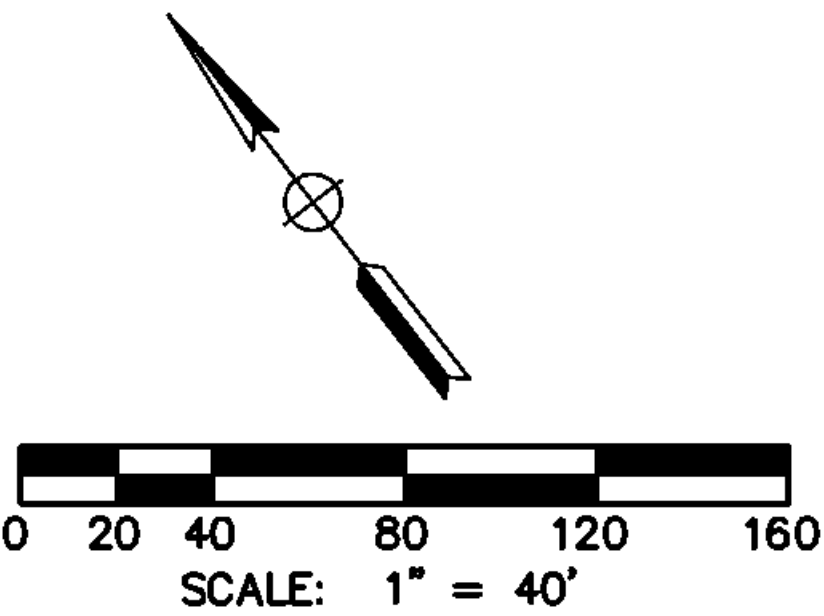
- ① CONST XX' HMA OVER XX' AB (CLASS 2)  
② CONST 8" PCC CURB & GUTTER PER COUNTY STD NO. 115  
③ CONST 8" PCC CURB ONLY TYPE A1 PER CALTRANS STD PLAN NO. A87A  
④ CONST 4" PCC SIDEWALK PER COUNTY STD NO. 109 (WIDTH PER PLAN)  
⑤ CONST DWY APPROACH PER COUNTY STD NO. 128  
⑥ CONST CURB RAMP PER COUNTY STD NO. 110  
⑦ CONST CROSS GUTTER PER COUNTY STD NO. 119  
⑧ CONST CONC BARRIER (TYPE 26 MOD) PER DET 6, SHT C-12  
⑨ CONST CONC BARRIER (TYPE 26 MOD) END TRANSITION PER DET 6, SHT C-12  
⑩ CONST 8" HMA DIKE PER COUNTY STD NO. 117  
⑪ CONST XX" AB ONLY (CLASS 2)  
⑫ CONST METAL BEAM GUARD RAILING (TYPE WB) PER CALTRANS STD PLAN NO. A77J4  
⑬ CONST FLARED END METAL BEAM GUARD RAILING TERMINAL SYSTEM PER DETAIL ON SHT C-13  
⑭ CONST DWY APPROACH PER COUNTY STD NO. 128A  
⑮ CONST ROCK SLOPE PROTECTION PER DET 7, SHT C-12  
⑯ SAWCUT EXISTING PAVEMENT  
⑰ XX' MIN COLD PLANE EXIST PAVEMENT AND OVERLAY WITH XX' MIN HMA FOR SMOOTH TRANSITION  
⑱ CONST TRANSITION CURB PER DET 3 & 5, SHT C-10 & C-11  
⑲ CONST XX' HMA OVER XX' AB (CLASS 2)  
⑳ CONST TRANSITION CURB & GUTTER PER DET 8, SHT C-12  
㉑ CONST METAL BEAM GUARD RAILING PER CALTRANS STD PLAN NO. A77A1  
㉒ INSTALL METAL BEAM GUARD RAILING END ANCHOR ASSEMBLY (TYPE SFT) PER CALTRANS STD PLAN NO. A77H1  
㉓ CONST CONC BARRIER WITH CHAIN LINK RAILING PER DET 9 SHT C-12



SCALE: HORIZ 1" = 40'  
VERT 1" = 8'

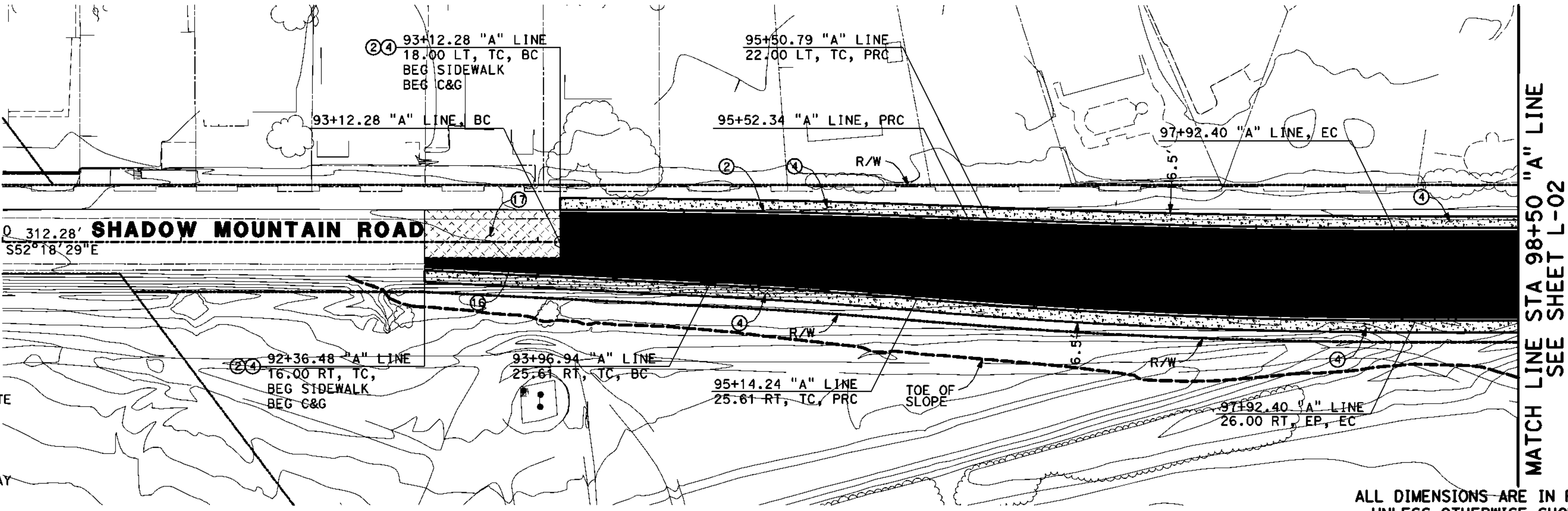
CURVE DATA

| NO.  | R        | Δ        | L       | T       |
|------|----------|----------|---------|---------|
| (A)  | 3200.00' | 4°17'53" | 240.06' | 120.08' |
| (A1) | 5750.00' | 2°23'22" | 239.81' | 119.92' |
| (A2) | 3200.00' | 2°05'05" | 116.44' | 58.22'  |
| (B)  | 3200.00' | 4°17'53" | 240.06' | 120.08' |
| (B1) | 5750.00' | 2°23'22" | 239.81' | 119.92' |
| (B2) | 3240.00' | 4°56'53" | 279.81' | 139.99' |



LEGEND:

- NEW ASPHALT CONCRETE  
PCC PAVEMENT  
COLD PLANE & OVERLAY



ALL DIMENSIONS ARE IN FEET  
UNLESS OTHERWISE SHOWN



| MARK | CHANGES    | RESIDENT ENGINEER | DATE |
|------|------------|-------------------|------|
|      | NO CHANGES |                   |      |

FIELD CHANGES

PLANS PREPARED BY:  
**AECOM**  
995 W. TOWN AND COUNTRY ROAD  
ORANGE, CA 92668-4713  
(714) 567-2501

JAMES FABER R.C.E. 45668 EXPIRES 12-31-12

COUNTY OF SAN BERNARDINO  
DEPARTMENT OF PUBLIC WORKS

RECOMMENDED / APPROVED BY

XXXX XXXX P.E. DEPUTY DIRECTOR DATE

XXXX XXXX P.E. DIRECTOR OF PUBLIC WORKS DATE

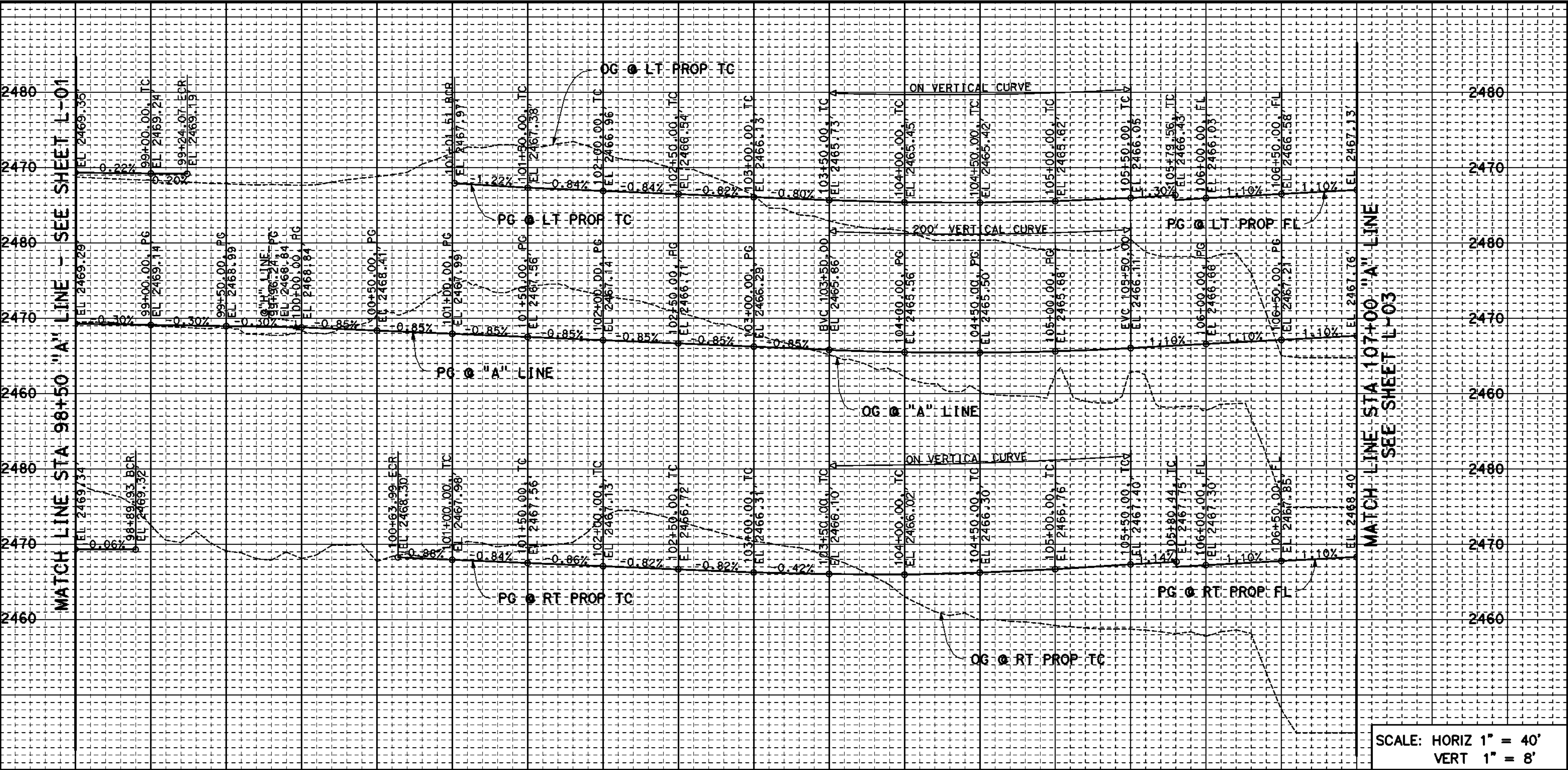
SHADOW MOUNTAIN ROAD

LAYOUT PLAN AND PROFILE  
STA 92+36.48 "A" LINE TO 98+50 "A" LINE

| J.L. REF. | W.O. NO.  | DRAWING NO. | SHEET NO. | TOTAL SHEETS |
|-----------|-----------|-------------|-----------|--------------|
| JL XXXX   | XX XXXXXX | L-01        | 13        | X            |

CONSTRUCTION NOTES:

- ① CONST XX' HMA OVER XX' AB (CLASS 2)  
② CONST 8" PCC CURB & GUTTER PER COUNTY STD NO. 115  
③ CONST 8" PCC CURB ONLY TYPE A1 PER CALTRANS STD PLAN NO. A87A  
④ CONST 4" PCC SIDEWALK PER COUNTY STD NO. 109 (WIDTH PER PLAN)  
⑤ CONST DWY APPROACH PER COUNTY STD NO. 128  
⑥ CONST CURB RAMP PER COUNTY STD NO. 110  
⑦ CONST CROSS GUTTER PER COUNTY STD NO. 119  
⑧ CONST CONC BARRIER (TYPE 26 MOD) PER DET 6, SHT C-12  
⑨ CONST CONC BARRIER (TYPE 26 MOD) END TRANSITION PER DET 6, SHT C-12  
⑩ CONST 8" HMA DIKE PER COUNTY STD NO. 117  
⑪ CONST XX" AB ONLY (CLASS 2)  
⑫ CONST METAL BEAM GUARD RAILING TRANSITION RAILING (TYPE WB) PER CALTRANS STD PLAN NO. A77J4  
⑬ CONST FLARED END METAL BEAM GUARD RAILING TERMINAL SYSTEM PER DETAIL ON SHT C-13  
⑭ CONST DWY APPROACH PER COUNTY STD NO. 128A  
⑮ CONST ROCK SLOPE PROTECTION PER DET 7, SHT C-12  
⑯ SAWCUT EXISTING PAVEMENT  
⑰ XX' MIN COLD PLANE EXIST PAVEMENT AND OVERLAY WITH XX' MIN HMA FOR SMOOTH TRANSITION  
⑱ CONST TRANSITION CURB PER DET 3 & 5, SHT C-10 & C-11  
⑲ CONST XX' HMA OVER XX' AB (CLASS 2)  
⑳ CONST TRANSITION CURB & GUTTER PER DET 8, SHT C-12  
㉑ CONST METAL BEAM GUARD RAILING PER CALTRANS STD PLAN NO. A77A1  
㉒ INSTALL METAL BEAM GUARD RAILING END ANCHOR ASSEMBLY (TYPE SFT) PER CALTRANS STD PLAN NO. A77H1  
㉓ CONST CONC BARRIER WITH CHAIN LINK RAILING PER DET 9 SHT C-12

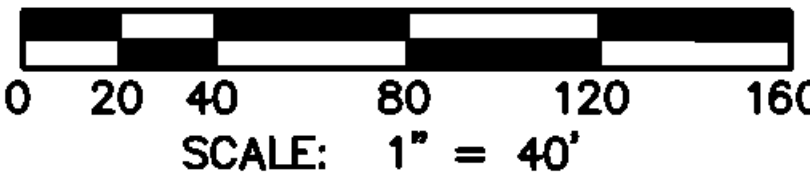
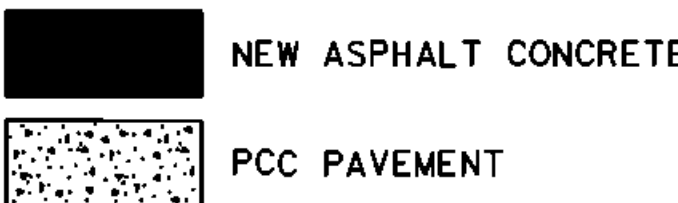


SCALE: HORIZ 1" = 40'  
VERT 1" = 8'

CURVE DATA

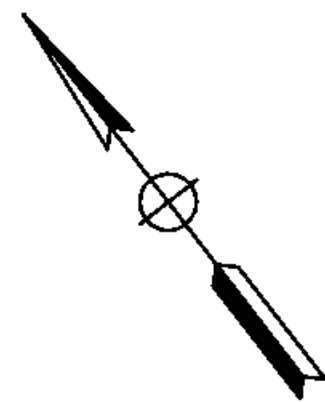
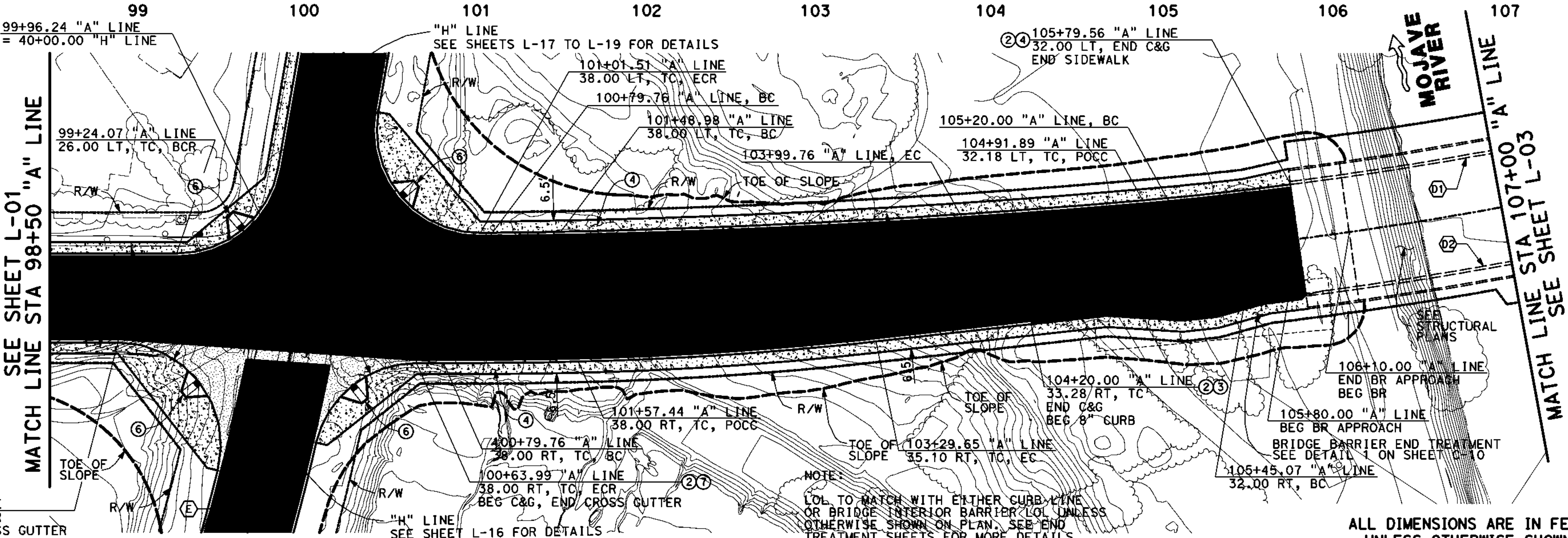
| No.  | R        | Δ          | L        | T       |
|------|----------|------------|----------|---------|
| (B)  | 3200.00' | 4°17'53"   | 240.06'  | 120.08' |
| (B1) | 5750.00' | 2°23'22"   | 239.81'  | 119.92' |
| (B2) | 3240.00' | 4°56'53"   | 279.81'  | 139.99' |
| (B3) | 60.00'   | 80°00'14"  | 83.78'   | 50.35'  |
| (B4) | 60.00'   | 100°23'09" | 105.12'  | 72.00'  |
| (B5) | 60.00'   | 104°10'46" | 109.10'  | 77.04'  |
| (B6) | 60.00'   | 76°56'26"  | 80.57'   | 47.68'  |
| (C)  | 3200.00' | 5°43'46"   | 320.00'  | 160.13' |
| (C1) | 5200.00' | 3°44'50"   | 340.10'  | 170.11' |
| (C2) | 3238.00' | 1°23'28"   | 78.61'   | 39.31'  |
| (C3) | 2000.00' | 4°59'29"   | 174.23'  | 87.17'  |
| (D)  | 2200.00' | 28°32'38"  | 1096.00' | 559.62' |
| (D1) | 2168.00' | 15°13'00"  | 575.78'  | 289.59' |
| (D2) | 2232.00' | 13°49'16"  | 538.41'  | 270.52' |
| (E)  | 1500.00' | 27°22'18"  | 716.59'  | 365.27' |

LEGEND:



②⑦ 99+35.02 "A" LINE  
26.00 RT, TC, BCR  
END C&G, BEG CROSS GUTTER

SEE SHEET L-01  
MATCH LINE STA 98+50 "A" LINE



ALL DIMENSIONS ARE IN FEET  
UNLESS OTHERWISE SHOWN



| MARK | CHANGES    | RESIDENT ENGINEER | DATE |
|------|------------|-------------------|------|
|      | NO CHANGES |                   |      |

FIELD CHANGES

PLANS PREPARED BY:  
**AECOM**  
999 W. TOWN AND COUNTRY ROAD  
ORANGE, CA 92668-4713  
(714) 567-2501

JAMES FABER R.C.E. 45668 EXPIRES 12-31-12

COUNTY OF SAN BERNARDINO  
DEPARTMENT OF PUBLIC WORKS

RECOMMENDED / APPROVED BY

XXXX XXXX P.E. DEPUTY DIRECTOR DATE  
XXXX XXXX P.E. DIRECTOR OF PUBLIC WORKS DATE

SHADOW MOUNTAIN ROAD

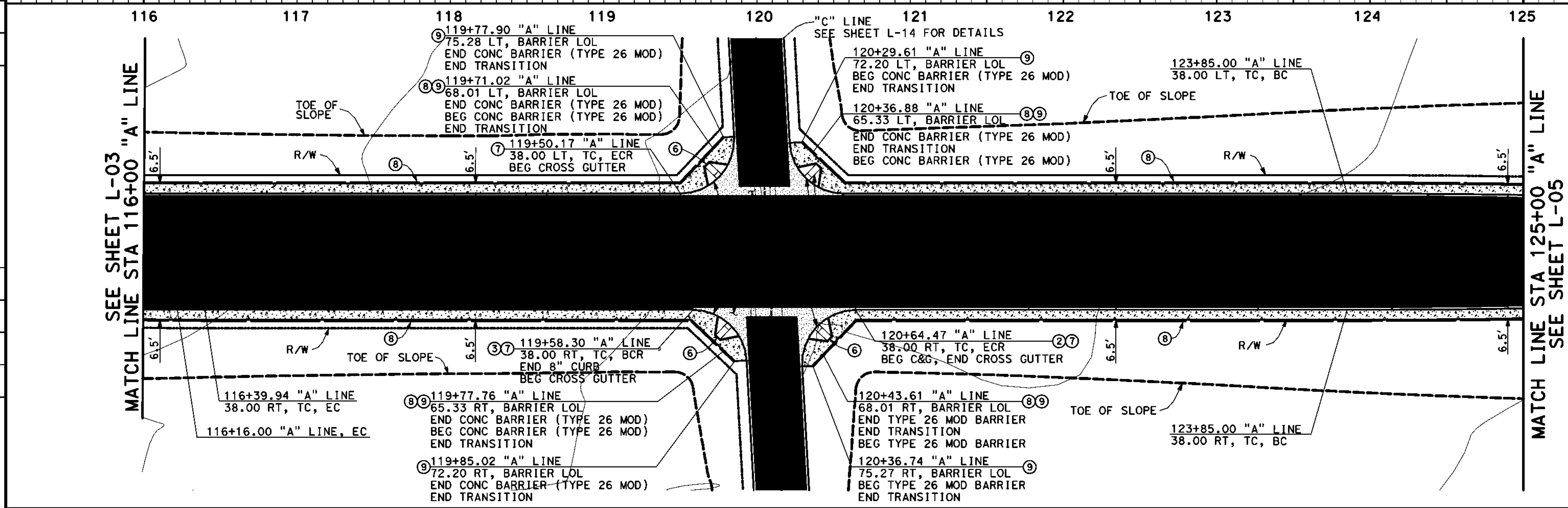
LAYOUT PLAN AND PROFILE  
STA 98+50 "A" LINE TO 107+00 "A" LINE

| J.L. REF. | W.O. NO.  | DRAWING NO. | SHEET NO. | TOTAL SHEETS |
|-----------|-----------|-------------|-----------|--------------|
| JL XXXX   | XX XXXXXX | L-02        | 14        | X            |



| MARK | REVISIONS | DATE |
|------|-----------|------|
|      |           |      |

| MARK | REVISIONS | DATE |
|------|-----------|------|
|      |           |      |



**LEGEND:**

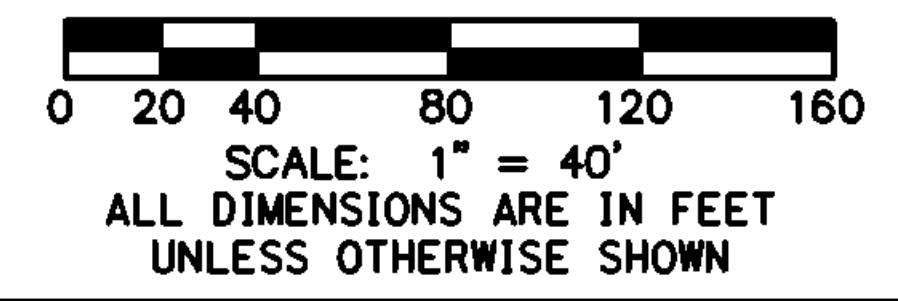
- NEW ASPHALT CONCRETE
- PCC PAVEMENT
- NEW AB

SCALE: HORIZ 1" = 40'  
VERT 1" = 8'

- CONSTRUCTION NOTES:**
- CONST XX' HMA OVER XX' AB (CLASS 2)
  - CONST 8" PCC CURB & GUTTER PER COUNTY STD NO. 115
  - CONST 8" PCC CURB ONLY TYPE A1 PER CALTRANS STD PLAN NO. A87A
  - CONST 4" PCC SIDEWALK PER COUNTY STD NO. 109 (WIDTH PER PLAN)
  - CONST DWY APPROACH PER COUNTY STD NO. 128
  - CONST CURB RAMP PER COUNTY STD NO. 110
  - CONST CROSS GUTTER PER COUNTY STD NO. 119
  - CONST CONC BARRIER (TYPE 26 MOD) PER DET 6, SHT C-12
  - CONST CONC BARRIER (TYPE 26 MOD) END TRANSITION PER DET 6, SHT C-12

**CURVE DATA**

| No. | R        | Δ         | L       | T       |
|-----|----------|-----------|---------|---------|
| 04  | 2232.00' | 14°04'12" | 548.10' | 275.44' |
| 05  | 35.00'   | 93°11'24" | 56.93'  | 37.00'  |
| 06  | 35.00'   | 86°48'36" | 53.03'  | 33.10'  |
| 07  | 35.00'   | 86°48'36" | 53.03'  | 33.10'  |
| 08  | 35.00'   | 93°11'24" | 56.93'  | 37.00'  |
| 09  | 6339.00' | 1°45'46"  | 195.03' | 97.52'  |
| 10  | 6339.00' | 1°45'46"  | 195.03' | 97.52'  |



| MARK | CHANGES           | DATE |
|------|-------------------|------|
|      | NO CHANGES        |      |
|      | RESIDENT ENGINEER |      |

**FIELD CHANGES**

PLANS PREPARED BY:

**AECOM**

995 W. TOWN AND COUNTRY ROAD  
ORANGE, CA 92668-4713  
(714) 567-2501

JAMES FABER R.C.E. 45668 EXPIRES 12-31-12

COUNTY OF SAN BERNARDINO  
DEPARTMENT OF PUBLIC WORKS

RECOMMENDED / APPROVED BY

XXXX XXXX P.E. DEPUTY DIRECTOR \_\_\_\_\_ DATE \_\_\_\_\_

XXXX XXXX P.E. DIRECTOR OF PUBLIC WORKS \_\_\_\_\_ DATE \_\_\_\_\_

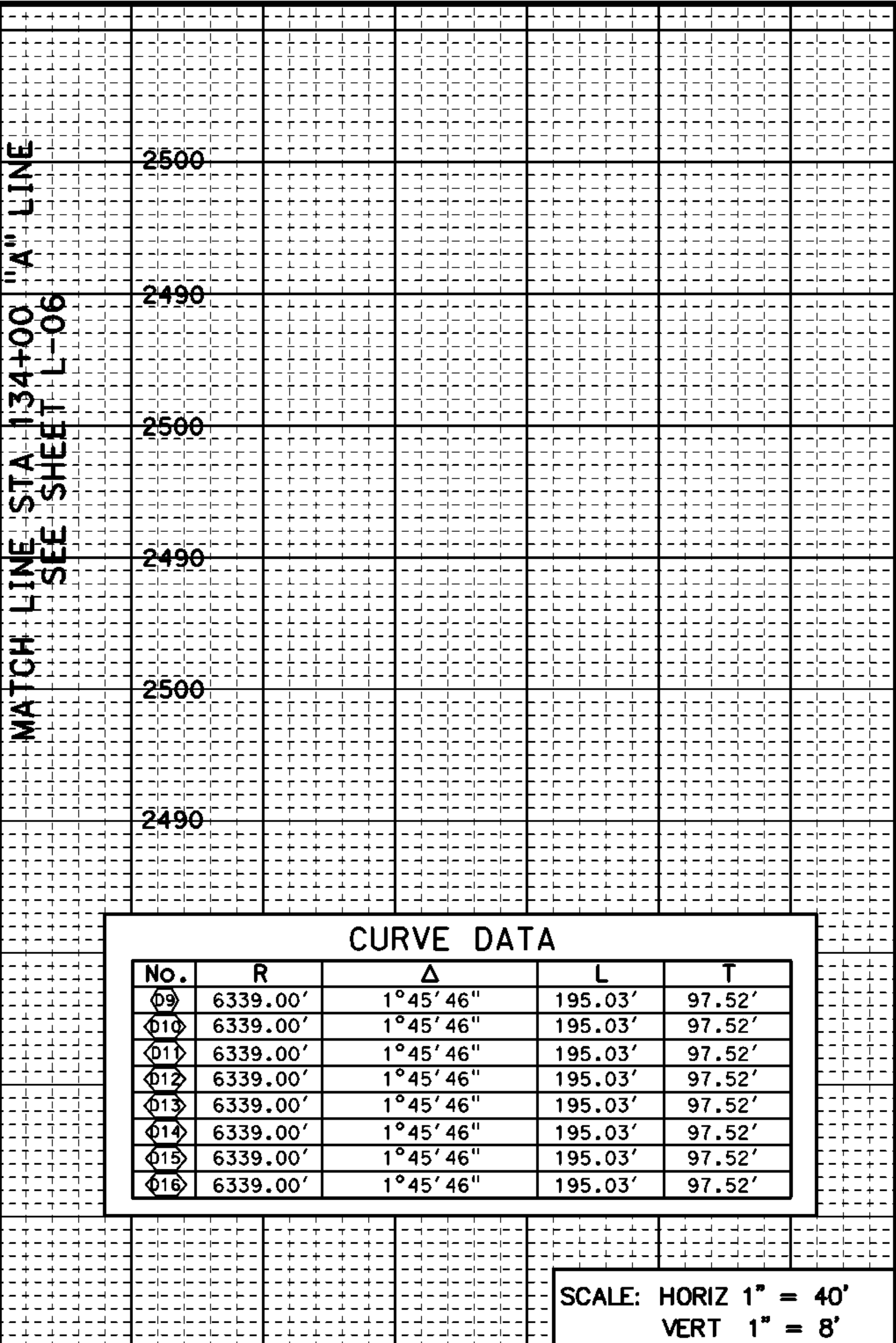
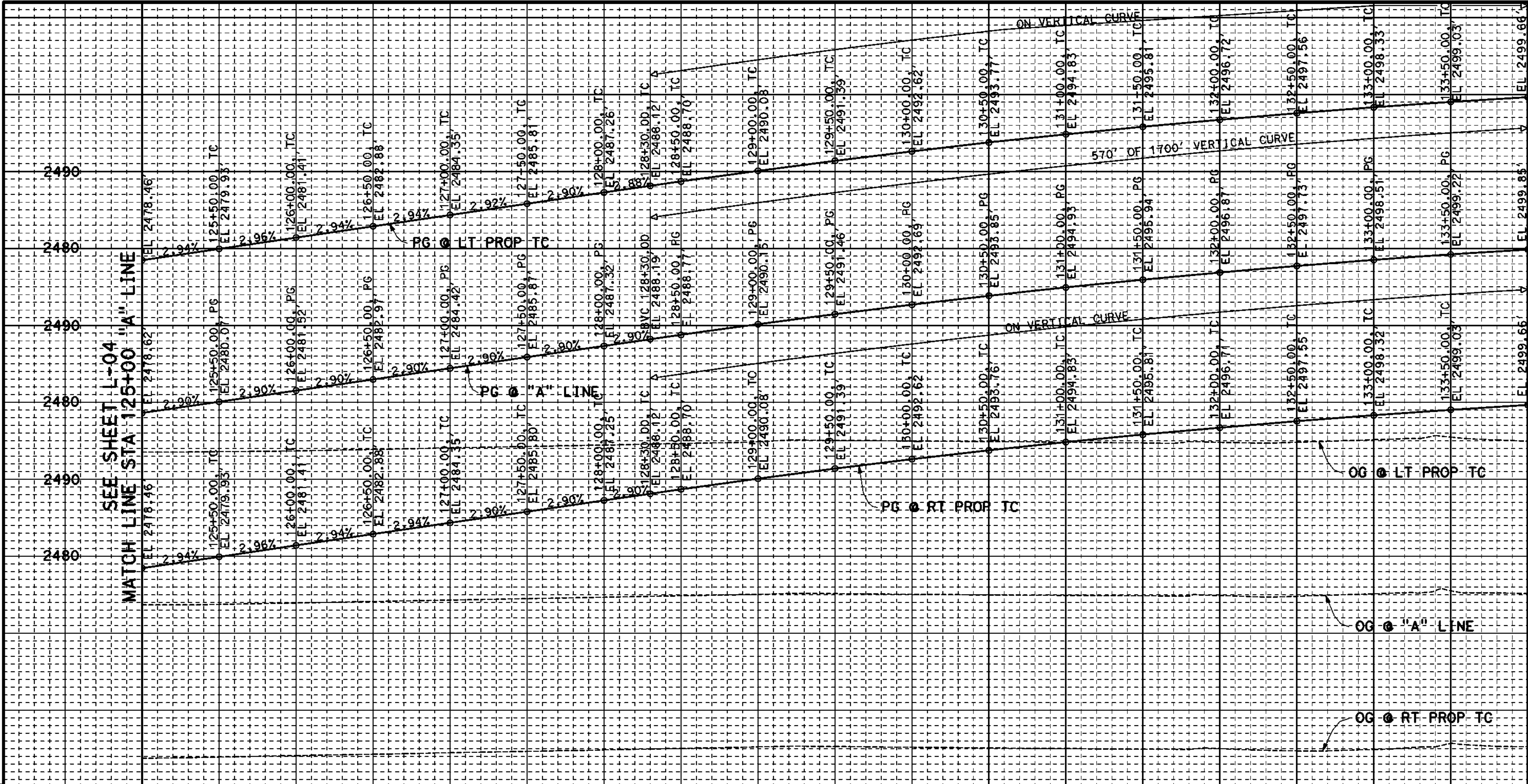
**SHADOW MOUNTAIN ROAD**

LAYOUT PLAN AND PROFILE  
STA 116+00 "A" LINE TO 125+00 "A" LINE

|                      |                       |                     |                 |                   |
|----------------------|-----------------------|---------------------|-----------------|-------------------|
| J.L. REF.<br>JL XXXX | W.O. NO.<br>XX XXXXXX | DRAWING NO.<br>L-04 | SHEET NO.<br>16 | TOTAL SHEETS<br>X |
|----------------------|-----------------------|---------------------|-----------------|-------------------|

| MARK | REVISIONS | DATE |
|------|-----------|------|
|      |           |      |

| MARK | REVISIONS | DATE |
|------|-----------|------|
|      |           |      |



| CURVE DATA |          |          |         |        |
|------------|----------|----------|---------|--------|
| No.        | R        | Δ        | L       | T      |
| 09         | 6339.00' | 1°45'46" | 195.03' | 97.52' |
| 10         | 6339.00' | 1°45'46" | 195.03' | 97.52' |
| 11         | 6339.00' | 1°45'46" | 195.03' | 97.52' |
| 12         | 6339.00' | 1°45'46" | 195.03' | 97.52' |
| 13         | 6339.00' | 1°45'46" | 195.03' | 97.52' |
| 14         | 6339.00' | 1°45'46" | 195.03' | 97.52' |
| 15         | 6339.00' | 1°45'46" | 195.03' | 97.52' |
| 16         | 6339.00' | 1°45'46" | 195.03' | 97.52' |

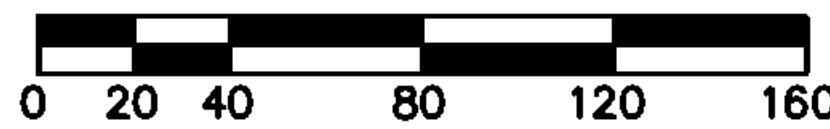
SCALE: HORIZ 1" = 40'  
VERT 1" = 8'

#### CONSTRUCTION NOTES:

- 1 CONST XX' HMA OVER XX' AB (CLASS 2)
- 2 CONST 8" PCC CURB & GUTTER PER COUNTY STD NO. 115
- 3 CONST 8" PCC CURB ONLY TYPE A1 PER CALTRANS STD PLAN NO. A87A
- 4 CONST 4" PCC SIDEWALK PER COUNTY STD NO. 109 (WIDTH PER PLAN)
- 5 CONST DWY APPROACH PER COUNTY STD NO. 128
- 6 CONST CURB RAMP PER COUNTY STD NO. 110
- 7 CONST CROSS GUTTER PER COUNTY STD NO. 119
- 8 CONST CONC BARRIER (TYPE 26 MOD) PER DET 6, SHT C-12
- 9 CONST CONC BARRIER (TYPE 26 MOD) END TRANSITION PER DET 6, SHT C-12

#### LEGEND:

- NEW ASPHALT CONCRETE
- PCC PAVEMENT



SCALE: 1" = 40'  
ALL DIMENSIONS ARE IN FEET  
UNLESS OTHERWISE SHOWN



| MARK | CHANGES    | RESIDENT ENGINEER | DATE |
|------|------------|-------------------|------|
|      | NO CHANGES |                   |      |

#### FIELD CHANGES

PLANS PREPARED BY:  
**AECOM**  
999 W. TOWN AND COUNTRY ROAD  
ORANGE, CA 92668-4713  
(714) 567-2501

JAMES FABER R.C.E. 45668 EXPIRES 12-31-12

COUNTY OF SAN BERNARDINO  
DEPARTMENT OF PUBLIC WORKS

RECOMMENDED / APPROVED BY

XXXX XXXX P.E. DEPUTY DIRECTOR DATE

XXXX XXXX P.E. DIRECTOR OF PUBLIC WORKS DATE

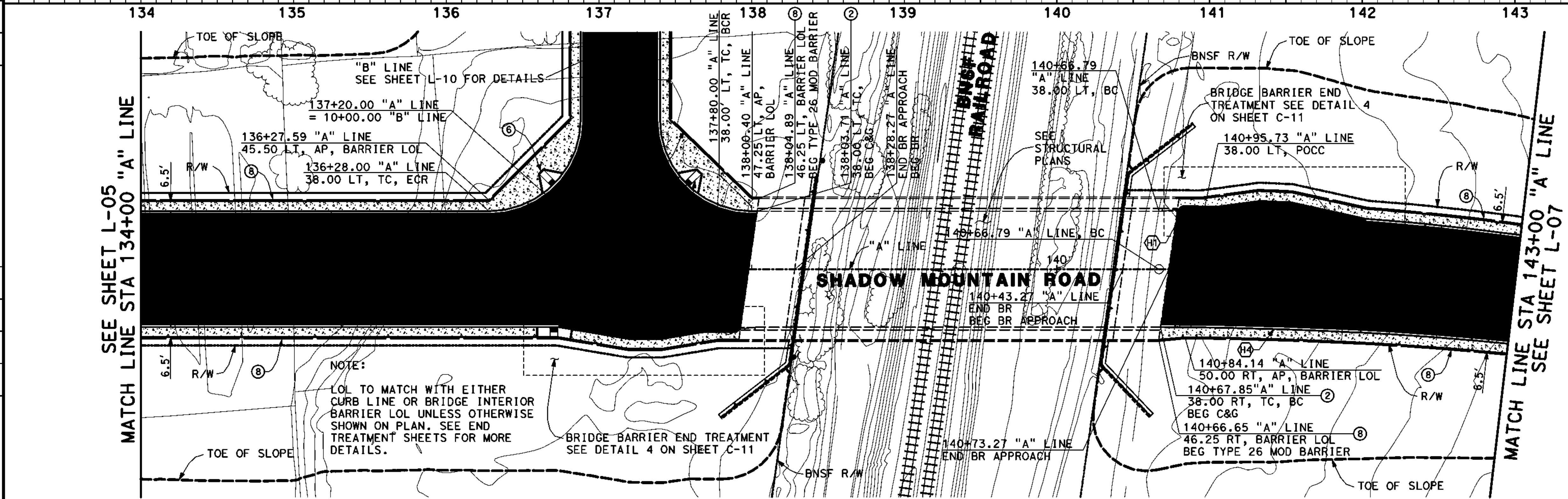
#### SHADOW MOUNTAIN ROAD

LAYOUT PLAN AND PROFILE  
STA 125+00 "A" LINE TO 134+00 "A" LINE

| J.L. REF. | W.O. NO.  | DRAWING NO. | SHEET NO. | TOTAL SHEETS |
|-----------|-----------|-------------|-----------|--------------|
| JL XXXX   | XX XXXXXX | L-05        | 17        | X            |

| MARK | REVISIONS | APPR. | DATE |
|------|-----------|-------|------|
|      |           |       |      |

| MARK | REVISIONS | APPR. | DATE |
|------|-----------|-------|------|
|      |           |       |      |



LEGEND:



SCALE: HORIZ 1" = 40'  
VERT 1" = 8'

CONSTRUCTION NOTES:

- 1 CONST XX' HMA OVER XX' AB (CLASS 2)
- 2 CONST 8" PCC CURB & GUTTER PER COUNTY STD NO. 115
- 3 CONST 8" PCC CURB ONLY TYPE A1 PER CALTRANS STD PLAN NO. A87A
- 4 CONST 4" PCC SIDEWALK PER COUNTY STD NO. 109 (WIDTH PER PLAN)
- 5 CONST DWY APPROACH PER COUNTY STD NO. 128
- 6 CONST CURB RAMP PER COUNTY STD NO. 110
- 7 CONST CROSS GUTTER PER COUNTY STD NO. 119
- 8 CONST CONC BARRIER (TYPE 26 MOD) PER DET 6, SHT C-12
- 9 CONST CONC BARRIER (TYPE 26 MOD) END TRANSITION PER DET 6, SHT C-12

CURVE DATA

| No. | R        | Δ         | L       | T       |
|-----|----------|-----------|---------|---------|
| 17  | 60.00'   | 90°00'00" | 94.25'  | 60.00'  |
| 18  | 60.00'   | 90°00'00" | 94.25'  | 60.00'  |
| 19  | 2000.00' | 12°11'38" | 425.65' | 213.63' |
| 20  | 2038.00' | 0°49'44"  | 29.49'  | 14.74'  |
| 21  | 1732.00' | 10°18'27" | 311.59' | 156.22' |
| 22  | 1962.00' | 0°34'39"  | 19.77'  | 9.89'   |
| 23  | 2768.00' | 2°19'38"  | 112.42' | 56.22'  |
| 24  | 1968.00' | 9°15'33"  | 318.03' | 159.36' |



SCALE: 1" = 40'  
ALL DIMENSIONS ARE IN FEET  
UNLESS OTHERWISE SHOWN



| MARK | CHANGES    | RESIDENT ENGINEER | DATE |
|------|------------|-------------------|------|
|      | NO CHANGES |                   |      |

FIELD CHANGES

PLANS PREPARED BY:  
**AECOM**  
999 W. TOWN AND COUNTRY ROAD  
ORANGE, CA 92668-4713  
(714) 567-2501

JAMES FABER R.C.E. 45668 EXPIRES 12-31-12

COUNTY OF SAN BERNARDINO  
DEPARTMENT OF PUBLIC WORKS

RECOMMENDED / APPROVED BY

XXXX XXXX P.E. DEPUTY DIRECTOR DATE

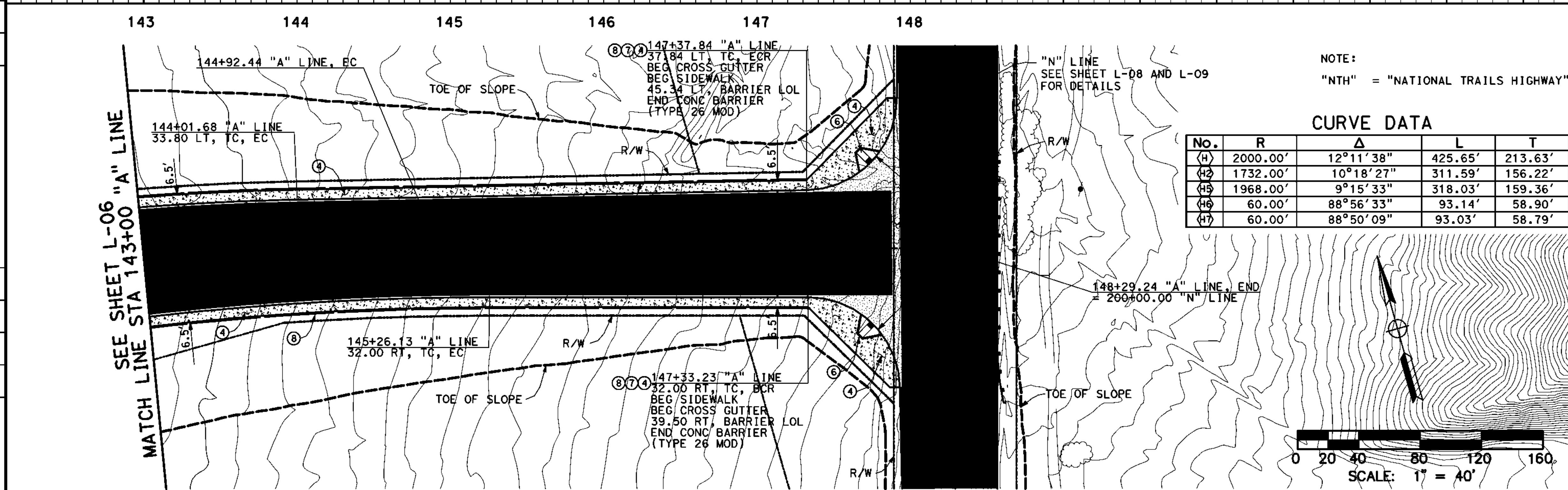
XXXX XXXX P.E. DIRECTOR OF PUBLIC WORKS DATE

SHADOW MOUNTAIN ROAD  
LAYOUT PLAN AND PROFILE  
STA 134+00 "A" LINE TO 143+00 "A" LINE

| J.L. REF. | W.O. NO.  | DRAWING NO. | SHEET NO. | TOTAL SHEETS |
|-----------|-----------|-------------|-----------|--------------|
| JL XXXX   | XX XXXXXX | L-06        | 18        | X            |

| MARK | REVISIONS | APPR. | DATE |
|------|-----------|-------|------|
|      |           |       |      |
|      |           |       |      |

| MARK | REVISIONS | APPR. | DATE |
|------|-----------|-------|------|
|      |           |       |      |
|      |           |       |      |



SCALE: HORIZ 1" = 40'  
VERT 1" = 8'

### CONSTRUCTION NOTES:

- CONST XX' HMA OVER XX' AB (CLASS 2)
- CONST 8" PCC CURB & GUTTER PER COUNTY STD NO. 115
- CONST 8" PCC CURB ONLY TYPE A1 PER CALTRANS STD PLAN NO. A87A
- CONST 4" PCC SIDEWALK PER COUNTY STD NO. 109 (WIDTH PER PLAN)
- CONST DWY APPROACH PER COUNTY STD NO. 128
- CONST CURB RAMP PER COUNTY STD NO. 110
- CONST CROSS GUTTER PER COUNTY STD NO. 119
- CONST CONC BARRIER (TYPE 26 MOD) PER DET 6, SHT C-12
- CONST CONC BARRIER (TYPE 26 MOD) END TRANSITION PER DET 6, SHT C-12

### LEGEND:

- NEW ASPHALT CONCRETE
- PCC PAVEMENT

ALL DIMENSIONS ARE IN FEET  
UNLESS OTHERWISE SHOWN



| MARK | CHANGES    | RESIDENT ENGINEER | DATE |
|------|------------|-------------------|------|
|      | NO CHANGES |                   |      |

### FIELD CHANGES

PLANS PREPARED BY:  
**AECOM**  
995 W. TOWN AND COUNTRY ROAD  
ORANGE, CA 92668-4713  
(714) 567-2501

JAMES FABER R.C.E. 45668 EXPIRES 12-31-12

COUNTY OF SAN BERNARDINO  
DEPARTMENT OF PUBLIC WORKS

RECOMMENDED / APPROVED BY

XXXX XXXX P.E. DEPUTY DIRECTOR DATE

XXXX XXXX P.E. DIRECTOR OF PUBLIC WORKS DATE

### SHADOW MOUNTAIN ROAD

LAYOUT PLAN  
STA 143+00 "A" LINE TO 148+29.24 "A" LINE

| J.L. REF. | W.O. NO.  | DRAWING NO. | SHEET NO. | TOTAL SHEETS |
|-----------|-----------|-------------|-----------|--------------|
| JL XXXX   | XX XXXXXX | L-07        | 19        | X            |

| APPR.     | DATE |
|-----------|------|
|           |      |
| REVISIONS |      |
|           |      |
|           |      |
|           |      |
| MARK      |      |

| APPR.     | DATE |
|-----------|------|
|           |      |
| REVISIONS |      |
|           |      |
|           |      |
|           |      |
| MARK      |      |

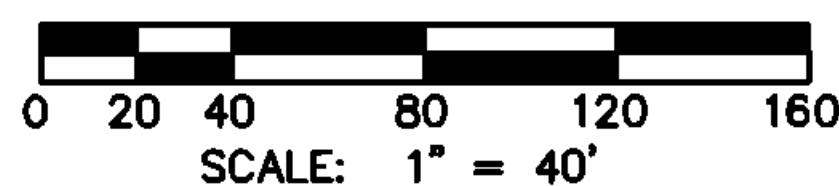
| No. | R         | Δ        | L       | T       |
|-----|-----------|----------|---------|---------|
| 01  | 12664.00' | 1°45'46" | 389.63' | 194.83' |
| 02  | 12692.00' | 0°35'55" | 132.58' | 66.29'  |
| 03  | 12662.50' | 1°45'46" | 389.58' | 194.81' |
| 04  | 12693.50' | 1°45'46" | 390.54' | 195.28' |

# CONSTRUCTION NOTES:

- ① CONST XX' HMA OVER XX' AB (CLASS 2)
- ② CONST XX' AB ONLY (CLASS 2)
- ③ CONST METAL BEAM GUARD RAILING TRANSITION RAILING (TYPE WB) PER CALTRANS STD PLAN NO. A77J4
- ④ CONST FLARED END METAL BEAM GUARD RAILING TERMINAL SYSTEM PER DETAIL ON SHT C-13
- ⑤ CONST DWY APPROACH PER COUNTY STD NO. 128A
- ⑥ CONST ROCK SLOPE PROTECTION PER DET 7, SHT C-12
- ⑦ SAWCUT EXISTING PAVEMENT
- ⑧ XX' MIN COLD PLANE EXIST PAVEMENT AND OVERLAY WITH XX' MIN HMA FOR SMOOTH TRANSITION

## LEGEND:

- NEW ASPHALT CONCRETE
- PCC PAVEMENT
- COLD PLANE & OVERLAY
- NEW AB



| MARK | CHANGES    | RESIDENT ENGINEER | DATE |
|------|------------|-------------------|------|
|      | NO CHANGES |                   |      |

## FIELD CHANGES

PLANS PREPARED BY:  
**AECOM**  
 999 W. TOWN AND COUNTRY ROAD  
 ORANGE, CA 92668-4713  
 (714) 567-2501

JAMES FABER R.C.E. 45668 EXPIRES 12-31-12

X  
DATE

COUNTY OF SAN BERNARDINO  
 DEPARTMENT OF PUBLIC WORKS

RECOMMENDED / APPROVED BY

XXXX XXXX P.E. DEPUTY DIRECTOR DATE  
 XXXX XXXX P.E. DIRECTOR OF PUBLIC WORKS DATE

SHADOW MOUNTAIN ROAD  
 LAYOUT PLAN AND PROFILE  
 STA 187+65.23 "N" LINE TO 198+00 "N" LINE,  
 "DWY 01 AND "DWY 02"

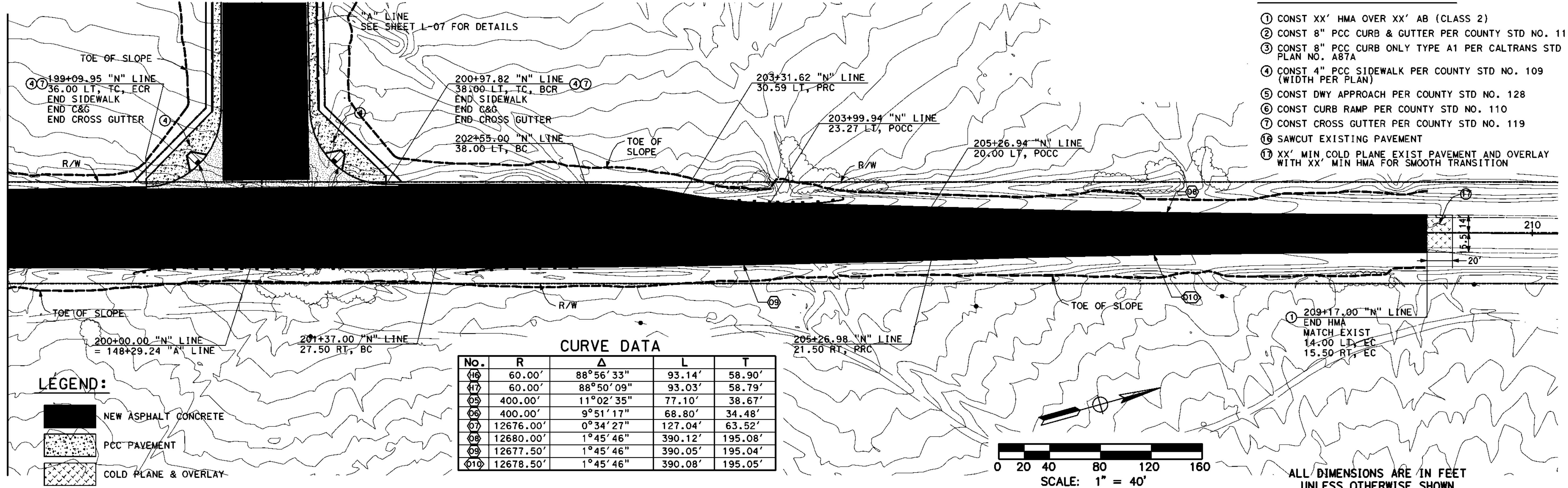
| J.L. REF. | W.O. NO.  | DRAWING NO. | SHEET NO. | TOTAL SHEETS |
|-----------|-----------|-------------|-----------|--------------|
| JL XXXX   | XX XXXXXX | L-08        | 20        | X            |

80% DRAFT SUBMITTAL - NOT FOR CONSTRUCTION

| MARK | REVISIONS | APPR. | DATE |
|------|-----------|-------|------|
|      |           |       |      |

| MARK | REVISIONS | APPR. | DATE |
|------|-----------|-------|------|
|      |           |       |      |

SEE SHEET L-08  
MATCH LINE STA 198+00 "N" LINE

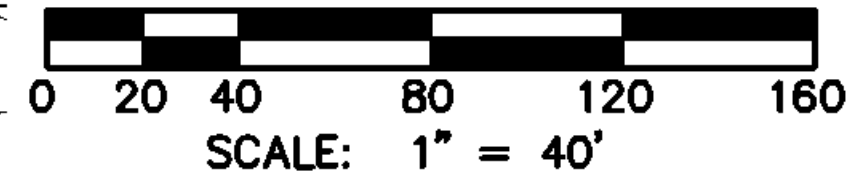


#### LEGEND:

- NEW ASPHALT CONCRETE
- PCC PAVEMENT
- COLD PLANE & OVERLAY

#### CURVE DATA

| No. | R         | Δ         | L       | T       |
|-----|-----------|-----------|---------|---------|
| 46  | 60.00'    | 88°56'33" | 93.14'  | 58.90'  |
| 47  | 60.00'    | 88°50'09" | 93.03'  | 58.79'  |
| 05  | 400.00'   | 11°02'35" | 77.10'  | 38.67'  |
| 06  | 400.00'   | 9°51'17"  | 68.80'  | 34.48'  |
| 07  | 12676.00' | 0°34'27"  | 127.04' | 63.52'  |
| 08  | 12680.00' | 1°45'46"  | 390.12' | 195.08' |
| 09  | 12677.50' | 1°45'46"  | 390.05' | 195.04' |
| 10  | 12678.50' | 1°45'46"  | 390.08' | 195.05' |



ALL DIMENSIONS ARE IN FEET  
UNLESS OTHERWISE SHOWN

SCALE: HORIZ 1" = 40'  
VERT 1" = 8'

#### CONSTRUCTION NOTES:

- CONST XX' HMA OVER XX' AB (CLASS 2)
- CONST 8" PCC CURB & GUTTER PER COUNTY STD NO. 115
- CONST 8" PCC CURB ONLY TYPE A1 PER CALTRANS STD PLAN NO. A87A
- CONST 4" PCC SIDEWALK PER COUNTY STD NO. 109 (WIDTH PER PLAN)
- CONST DWY APPROACH PER COUNTY STD NO. 128
- CONST CURB RAMP PER COUNTY STD NO. 110
- CONST CROSS GUTTER PER COUNTY STD NO. 119
- SAWCUT EXISTING PAVEMENT
- XX' MIN COLD PLANE EXIST PAVEMENT AND OVERLAY WITH XX' MIN HMA FOR SMOOTH TRANSITION



| MARK | CHANGES    | RESIDENT ENGINEER | DATE |
|------|------------|-------------------|------|
|      | NO CHANGES |                   |      |

#### FIELD CHANGES

PLANS PREPARED BY:  
**AECOM**  
995 W. TOWN AND COUNTRY ROAD  
ORANGE, CA 92668-4713  
(714) 567-2501

JAMES FABER R.C.E. 45668 EXPIRES 12-31-12

COUNTY OF SAN BERNARDINO  
DEPARTMENT OF PUBLIC WORKS

RECOMMENDED / APPROVED BY

XXXX XXXX P.E. DEPUTY DIRECTOR

XXXX XXXX P.E. DIRECTOR OF PUBLIC WORKS

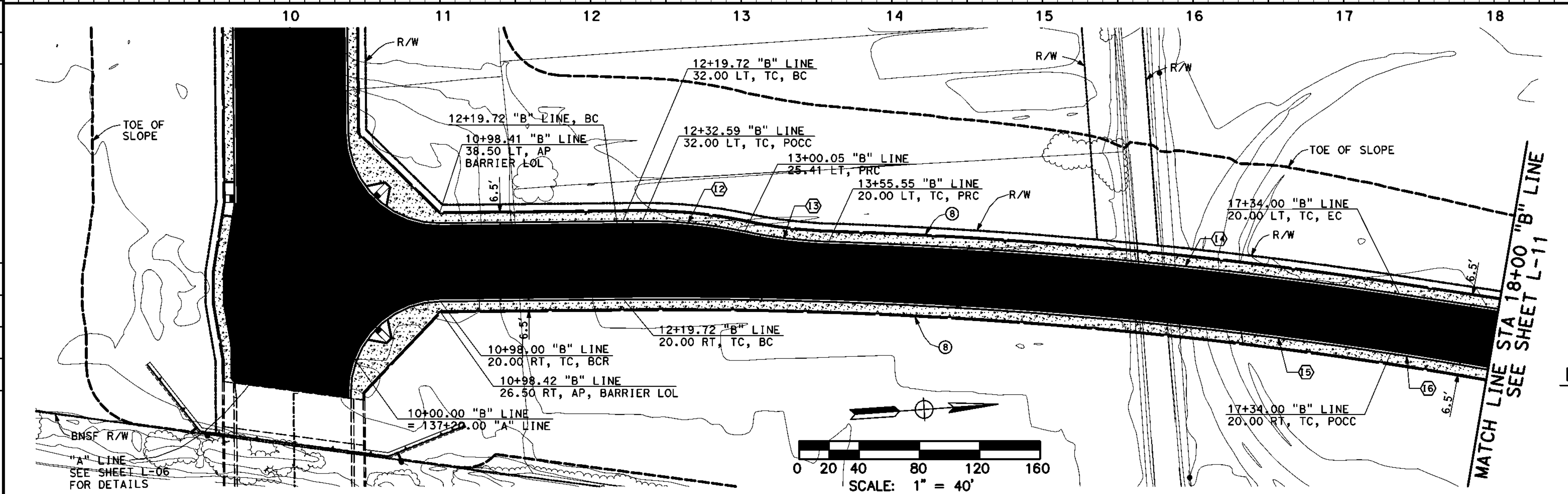
SHADOW MOUNTAIN ROAD  
LAYOUT PLAN  
STA 198+00 "N" LINE TO 209+17 "N" LINE

| J.L. REF. | W.O. NO.  | DRAWING NO. | SHEET NO. | TOTAL SHEETS |
|-----------|-----------|-------------|-----------|--------------|
| JL XXXX   | XX XXXXXX | L-09        | 21        | X            |

| MARK | REVISIONS | DATE |
|------|-----------|------|
|      |           |      |
|      |           |      |

| MARK | REVISIONS | DATE |
|------|-----------|------|
|      |           |      |
|      |           |      |

SCALE: HORIZ. 1" = 40'  
VERT. 1" = 8'



### CONSTRUCTION NOTES:

- CONST XX' HMA OVER XX' AB (CLASS 2)
- CONST 8" PCC CURB & GUTTER PER COUNTY STD NO. 115
- CONST 8" PCC CURB ONLY TYPE A1 PER CALTRANS STD PLAN NO. A87A
- CONST 4" PCC SIDEWALK PER COUNTY STD NO. 109 (WIDTH PER PLAN)
- CONST DWY APPROACH PER COUNTY STD NO. 128
- CONST CURB RAMP PER COUNTY STD NO. 110
- CONST CROSS GUTTER PER COUNTY STD NO. 119
- CONST CONC BARRIER (TYPE 26 MOD) PER DET 6, SHT C-12
- CONST CONC BARRIER (TYPE 26 MOD) END TRANSITION PER DET 6, SHT C-12
- CONST 8" HMA DIKE PER COUNTY STD NO. 117
- CONST XX' AB ONLY (CLASS 2)
- CONST METAL BEAM GUARD RAILING TRANSITION RAILING (TYPE WB) PER CALTRANS STD PLAN NO. A77J4
- CONST FLARED END METAL BEAM GUARD RAILING TERMINAL SYSTEM PER DETAIL ON SHT C-13

### CURVE DATA

| NO. | R        | Δ         | L        | T       |
|-----|----------|-----------|----------|---------|
| 017 | 60.00'   | 90°00'00" | 94.25'   | 60.00'  |
| 018 | 60.00'   | 90°00'00" | 94.25'   | 60.00'  |
| 01  | 3200.00' | 18°38'43" | 1041.35' | 525.32' |
| 01  | 3232.00' | 0°13'50"  | 13.01'   | 6.50'   |
| 02  | 320.00'  | 12°16'02" | 68.51'   | 34.39'  |
| 03  | 320.00'  | 10°03'56" | 56.22'   | 28.18'  |
| 04  | 3220.00' | 6°46'35"  | 380.83'  | 190.64' |
| 05  | 3180.00' | 9°12'30"  | 511.07'  | 256.09' |
| 06  | 2530.00' | 8°07'14"  | 358.58'  | 179.59' |

### LEGEND:

- NEW ASPHALT CONCRETE
- PCC PAVEMENT

ALL DIMENSIONS ARE IN FEET  
UNLESS OTHERWISE SHOWN



| MARK | CHANGES    | RESIDENT ENGINEER | DATE |
|------|------------|-------------------|------|
|      | NO CHANGES |                   |      |

### FIELD CHANGES

PLANS PREPARED BY:  
**AECOM**  
995 W. TOWN AND COUNTRY ROAD  
ORANGE, CA 92668-4713  
(714) 567-2501

JAMES FABER R.C.E. 45668 EXPIRES 12-31-12

COUNTY OF SAN BERNARDINO  
DEPARTMENT OF PUBLIC WORKS

RECOMMENDED / APPROVED BY

XXXX XXXX P.E. DEPUTY DIRECTOR DATE  
XXXX XXXX P.E. DIRECTOR OF PUBLIC WORKS DATE

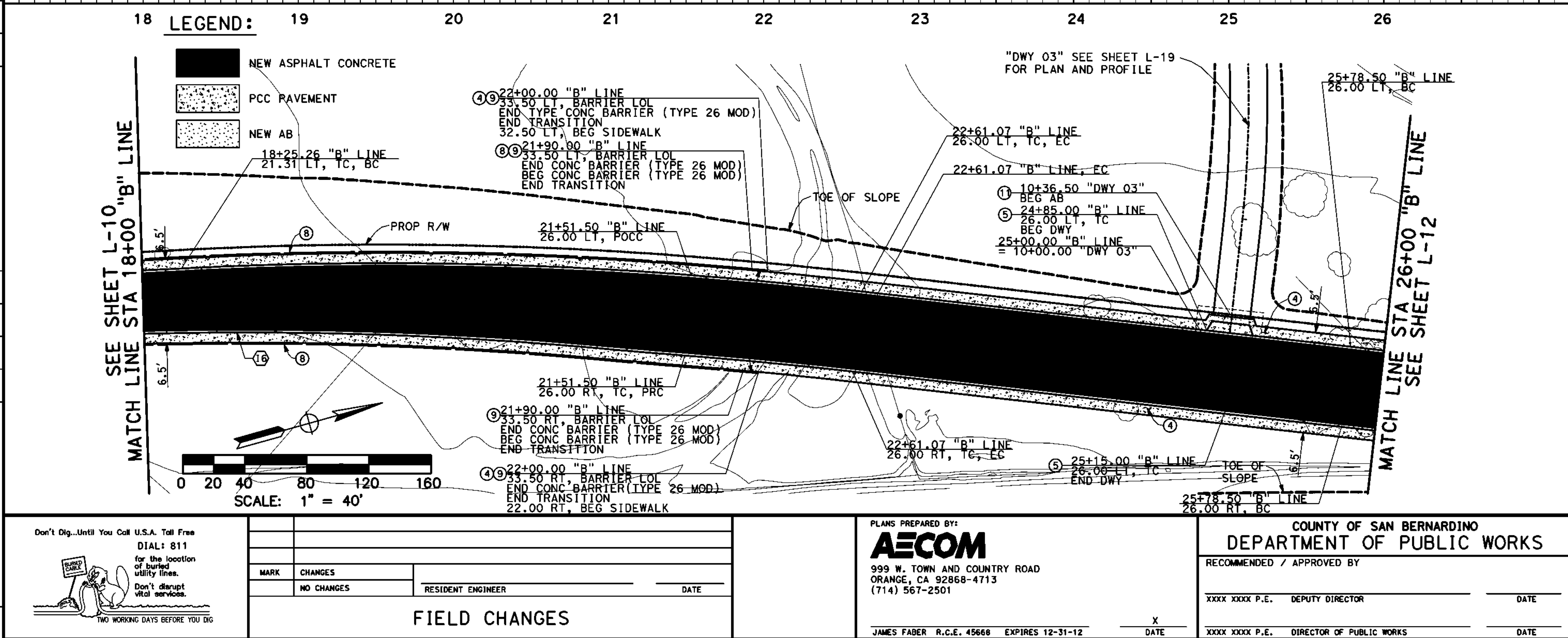
### SHADOW MOUNTAIN ROAD

LAYOUT PLAN AND PROFILE  
STA 10+00 "B" LINE TO 18+00 "B" LINE

| J.L. REF. | W.O. NO.  | DRAWING NO. | SHEET NO. | TOTAL SHEETS |
|-----------|-----------|-------------|-----------|--------------|
| JL XXXX   | XX XXXXXX | L-10        | 22        | X            |

| MARK | REVISIONS | DATE |
|------|-----------|------|
|      |           |      |
|      |           |      |

| MARK | REVISIONS | DATE |
|------|-----------|------|
|      |           |      |
|      |           |      |



# CONSTRUCTION NOTES:

- CONST XX' HMA OVER XX' AB (CLASS 2)
- CONST 8" PCC CURB & GUTTER PER COUNTY STD NO. 115
- CONST 8" PCC CURB ONLY TYPE A1 PER CALTRANS STD PLAN NO. A87A
- CONST 4" PCC SIDEWALK PER COUNTY STD NO. 109 (WIDTH PER PLAN)
- CONST DWY APPROACH PER COUNTY STD NO. 128
- CONST CURB RAMP PER COUNTY STD NO. 110
- CONST CROSS GUTTER PER COUNTY STD NO. 119
- CONST CONC BARRIER (TYPE 26 MOD) PER DET 6, SHT C-12
- CONST CONC BARRIER (TYPE 26 MOD) END TRANSITION PER DET 6, SHT C-12
- CONST 8" HMA DIKE PER COUNTY STD NO. 117
- CONST XX" AB ONLY (CLASS 2)

## CURVE DATA

| No.  | R        | Δ         | L        | T       |
|------|----------|-----------|----------|---------|
| (1)  | 3200.00' | 18°38'43" | 1041.35' | 525.32' |
| (6)  | 2530.00' | 8°07'14"  | 358.58'  | 179.59' |
| (7)  | 2520.00' | 7°28'30"  | 328.77'  | 164.62' |
| (8)  | 3226.00' | 1°57'43"  | 110.46'  | 55.24'  |
| (9)  | 6359.00' | 1°45'46"  | 195.65'  | 97.83'  |
| (10) | 4970.00' | 0°38'47"  | 56.06'   | 28.03'  |
| (11) | 3174.00' | 1°57'43"  | 108.68'  | 54.35'  |
| (12) | 6359.00' | 1°45'46"  | 195.65'  | 97.83'  |
| (J)  | 800.00'  | 18°48'37" | 262.64'  | 132.51' |

ALL DIMENSIONS ARE IN FEET  
UNLESS OTHERWISE SHOWN

SHADOW MOUNTAIN ROAD  
LAYOUT PLAN AND PROFILE  
STA 18+00 "B" LINE TO 26+00 "B" LINE  
AND "DWY 03"

| J.L. REF. | W.O. NO.  | DRAWING NO. | SHEET NO. | TOTAL SHEETS |
|-----------|-----------|-------------|-----------|--------------|
| JL XXXX   | XX XXXXXX | L-11        | 23        | X            |

PLANS PREPARED BY:  
**AECOM**  
999 W. TOWN AND COUNTRY ROAD  
ORANGE, CA 92668-4713  
(714) 567-2501

COUNTY OF SAN BERNARDINO  
DEPARTMENT OF PUBLIC WORKS

RECOMMENDED / APPROVED BY

|                |                          |      |
|----------------|--------------------------|------|
| XXXX XXXX P.E. | DEPUTY DIRECTOR          | DATE |
| XXXX XXXX P.E. | DIRECTOR OF PUBLIC WORKS | DATE |

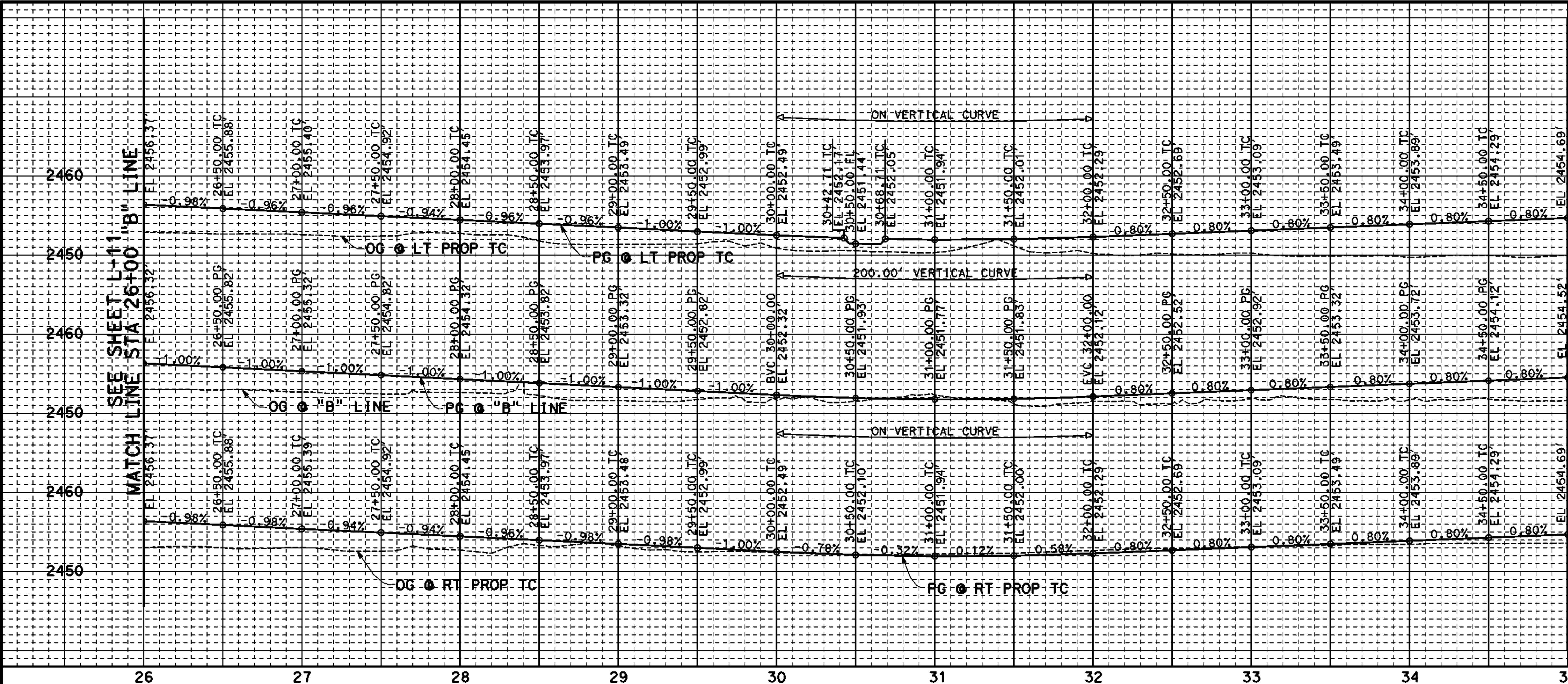
| MARK | CHANGES    | DATE |
|------|------------|------|
|      | NO CHANGES |      |

FIELD CHANGES

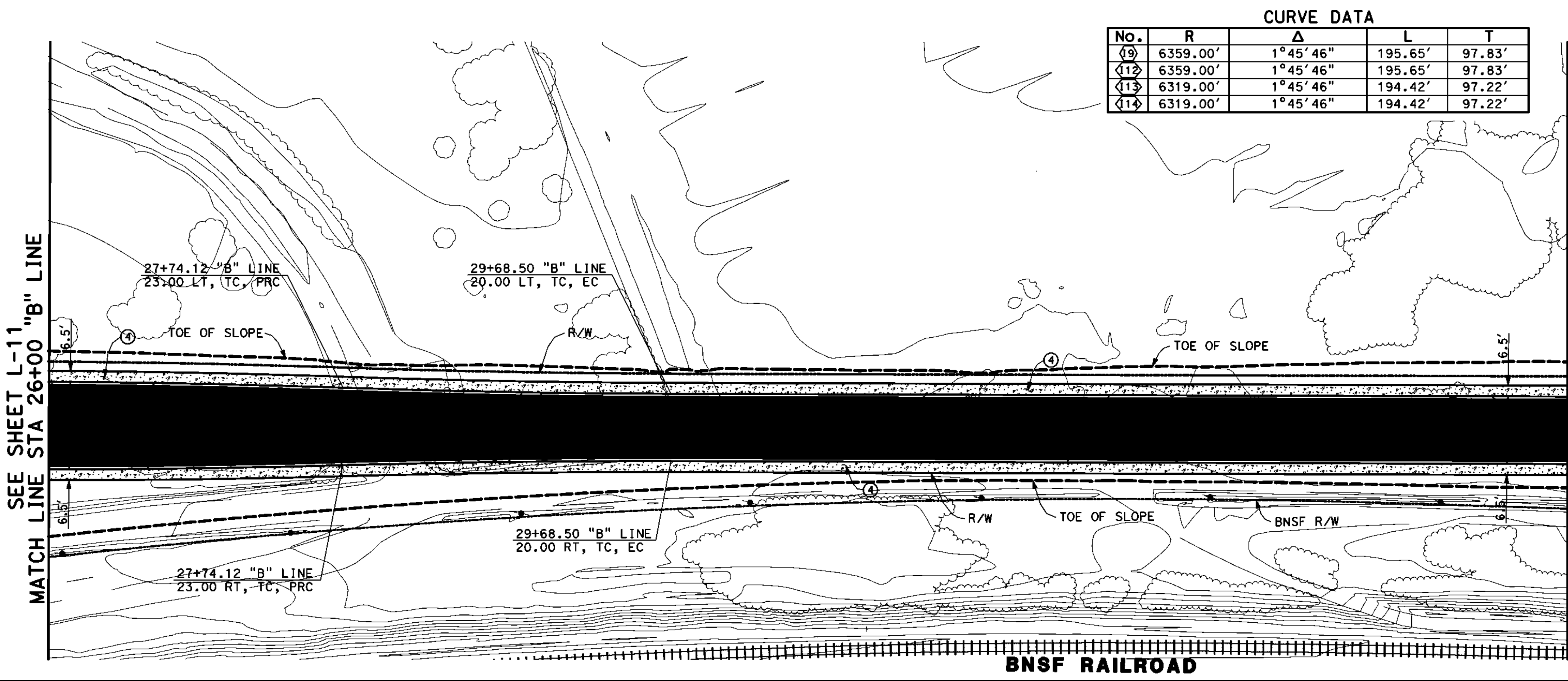


| MARK | REVISIONS | DATE |
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|      |           |      |
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| MARK | REVISIONS | DATE |
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|      |           |      |



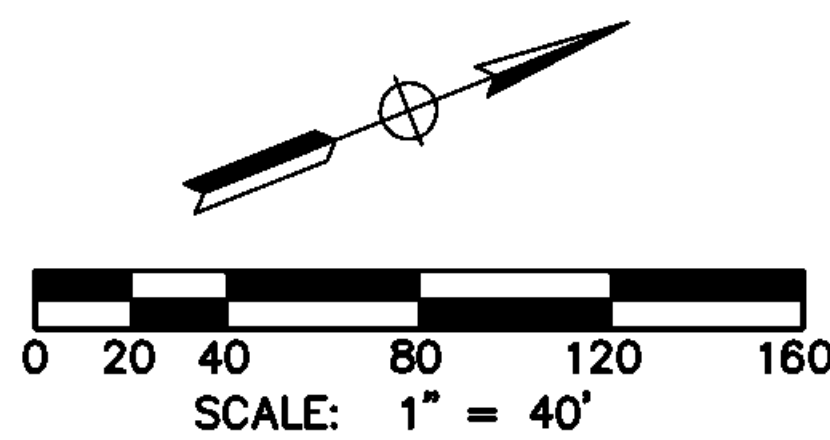
SCALE: HORIZ 1" = 40'  
VERT 1" = 8'



| CURVE DATA |          |          |         |        |
|------------|----------|----------|---------|--------|
| No.        | R        | Δ        | L       | T      |
| (10)       | 6359.00' | 1°45'46" | 195.65' | 97.83' |
| (11)       | 6359.00' | 1°45'46" | 195.65' | 97.83' |
| (12)       | 6319.00' | 1°45'46" | 194.42' | 97.22' |
| (13)       | 6319.00' | 1°45'46" | 194.42' | 97.22' |

- CONSTRUCTION NOTES:**
- 1 CONST XX' HMA OVER XX' AB (CLASS 2)
  - 2 CONST 8" PCC CURB & GUTTER PER COUNTY STD NO. 115
  - 3 CONST 8" PCC CURB ONLY TYPE A1 PER CALTRANS STD PLAN NO. A87A
  - 4 CONST 4" PCC SIDEWALK PER COUNTY STD NO. 109 (WIDTH PER PLAN)
  - 5 CONST DWY APPROACH PER COUNTY STD NO. 128
  - 6 CONST CURB RAMP PER COUNTY STD NO. 110
  - 7 CONST CROSS GUTTER PER COUNTY STD NO. 119
  - 8 CONST CONC BARRIER (TYPE 26 MOD) PER DET 6, SHT C-1
  - 9 CONST CONC BARRIER (TYPE 26 MOD) END TRANSITION PER DET 6, SHT C-12
  - 10 CONST 8" HMA DIKE PER COUNTY STD NO. 117
  - 11 CONST XX' AB ONLY (CLASS 2)

- LEGEND:**
- NEW ASPHALT CONCRETE
  - PCC PAVEMENT
  - NEW AB



ALL DIMENSIONS ARE IN FEET  
UNLESS OTHERWISE SHOWN



| MARK | CHANGES    | RESIDENT ENGINEER | DATE |
|------|------------|-------------------|------|
|      | NO CHANGES |                   |      |

FIELD CHANGES

PLANS PREPARED BY:  
**AECOM**  
995 W. TOWN AND COUNTRY ROAD  
ORANGE, CA 92668-4713  
(714) 567-2501

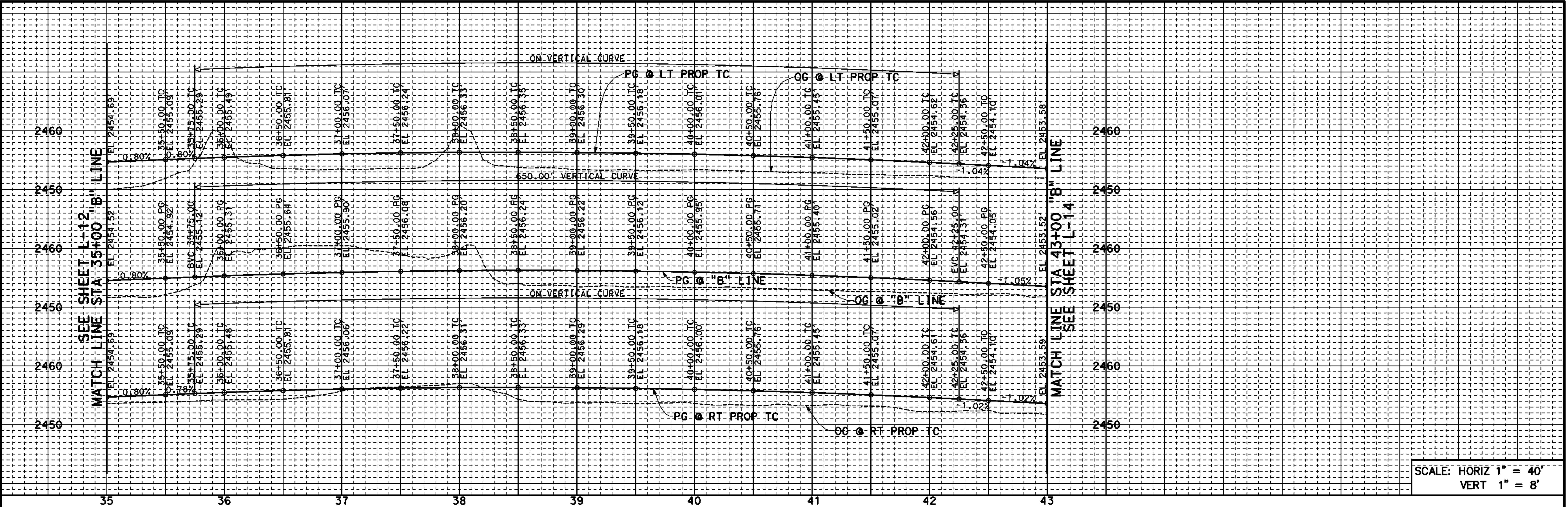
JAMES FABER R.C.E. 45668 EXPIRES 12-31-12

COUNTY OF SAN BERNARDINO  
DEPARTMENT OF PUBLIC WORKS  
RECOMMENDED / APPROVED BY  
XXXX XXXX P.E. DEPUTY DIRECTOR DATE  
XXXX XXXX P.E. DIRECTOR OF PUBLIC WORKS DATE

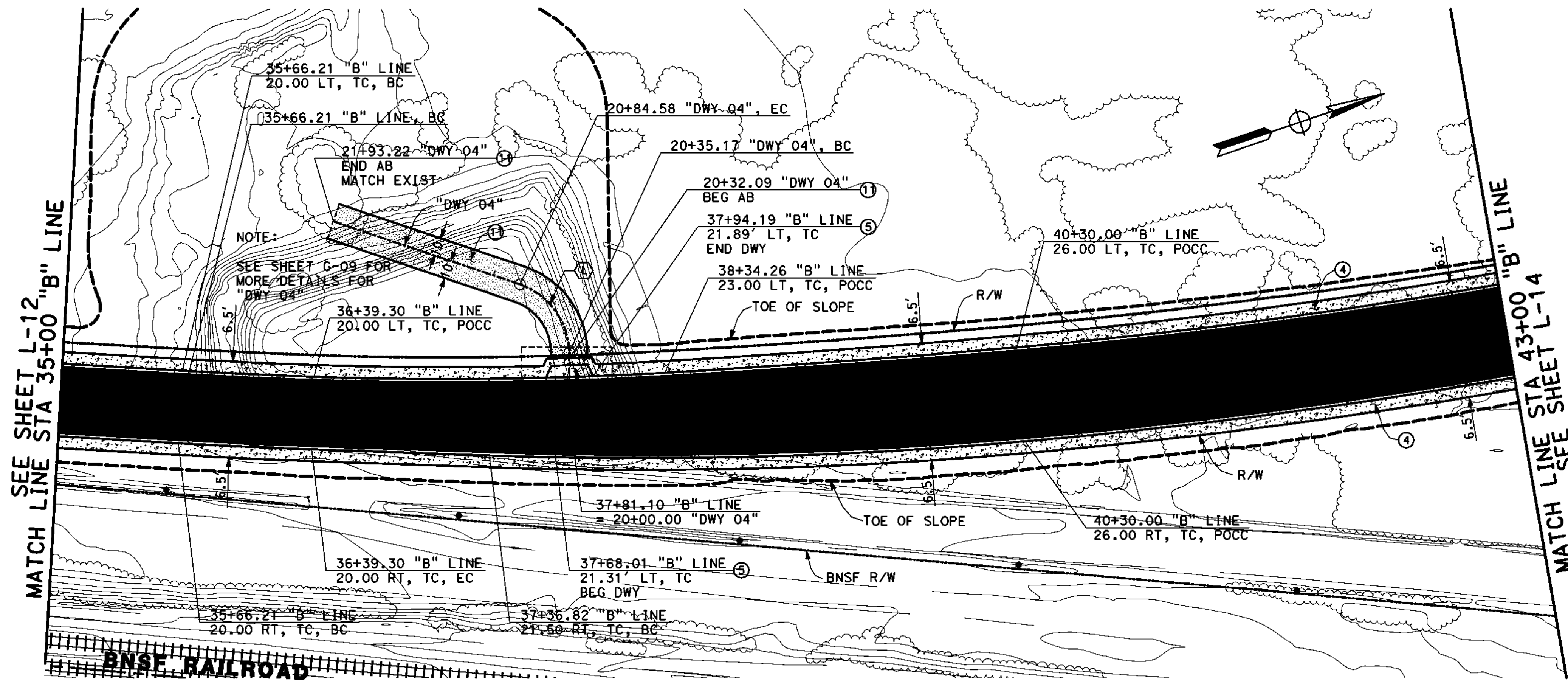
| SHADOW MOUNTAIN ROAD                 |           |             |           |              |
|--------------------------------------|-----------|-------------|-----------|--------------|
| LAYOUT PLAN                          |           |             |           |              |
| STA 26+00 "B" LINE TO 35+00 "B" LINE |           |             |           |              |
| J.L. REF.                            | W.O. NO.  | DRAWING NO. | SHEET NO. | TOTAL SHEETS |
| JL XXXX                              | XX XXXXXX | L-12        | 24        | X            |

| MARK | REVISIONS | APPR. | DATE |
|------|-----------|-------|------|
|      |           |       |      |
|      |           |       |      |

| MARK | REVISIONS | APPR. | DATE |
|------|-----------|-------|------|
|      |           |       |      |
|      |           |       |      |



SCALE: HORIZ 1" = 40'  
VERT 1" = 8'



CONSTRUCTION NOTES:

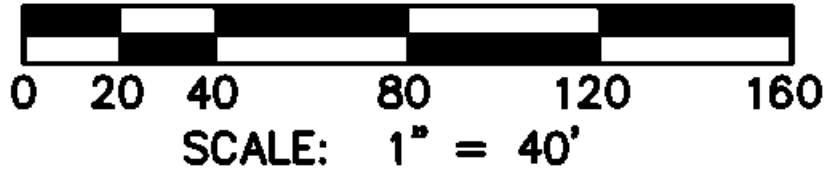
- CONST XX' HMA OVER XX' AB (CLASS 2)
- CONST 8" PCC CURB & GUTTER PER COUNTY STD NO. 115
- CONST 8" PCC CURB ONLY TYPE A1 PER CALTRANS STD PLAN NO. A87A
- CONST 4" PCC SIDEWALK PER COUNTY STD NO. 109 (WIDTH PER PLAN)
- CONST DWY APPROACH PER COUNTY STD NO. 128
- CONST CURB RAMP PER COUNTY STD NO. 110
- CONST CROSS GUTTER PER COUNTY STD NO. 119
- CONST CONC BARRIER (TYPE 26 MOD) PER DET 6, SHT C-12
- CONST CONC BARRIER (TYPE 26 MOD) END TRANSITION PER DET 6, SHT C-12
- CONST 8" HMA DIKE PER COUNTY STD NO. 117
- CONST XX" AB ONLY (CLASS 2)

CURVE DATA

| No. | R        | Δ         | L        | T       |
|-----|----------|-----------|----------|---------|
| (K) | 3200.00' | 22°29'47" | 1256.44' | 636.42' |
| (K) | 3180.00' | 1°18'31"  | 72.63'   | 36.32'  |
| (K) | 2108.62' | 5°15'49"  | 193.71'  | 96.92'  |
| (K) | 6418.79' | 1°44'02"  | 194.24'  | 97.13'  |
| (K) | 3174.00' | 6°35'17"  | 364.96'  | 182.68' |
| (K) | 3220.00' | 1°18'31"  | 73.55'   | 36.78'  |
| (K) | 2420.00' | 6°59'44"  | 295.47'  | 147.92' |
| (K) | 3226.00' | 5°30'42"  | 310.34'  | 155.29' |
| (L) | 40.00'   | 70°46'38" | 49.41'   | 28.41'  |

LEGEND:

- NEW ASPHALT CONCRETE
- PCC PAVEMENT



ALL DIMENSIONS ARE IN FEET  
UNLESS OTHERWISE SHOWN



| MARK | CHANGES    | RESIDENT ENGINEER | DATE |
|------|------------|-------------------|------|
|      | NO CHANGES |                   |      |

FIELD CHANGES

PLANS PREPARED BY:  
**AECOM**  
995 W. TOWN AND COUNTRY ROAD  
ORANGE, CA 92668-4713  
(714) 567-2501

JAMES FABER R.C.E. 45668 EXPIRES 12-31-12

COUNTY OF SAN BERNARDINO  
DEPARTMENT OF PUBLIC WORKS

RECOMMENDED / APPROVED BY

XXXX XXXX P.E. DEPUTY DIRECTOR DATE

XXXX XXXX P.E. DIRECTOR OF PUBLIC WORKS DATE

SHADOW MOUNTAIN ROAD  
LAYOUT PLAN AND PROFILE  
STA 35+00 "B" LINE TO 43+00 "B" LINE  
AND "DWY 04"

| J.L. REF. | W.O. NO.  | DRAWING NO. | SHEET NO. | TOTAL SHEETS |
|-----------|-----------|-------------|-----------|--------------|
| JL XXXX   | XX XXXXXX | L-13        | 25        | X            |

CONSTRUCTION NOTES:

- 1 CONST XX' HMA OVER XX' AB (CLASS 2)
- 2 CONST 8" PCC CURB & GUTTER PER COUNTY STD NO. 115
- 3 CONST 8" PCC CURB ONLY TYPE A1 PER CALTRANS STD PLAN NO. A87A
- 4 CONST 4" PCC SIDEWALK PER COUNTY STD NO. 109 (WIDTH PER PLAN)
- 5 CONST DWY APPROACH PER COUNTY STD NO. 128
- 6 CONST CURB RAMP PER COUNTY STD NO. 110
- 7 CONST CROSS GUTTER PER COUNTY STD NO. 119
- 8 CONST CONC BARRIER (TYPE 26 MOD) PER DET 6, SHT C-12
- 9 CONST CONC BARRIER (TYPE 26 MOD) END TRANSITION PER DET 6, SHT C-12
- 10 CONST 8" HMA DIKE PER COUNTY STD NO. 117
- 11 CONST XX" AB ONLY (CLASS 2)
- 12 CONST METAL BEAM GUARD RAILING TRANSITION RAILING (TYPE WB) PER CALTRANS STD PLAN NO. A77J4
- 13 CONST FLARED END METAL BEAM GUARD RAILING TERMINAL SYSTEM PER DETAIL ON SHT C-13
- 14 CONST DWY APPROACH PER COUNTY STD NO. 128A
- 15 CONST ROCK SLOPE PROTECTION PER DET 7, SHT C-12
- 16 SAWCUT EXISTING PAVEMENT
- 17 XX' MIN COLD PLANE EXIST PAVEMENT AND OVERLAY WITH XX' MIN HMA FOR SMOOTH TRANSITION
- 18 CONST TRANSITION CURB PER DET 3 & 5, SHT C-10 & C-11
- 19 CONST XX' HMA OVER XX' AB (CLASS 2)
- 20 CONST TRANSITION CURB & GUTTER PER DET 8, SHT C-12

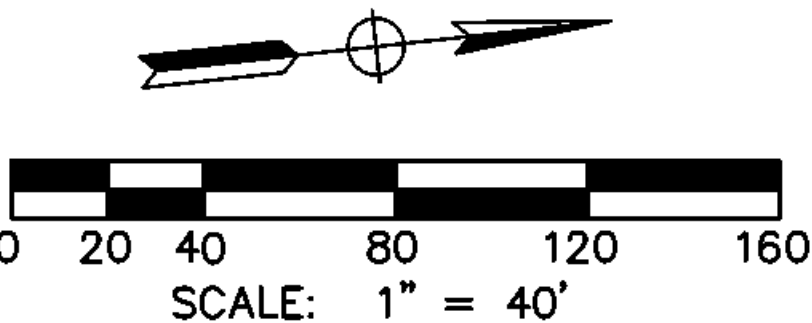
SCALE: HORIZ 1" = 40'  
VERT 1" = 8'

LEGEND:

- NEW ASPHALT CONCRETE
- PCC PAVEMENT
- COLD PLANE & OVERLAY
- NEW AB

CURVE DATA

| No.   | R        | Δ          | L        | T       |
|-------|----------|------------|----------|---------|
| (K)   | 3200.00' | 22°29'47"  | 1256.44' | 636.42' |
| (K4)  | 3174.00' | 6°35'17"   | 364.96'  | 182.68' |
| (K7)  | 3226.00' | 5°30'42"   | 310.34'  | 155.29' |
| (K9)  | 2480.22' | 7°37'19"   | 329.94'  | 165.21' |
| (K9)  | 35.00'   | 72°36'28"  | 44.35'   | 25.71'  |
| (K10) | 35.00'   | 116°29'00" | 71.16'   | 56.54'  |
| (K11) | 2639.21' | 8°13'51"   | 379.13'  | 189.89' |
| (M)   | 250.00'  | 66°05'48"  | 288.40'  | 162.65' |
| (N)   | 250.00'  | 67°09'01"  | 293.00'  | 165.94' |



ALL DIMENSIONS ARE IN FEET  
UNLESS OTHERWISE SHOWN

Don't Dig...Until You Call U.S.A. Toll Free

DIAL: 811  
for the location  
of buried  
utility lines.  
Don't disrupt  
vital services.

NO WORKING DAYS BEFORE YOU DIG

| MARK | CHANGES    | RESIDENT ENGINEER | DATE |
|------|------------|-------------------|------|
|      | NO CHANGES |                   |      |

FIELD CHANGES

PLANS PREPARED BY:  
**AECOM**

999 W. TOWN AND COUNTRY ROAD  
ORANGE, CA 92668-4713  
(714) 567-2501

JAMES FABER R.C.E. 45668 EXPIRES 12-31-12

COUNTY OF SAN BERNARDINO  
DEPARTMENT OF PUBLIC WORKS

RECOMMENDED / APPROVED BY

XXXX XXXX P.E. DEPUTY DIRECTOR DATE

XXXX XXXX P.E. DIRECTOR OF PUBLIC WORKS DATE

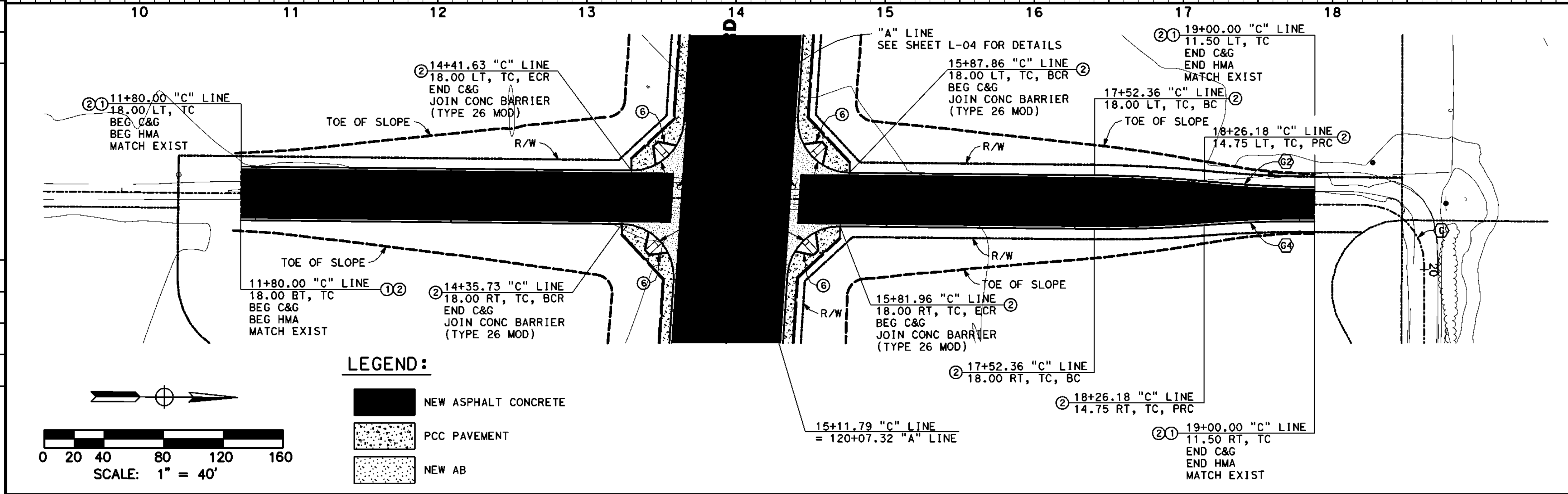
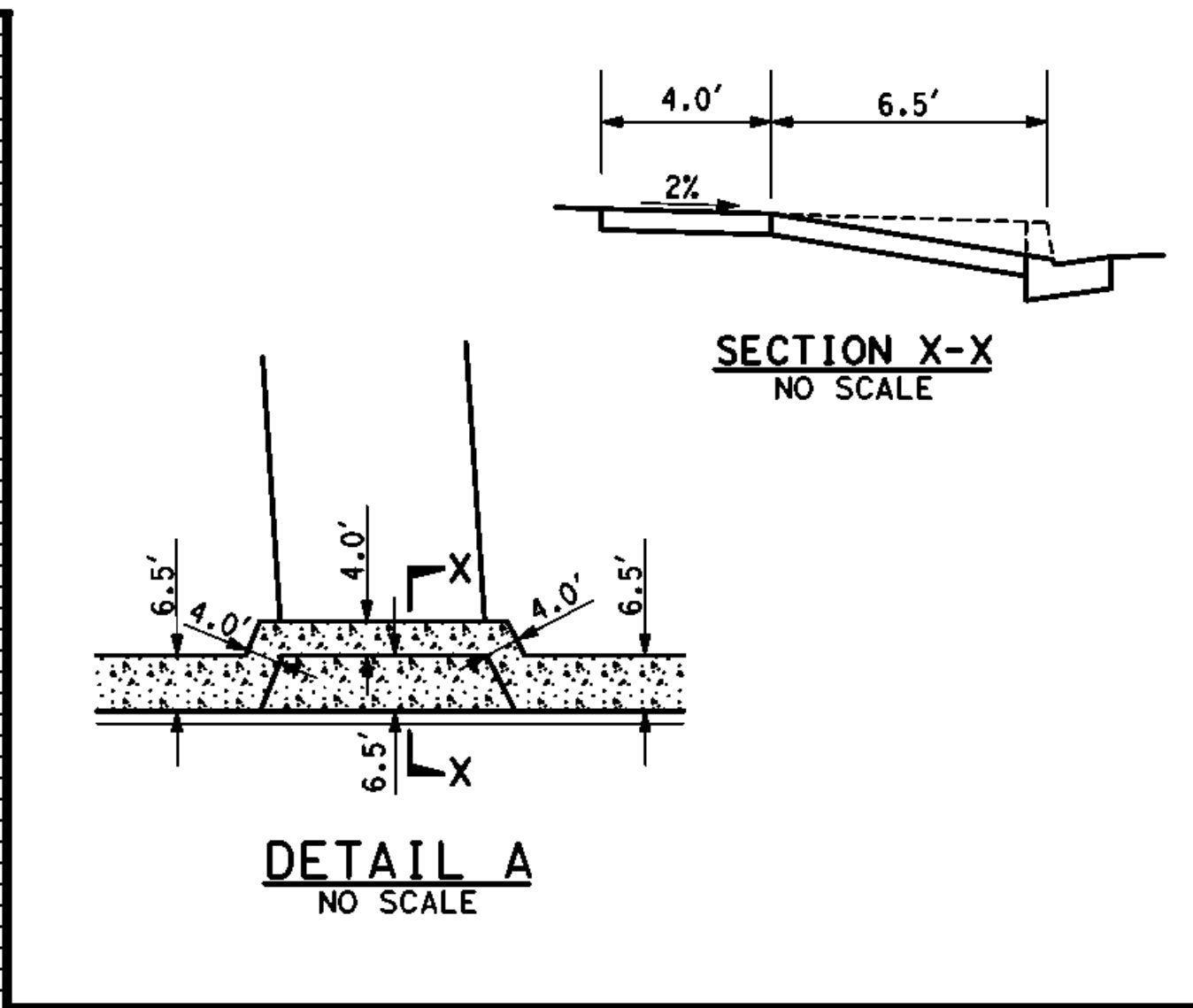
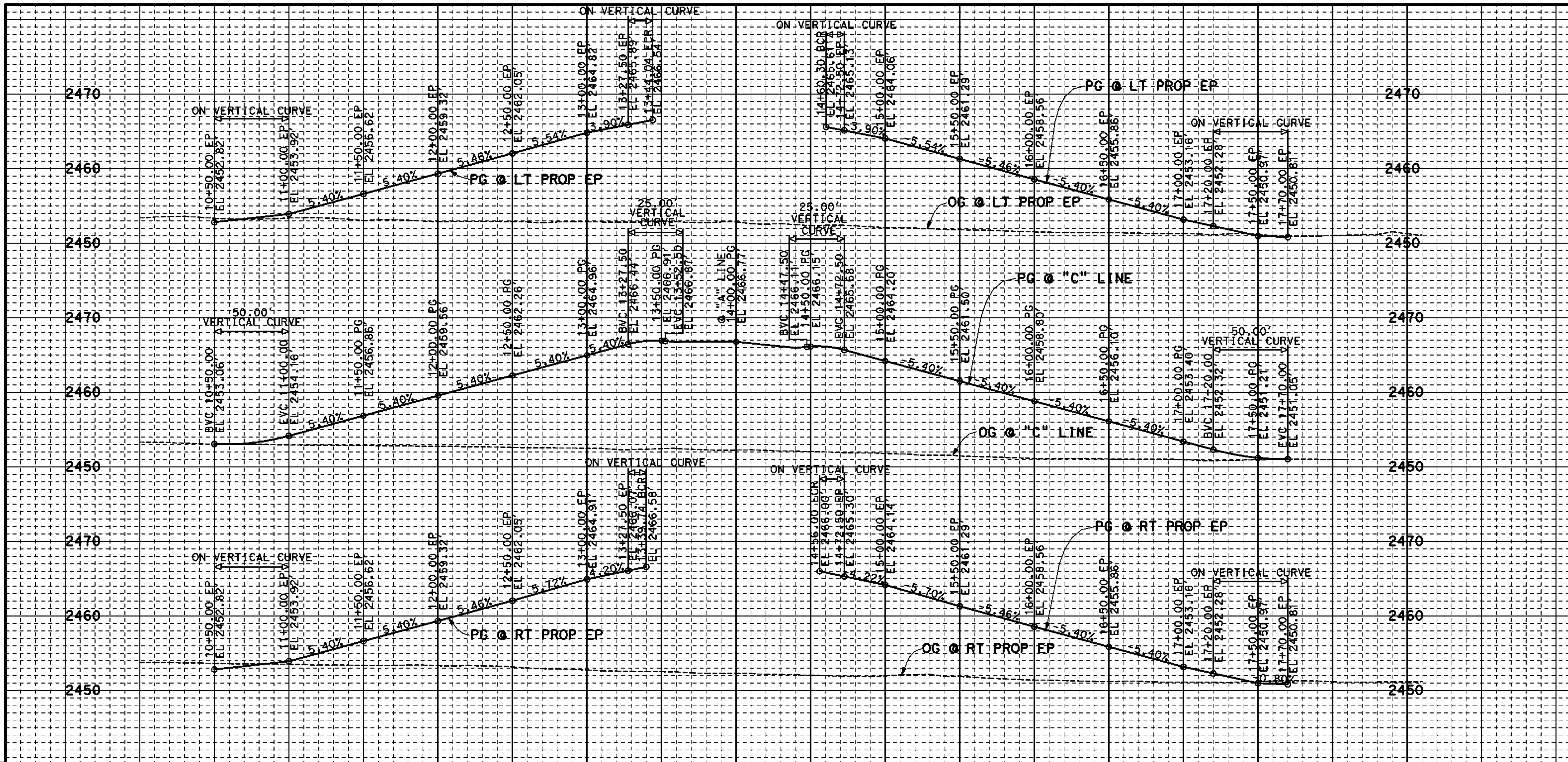
SHADOW MOUNTAIN ROAD  
LAYOUT PLAN AND PROFILE

STA 43+00 "B" LINE TO 48+25.74 "B" LINE  
STA 18+82.50 "J" LINE TO 23+37.25 "J" LINE  
STA 39+86.45 "V" LINE TO 48+22.65 "V" LINE

| J.L. REF. | W.O. NO.  | DRAWING NO. | SHEET NO. | TOTAL SHEETS |
|-----------|-----------|-------------|-----------|--------------|
| JL XXXX   | XX XXXXXX | L-14        | 26        | X            |

| MARK | REVISIONS | DATE |
|------|-----------|------|
|      |           |      |
|      |           |      |
|      |           |      |

| MARK | REVISIONS | DATE |
|------|-----------|------|
|      |           |      |
|      |           |      |
|      |           |      |



- CONSTRUCTION NOTES:**
- 1 CONST XX' HMA OVER XX' AB (CLASS 2)
  - 2 CONST 8" PCC CURB & GUTTER PER COUNTY STD NO. 115
  - 3 CONST 8" PCC CURB ONLY TYPE A1 PER CALTRANS STD PLAN NO. A87A
  - 4 CONST 4" PCC SIDEWALK PER COUNTY STD NO. 109 (WIDTH PER PLAN)
  - 5 CONST DWY APPROACH PER COUNTY STD NO. 128
  - 6 CONST CURB RAMP PER COUNTY STD NO. 110
  - 7 CONST CROSS GUTTER PER COUNTY STD NO. 119

**CURVE DATA**

| No. | R      | Δ         | L      | T      |
|-----|--------|-----------|--------|--------|
| 05  | 35.00' | 93°11'24" | 56.93' | 37.00' |
| 06  | 35.00' | 86°48'36" | 53.03' | 33.10' |
| 07  | 35.00' | 86°48'36" | 53.03' | 33.10' |
| 08  | 35.00' | 93°11'24" | 56.93' | 37.00' |
| 09  | 40.00' | 89°34'55" | 62.54' | 39.71' |
| 10  | 840'   | 05°02'30" | 73.92' | 36.98' |
| 11  | 840'   | 05°02'30" | 73.92' | 36.98' |
| 12  | 840'   | 05°02'30" | 73.92' | 36.98' |

ALL DIMENSIONS ARE IN FEET  
UNLESS OTHERWISE SHOWN

Don't Dig...Until You Call U.S.A. Toll Free  
DIAL: 811  
for the location  
of buried  
utility lines.  
Don't disrupt  
vital services.  
TWO WORKING DAYS BEFORE YOU DIG

**FIELD CHANGES**

| MARK | CHANGES | DATE |
|------|---------|------|
|      |         |      |

PLANS PREPARED BY:  
**AECOM**  
999 W. TOWN AND COUNTRY ROAD  
ORANGE, CA 92668-4713  
(714) 567-2501

COUNTY OF SAN BERNARDINO  
DEPARTMENT OF PUBLIC WORKS  
RECOMMENDED / APPROVED BY

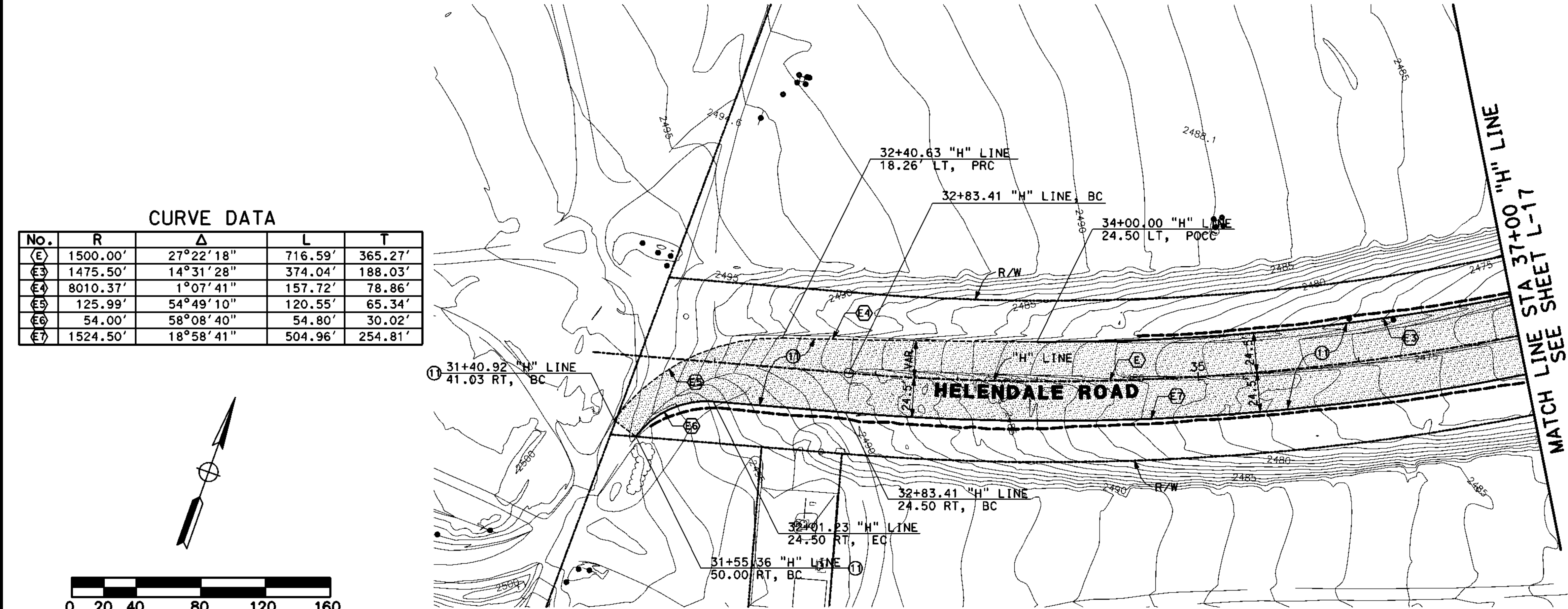
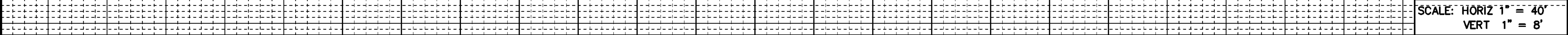
|                                         |      |
|-----------------------------------------|------|
| XXXX XXXX P.E. DEPUTY DIRECTOR          | DATE |
| XXXX XXXX P.E. DIRECTOR OF PUBLIC WORKS | DATE |

**SHADOW MOUNTAIN ROAD**  
LAYOUT PLAN AND PROFILE  
STA 10+00 "C" LINE TO 19+00 "C" LINE

| J.L. REF. | W.O. NO.  | DRAWING NO. | SHEET NO. | TOTAL SHEETS |
|-----------|-----------|-------------|-----------|--------------|
| JL XXXX   | XX XXXXXX | L-15        | 27        | X            |

| REVISIONS | DATE | MARK |
|-----------|------|------|
|           |      |      |
|           |      |      |
|           |      |      |

| REVISIONS | DATE | MARK |
|-----------|------|------|
|           |      |      |
|           |      |      |
|           |      |      |



| CURVE DATA |          |           |         |         |
|------------|----------|-----------|---------|---------|
| NO.        | R        | Δ         | L       | T       |
| (E)        | 1500.00' | 27°22'18" | 716.59' | 365.27' |
| (E)        | 1475.50' | 14°31'28" | 374.04' | 188.03' |
| (E)        | 8010.37' | 1°07'41"  | 157.72' | 78.86'  |
| (E)        | 125.99'  | 54°49'10" | 120.55' | 65.34'  |
| (E)        | 54.00'   | 58°08'40" | 54.80'  | 30.02'  |
| (E)        | 1524.50' | 18°58'41" | 504.96' | 254.81' |

- CONSTRUCTION NOTES:**
- 1 CONST XX' HMA OVER XX' AB (CLASS 2)
  - 2 CONST 8" PCC CURB & GUTTER PER COUNTY STD NO. 115
  - 3 CONST 8" PCC CURB ONLY TYPE A1 PER CALTRANS STD PLAN NO. A87A
  - 4 CONST 4" PCC SIDEWALK PER COUNTY STD NO. 109 (WIDTH PER PLAN)
  - 5 CONST DWY APPROACH PER COUNTY STD NO. 128
  - 6 CONST CURB RAMP PER COUNTY STD NO. 110
  - 7 CONST CROSS GUTTER PER COUNTY STD NO. 119
  - 8 CONST CONC BARRIER (TYPE 26 MOD) PER DET 6, SHT C-12
  - 9 CONST CONC BARRIER (TYPE 26 MOD) END TRANSITION PER DET 6, SHT C-12
  - 10 CONST 8" HMA DIKE PER COUNTY STD NO. 117
  - 11 CONST XX' AB ONLY (CLASS 2)
  - 12 CONST METAL BEAM GUARD RAILING TRANSITION RAILING (TYPE WB) PER CALTRANS STD PLAN NO. A77J4
  - 13 CONST FLARED END METAL BEAM GUARD RAILING TERMINAL SYSTEM PER DETAIL ON SHT C-13
  - 14 CONST DWY APPROACH PER COUNTY STD NO. 128A
  - 15 CONST ROCK SLOPE PROTECTION PER DET 7, SHT C-12
  - 16 SAWCUT EXISTING PAVEMENT
  - 17 XX' MIN COLD PLANE EXIST PAVEMENT AND OVERLAY WITH XX' MIN HMA FOR SMOOTH TRANSITION
  - 18 CONST TRANSITION CURB PER DET 3 & 5, SHT C-10 & C-11
  - 19 CONST XX' HMA OVER XX' AB (CLASS 2)
  - 20 CONST TRANSITION CURB & GUTTER PER DET 8, SHT C-12
  - 21 CONST METAL BEAM GUARD RAILING PER CALTRANS STD PLAN NO. A77A1
  - 22 INSTALL METAL BEAM GUARD RAILING END ANCHOR ASSEMBLY (TYPE SFT) PER CALTRANS STD PLAN NO. A77H1
  - 23 CONST CONC BARRIER WITH CHAIN LINK RAILING PER DET 9 SHT C-12

**LEGEND:**

NEW AB

ALL DIMENSIONS ARE IN FEET  
UNLESS OTHERWISE SHOWN

Don't Dig...Until You Call U.S.A. Toll Free  
DIAL: 811  
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of buried  
utility lines.  
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TWO WORKING DAYS BEFORE YOU DIG

|      |         |            |                   |      |
|------|---------|------------|-------------------|------|
| MARK | CHANGES | NO CHANGES | RESIDENT ENGINEER | DATE |
|------|---------|------------|-------------------|------|

**FIELD CHANGES**

PLANS PREPARED BY:  
**AECOM**  
995 W. TOWN AND COUNTRY ROAD  
ORANGE, CA 92668-4713  
(714) 567-2501

JAMES FABER R.C.E. 45668 EXPIRES 12-31-12

COUNTY OF SAN BERNARDINO  
DEPARTMENT OF PUBLIC WORKS

RECOMMENDED / APPROVED BY

XXXX XXXX P.E. DEPUTY DIRECTOR DATE

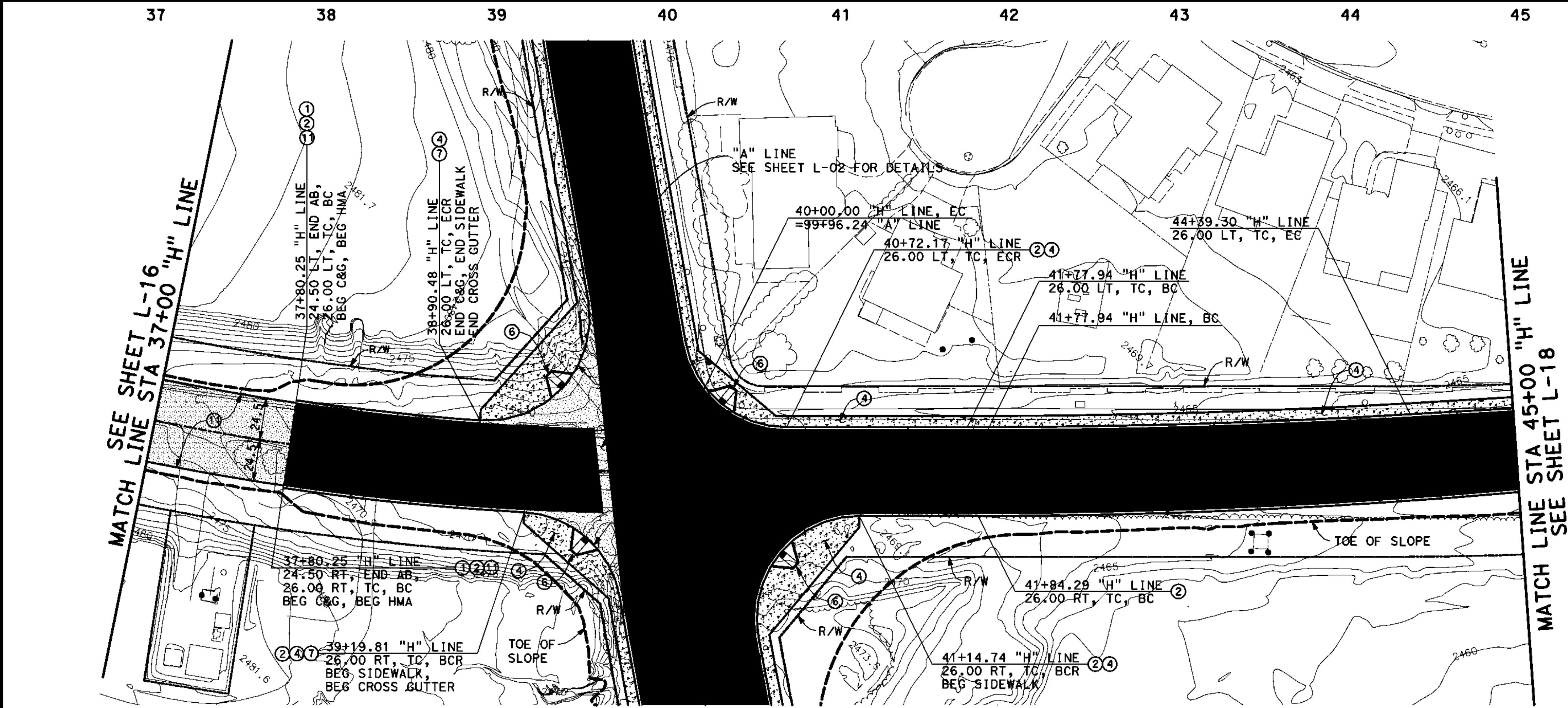
XXXX XXXX P.E. DIRECTOR OF PUBLIC WORKS DATE

**SHADOW MOUNTAIN ROAD**  
LAYOUT PLAN AND PROFILE  
STA 31+40.92 "H" LINE TO 37+00 "H" LINE

|                      |                       |                     |                 |                   |
|----------------------|-----------------------|---------------------|-----------------|-------------------|
| J.L. REF.<br>JL XXXX | W.O. NO.<br>XX XXXXXX | DRAWING NO.<br>L-16 | SHEET NO.<br>28 | TOTAL SHEETS<br>X |
|----------------------|-----------------------|---------------------|-----------------|-------------------|

| MARK | REVISIONS | APPR. | DATE |
|------|-----------|-------|------|
|      |           |       |      |

| MARK | REVISIONS | APPR. | DATE |
|------|-----------|-------|------|
|      |           |       |      |



# CONSTRUCTION NOTES:

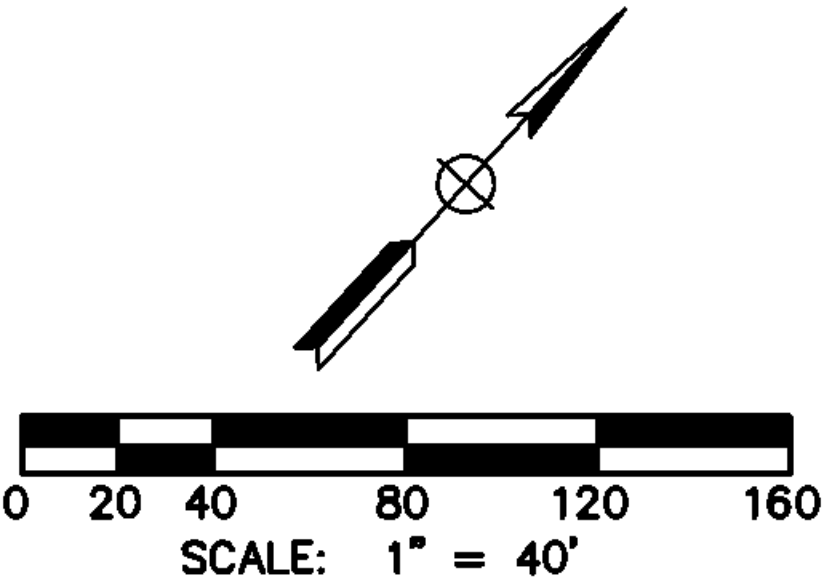
- CONST XX' HMA OVER XX' AB (CLASS 2)
- CONST 8" PCC CURB & GUTTER PER COUNTY STD NO. 115
- CONST 8" PCC CURB ONLY TYPE A1 PER CALTRANS STD PLAN NO. A87A
- CONST 4" PCC SIDEWALK PER COUNTY STD NO. 109 (WIDTH PER PLAN)
- CONST DWY APPROACH PER COUNTY STD NO. 128
- CONST CURB RAMP PER COUNTY STD NO. 110
- CONST CROSS GUTTER PER COUNTY STD NO. 119
- CONST CONC BARRIER (TYPE 26 MOD) PER DET 6, SHT C-12
- CONST CONC BARRIER (TYPE 26 MOD) END TRANSITION PER DET 6, SHT C-12
- CONST 8" HMA DIKE PER COUNTY STD NO. 117
- CONST XX" AB ONLY (CLASS 2)
- CONST METAL BEAM GUARD RAILING TRANSITION RAILING (TYPE WB) PER CALTRANS STD PLAN NO. A77J4
- CONST FLARED END METAL BEAM GUARD RAILING TERMINAL SYSTEM PER DETAIL ON SHT C-13
- CONST DWY APPROACH PER COUNTY STD NO. 128A
- CONST ROCK SLOPE PROTECTION PER DET 7, SHT C-12
- SAWCUT EXISTING PAVEMENT
- XX' MIN COLD PLANE EXIST PAVEMENT AND OVERLAY WITH XX' MIN HMA FOR SMOOTH TRANSITION
- CONST TRANSITION CURB PER DET 3 & 5, SHT C-10 & C-11
- CONST XX' HMA OVER XX' AB (CLASS 2)
- CONST TRANSITION CURB & GUTTER PER DET 8, SHT C-12
- CONST METAL BEAM GUARD RAILING PER CALTRANS STD PLAN NO. A77A1
- INSTALL METAL BEAM GUARD RAILING END ANCHOR ASSEMBLY (TYPE SFT) PER CALTRANS STD PLAN NO. A77H1
- CONST CONC BARRIER WITH CHAIN LINK RAILING PER DET 9 SHT C-12

## CURVE DATA

| No. | R        | $\Delta$   | L       | T       |
|-----|----------|------------|---------|---------|
| 63  | 60.00'   | 80°00'14"  | 83.78'  | 50.35'  |
| 64  | 60.00'   | 100°23'09" | 105.12' | 72.00'  |
| 65  | 60.00'   | 104°10'46" | 109.10' | 77.04'  |
| 66  | 60.00'   | 76°56'26"  | 80.57'  | 27.68'  |
| (E) | 1500.00' | 27°22'18"  | 716.59' | 365.27' |
| (E) | 1474.00' | 4°12'38"   | 108.32' | 54.18'  |
| (E) | 1526.00' | 5°19'50"   | 141.97' | 71.04'  |
| (F) | 4500.00' | 8°49'56"   | 693.68' | 347.53' |
| (F) | 4474.00' | 3°19'40"   | 259.85' | 129.96' |
| (F) | 3600.00' | 8°49'56"   | 554.94' | 278.02' |

## LEGEND:

- NEW ASPHALT CONCRETE
- NEW AB



ALL DIMENSIONS ARE IN FEET  
UNLESS OTHERWISE SHOWN



| MARK | CHANGES    | RESIDENT ENGINEER | DATE |
|------|------------|-------------------|------|
|      | NO CHANGES |                   |      |

## FIELD CHANGES

PLANS PREPARED BY:  
**AECOM**  
999 W. TOWN AND COUNTRY ROAD  
ORANGE, CA 92668-4713  
(714) 567-2501

JAMES FABER R.C.E. 45668 EXPIRES 12-31-12

COUNTY OF SAN BERNARDINO  
DEPARTMENT OF PUBLIC WORKS

RECOMMENDED / APPROVED BY

XXXX XXXX P.E. DEPUTY DIRECTOR DATE

XXXX XXXX P.E. DIRECTOR OF PUBLIC WORKS DATE

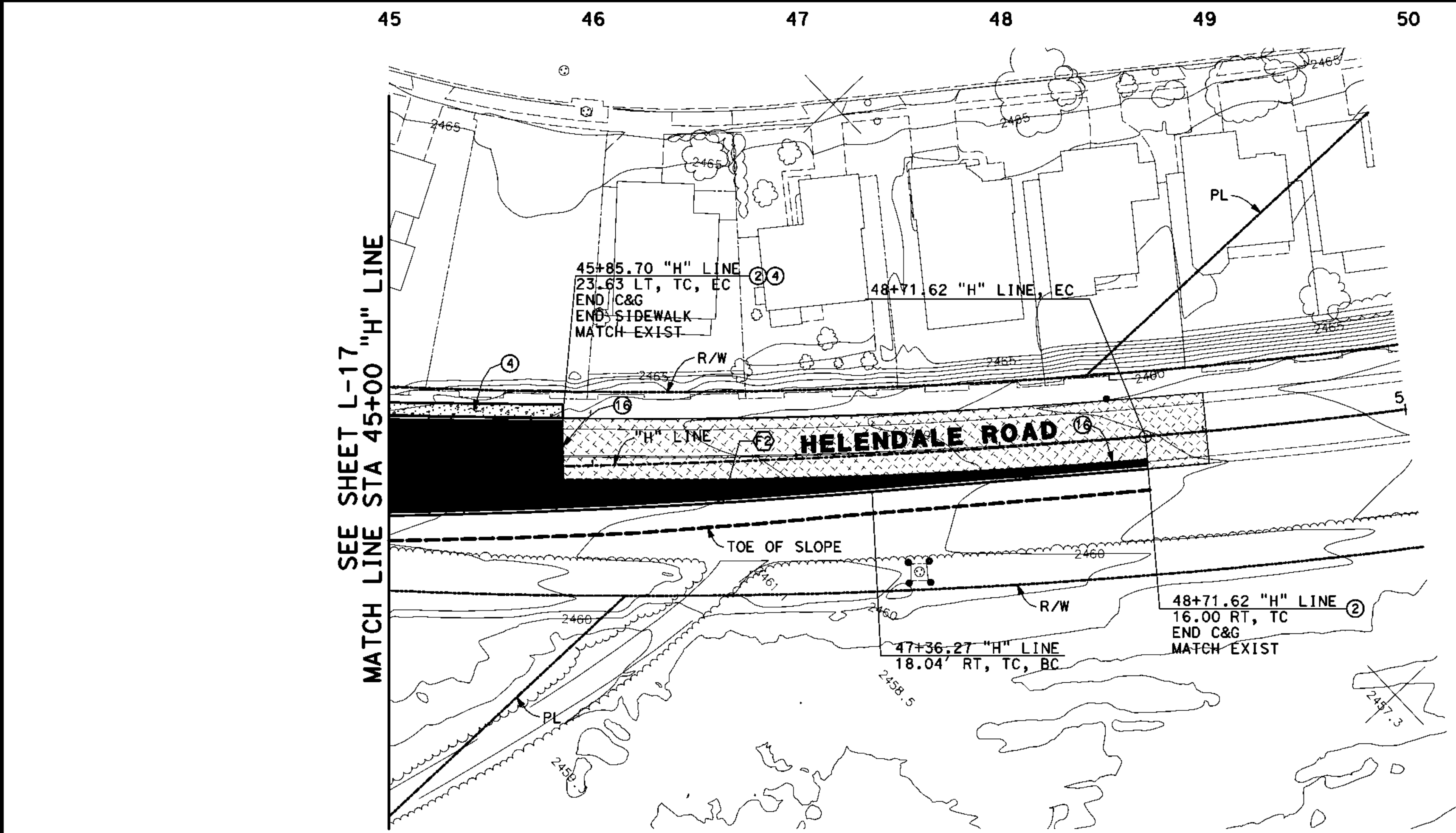
## SHADOW MOUNTAIN ROAD

LAYOUT PLAN AND PROFILE  
STA 37+00 "H" LINE TO 45+00 "H" LINE

| J.L. REF. | W.O. NO.  | DRAWING NO. | SHEET NO. | TOTAL SHEETS |
|-----------|-----------|-------------|-----------|--------------|
| JL XXXX   | XX XXXXXX | L-17        | 29        | X            |

| MARK | REVISIONS | DATE |
|------|-----------|------|
|      |           |      |
|      |           |      |
|      |           |      |

| MARK | REVISIONS | DATE |
|------|-----------|------|
|      |           |      |
|      |           |      |
|      |           |      |



CONSTRUCTION NOTES:

1

CONST XX' HMA OVER XX' AB (CLASS 2)

2

CONST 8" PCC CURB & GUTTER PER COUNTY STD NO. 115

3

CONST 8" PCC CURB ONLY TYPE A1 PER CALTRANS STD PLAN NO. A87A

4

CONST 4" PCC SIDEWALK PER COUNTY STD NO. 109 (WIDTH PER PLAN)

5

CONST DWY APPROACH PER COUNTY STD NO. 128

6

CONST CURB RAMP PER COUNTY STD NO. 110

7

CONST CROSS GUTTER PER COUNTY STD NO. 119

8

CONST CONC BARRIER (TYPE 26 MOD) PER DET 6, SHT C-12

9

CONST CONC BARRIER (TYPE 26 MOD) END TRANSITION PER DET 6, SHT C-12

10

CONST 8" HMA DIKE PER COUNTY STD NO. 117

11

CONST XX" AB ONLY (CLASS 2)

12

CONST METAL BEAM GUARD RAILING TRANSITION RAILING (TYPE WB) PER CALTRANS STD PLAN NO. A77J4

13

CONST FLARED END METAL BEAM GUARD RAILING TERMINAL SYSTEM PER DETAIL ON SHT C-13

14

CONST DWY APPROACH PER COUNTY STD NO. 128A

15

CONST ROCK SLOPE PROTECTION PER DET 7, SHT C-12

16

SAWCUT EXISTING PAVEMENT

17

XX' MIN COLD PLANE EXIST PAVEMENT AND OVERLAY WITH XX' MIN HMA FOR SMOOTH TRANSITION

18

CONST TRANSITION CURB PER DET 3 & 5, SHT C-10 & C-11

19

CONST XX' HMA OVER XX' AB (CLASS 2)

20

CONST TRANSITION CURB & GUTTER PER DET 8, SHT C-12

21

CONST METAL BEAM GUARD RAILING PER CALTRANS STD PLAN NO. A77A1

22

INSTALL METAL BEAM GUARD RAILING END ANCHOR ASSEMBLY (TYPE SFT) PER CALTRANS STD PLAN NO. A77H1

23

CONST CONC BARRIER WITH CHAIN LINK RAILING PER DET 9 SHT C-12

SCALE: HORIZ 1" = 40'  
VERT 1" = 8'

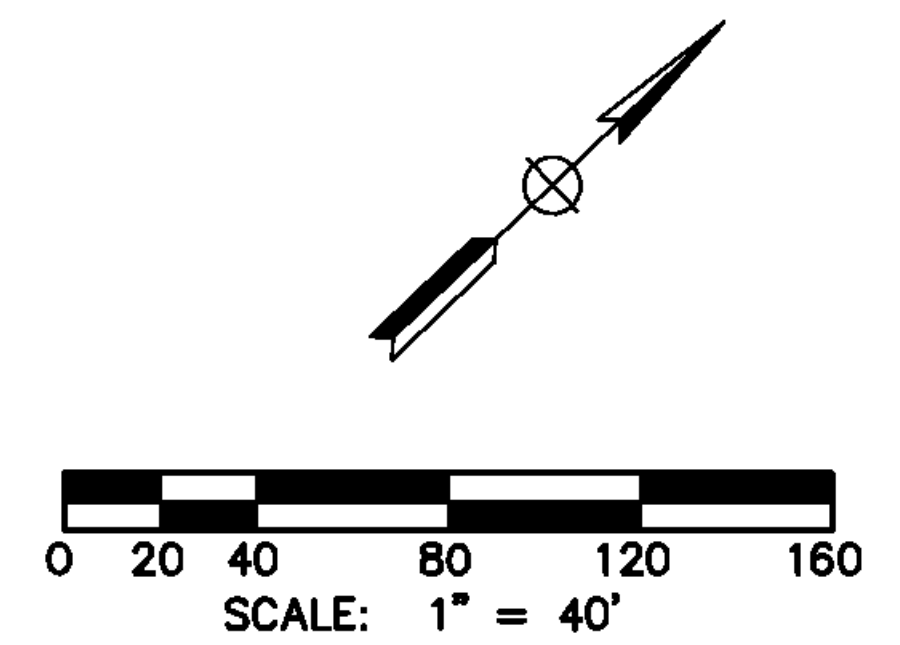
| CURVE DATA |          |          |         |         |
|------------|----------|----------|---------|---------|
| No.        | R        | Δ        | L       | T       |
| (F)        | 4500.00' | 8°49'56" | 693.68' | 347.53' |
| (1)        | 4474.00' | 3°19'40" | 259.85' | 129.96' |
| (2)        | 3600.00' | 8°49'56" | 554.94' | 278.02' |

LEGEND:

NEW ASPHALT CONCRETE

NEW AB

NEW AB OVERLAY



Don't Dig...Until You Call U.S.A. Toll Free DIAL: 811 for the location of buried utility lines. Don't disrupt vital services. TWO WORKING DAYS BEFORE YOU DIG

| MARK | CHANGES | RESIDENT ENGINEER | DATE |
|------|---------|-------------------|------|
|      |         |                   |      |
|      |         |                   |      |

FIELD CHANGES

PLANS PREPARED BY:

**AECOM**

995 W. TOWN AND COUNTRY ROAD  
ORANGE, CA 92668-4713  
(714) 567-2501

JAMES FABER R.C.E. 45668 EXPIRES 12-31-12

COUNTY OF SAN BERNARDINO  
DEPARTMENT OF PUBLIC WORKS

RECOMMENDED / APPROVED BY

XXXX XXXX P.E. DEPUTY DIRECTOR \_\_\_\_\_ DATE \_\_\_\_\_

XXXX XXXX P.E. DIRECTOR OF PUBLIC WORKS \_\_\_\_\_ DATE \_\_\_\_\_

SHADOW MOUNTAIN ROAD

LAYOUT PLAN AND PROFILE

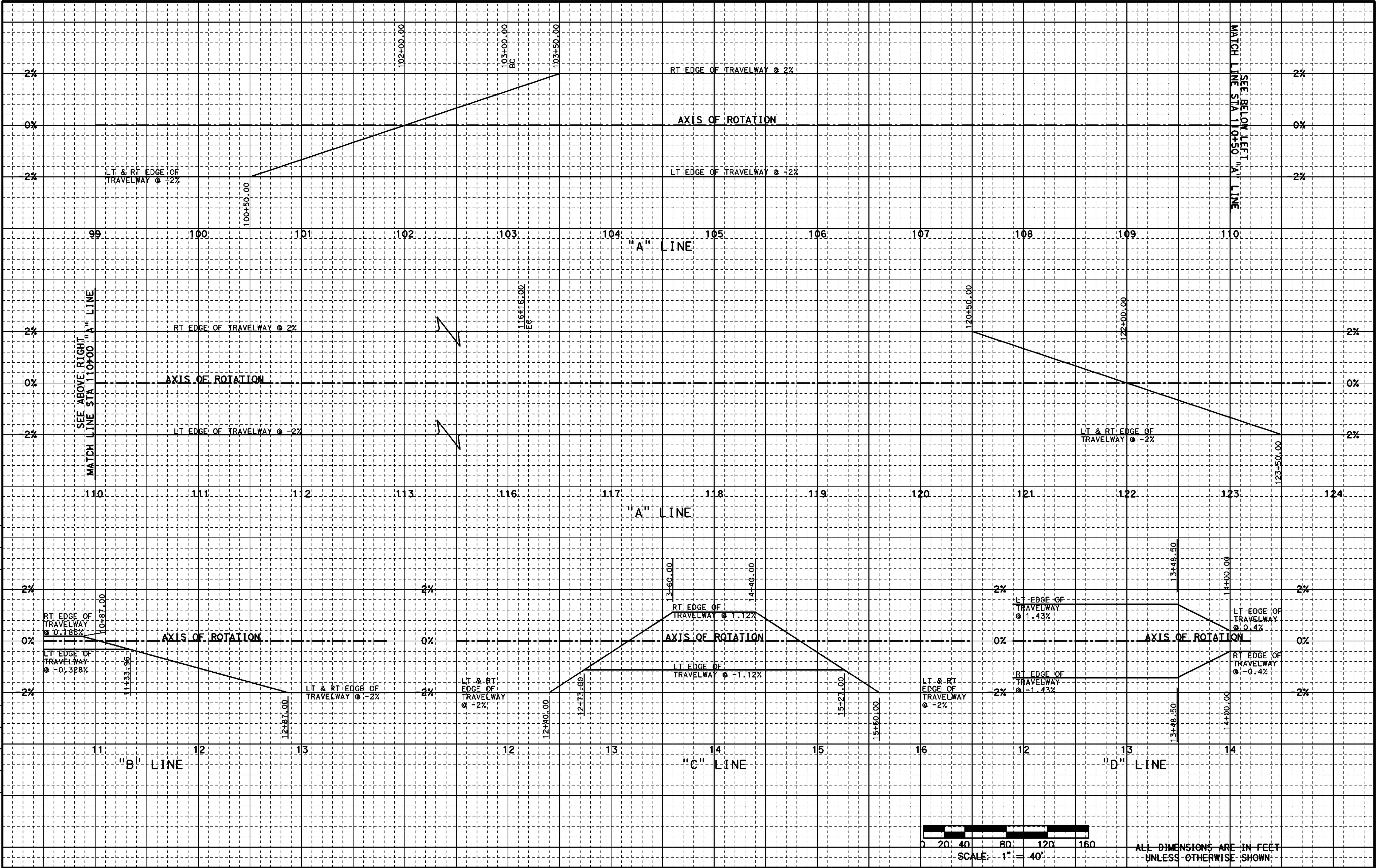
STA 45+00 "H" LINE TO 48+71.62 "H" LINE

|                      |                       |                     |                 |                   |
|----------------------|-----------------------|---------------------|-----------------|-------------------|
| J.L. REF.<br>JL XXXX | W.O. NO.<br>XX XXXXXX | DRAWING NO.<br>L-18 | SHEET NO.<br>30 | TOTAL SHEETS<br>X |
|----------------------|-----------------------|---------------------|-----------------|-------------------|

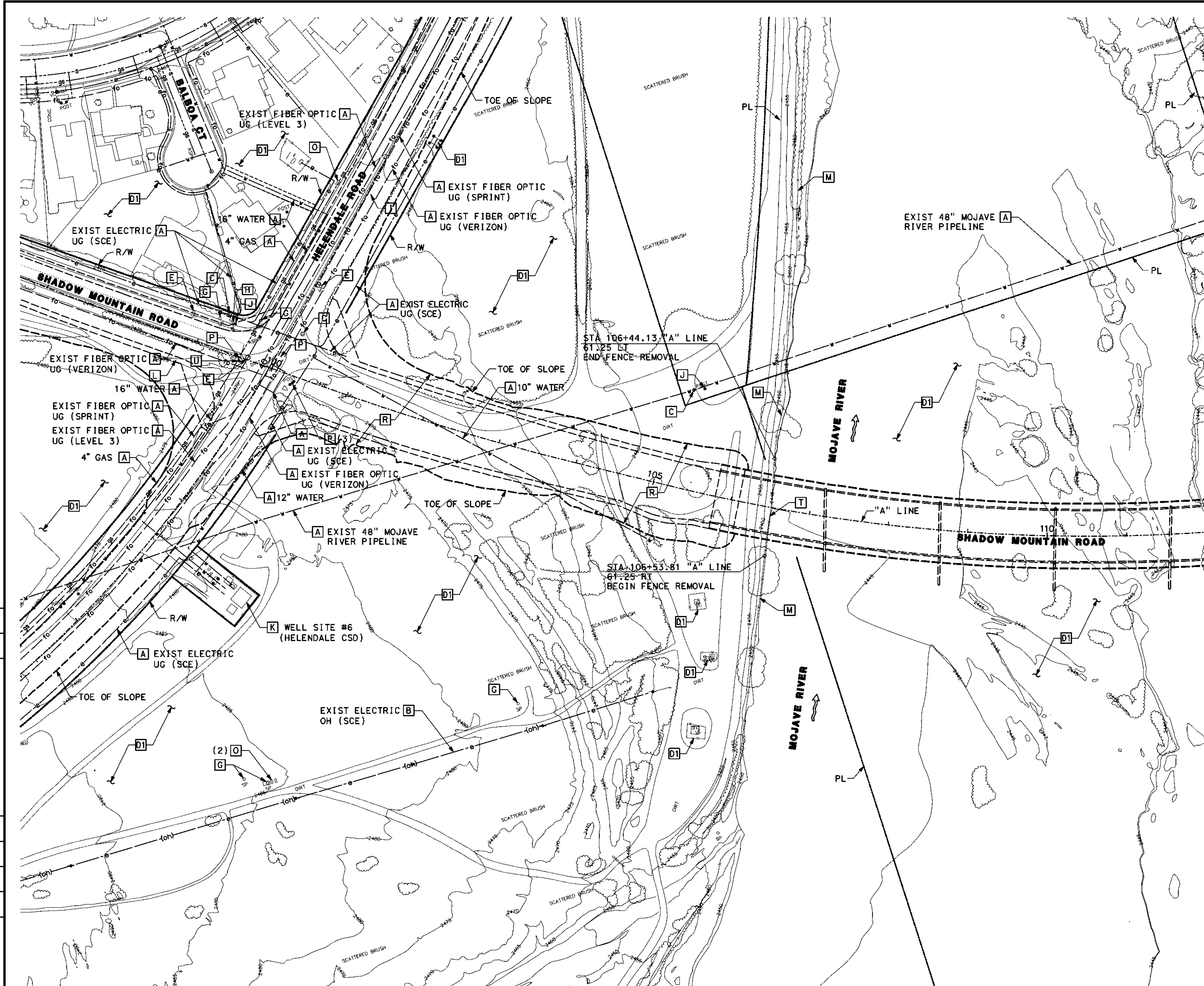


| MARK | REVISIONS | APPR. | DATE |
|------|-----------|-------|------|
|      |           |       |      |

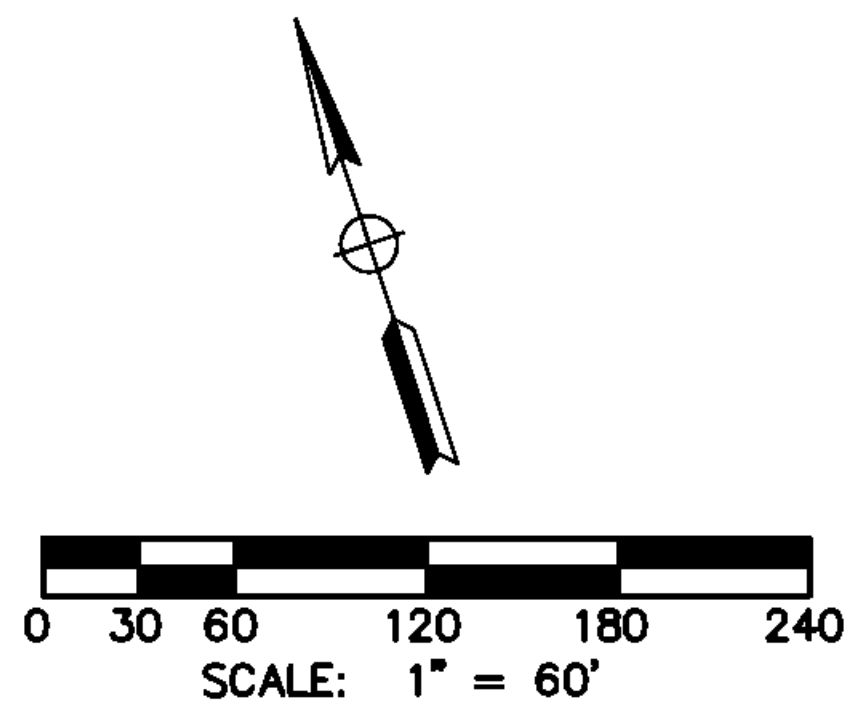
| MARK | REVISIONS | APPR. | DATE |
|------|-----------|-------|------|
|      |           |       |      |



|                                                                                                                                                                            |                       |                      |                   |                   |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|----------------------|-------------------|-------------------|
|                                                                                                                                                                            | MARK                  |                      | CHANGES           | DATE              |
|                                                                                                                                                                            | NO CHANGES            |                      | RESIDENT ENGINEER | DATE              |
| FIELD CHANGES                                                                                                                                                              |                       |                      |                   |                   |
| PLANS PREPARED BY: <b>AECOM</b><br>999 W. TOWN AND COUNTRY ROAD<br>ORANGE, CA 92668-4713<br>(714) 567-2501                                                                 |                       |                      |                   |                   |
| COUNTY OF SAN BERNARDINO<br>DEPARTMENT OF PUBLIC WORKS<br>RECOMMENDED / APPROVED BY<br>XXXX XXXX P.E. DEPUTY DIRECTOR DATE<br>XXXX XXXX P.E. DIRECTOR OF PUBLIC WORKS DATE |                       |                      |                   |                   |
| SHADOW MOUNTAIN ROAD<br>SUPERELEVATION DIAGRAM                                                                                                                             |                       |                      |                   |                   |
| J.L. REF.<br>JL XXXX                                                                                                                                                       | W.O. NO.<br>XX XXXXXX | DRAWING NO.<br>SE-01 | SHEET NO.<br>32   | TOTAL SHEETS<br>X |



- DEMOLITION NOTES:**
- [A] PROTECT EXIST UNDERGROUND UTILITIES IN PLACE
  - [B] PROTECT EXIST OVERHEAD UTILITIES IN PLACE
  - [C] PROTECT EXIST MANHOLE IN PLACE
  - [D] PROTECT EXIST BLOWOFF
  - [E] PROTECT EXIST VALVE
  - [F] PROTECT EXIST FLUSH OUT
  - [G] PROTECT EXIST RISER
  - [H] PROTECT EXIST STREET LIGHT
  - [I] PROTECT EXIST SIGN/POST IN PLACE
  - [J] PROTECT EXIST GUARD POST
  - [K] PROTECT EXIST MONITORING WELL SITE IN PLACE
  - [L] PROTECT EXIST CONC V-DITCH
  - [M] PROTECT EXIST FENCING
  - [N] PROTECT EXIST BUILDING STRUCTURE
  - [O] PROTECT EXIST VAULT
  - [P] REMOVE EXIST SIGN/POST
  - [Q] REMOVE EXIST MANHOLE
  - [R] REMOVE EXIST TREE/SHRUB AND ROOTS
  - [S] REMOVE EXIST RISER
  - [T] REMOVE EXIST FENCING
  - [U] REMOVE EXIST GUARD POST
  - [V] REMOVE EXIST AC PAVEMENT
  - [W] RELOCATE EXIST POWER POLE AND OVERHEAD UTILITIES
  - [X] RELOCATE EXIST UNDERGROUND UTILITIES
  - [Y] RELOCATE EXIST POWER POLE AND ELECT LINES BY SCE
  - [Z] RELOCATE EXIST POWER POLE AND ELECT LINES BY SCE
  - [A1] RELOCATE EXIST FIRE HYDRANT/LATERAL AND VALVE
  - [B1] RELOCATE EXIST SIGN/POST
  - [C1] RELOCATE EXIST VAULT
  - [D1] KEEP IN PLACE



ALL DIMENSIONS ARE IN FEET  
UNLESS OTHERWISE SHOWN

| REVISIONS | DATE |
|-----------|------|
|           |      |
|           |      |
|           |      |

| REVISIONS | DATE |
|-----------|------|
|           |      |
|           |      |
|           |      |



| MARK | CHANGES | RESIDENT ENGINEER | DATE |
|------|---------|-------------------|------|
|      |         |                   |      |
|      |         |                   |      |

FIELD CHANGES

PLANS PREPARED BY:  
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999 W. TOWN AND COUNTRY ROAD  
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(714) 567-2501

JAMES FABER R.C.E. 45668 EXPIRES 12-31-12

COUNTY OF SAN BERNARDINO  
DEPARTMENT OF PUBLIC WORKS

|                                         |  |
|-----------------------------------------|--|
| RECOMMENDED / APPROVED BY               |  |
| XXXX XXXX P.E. DEPUTY DIRECTOR          |  |
| XXXX XXXX P.E. DIRECTOR OF PUBLIC WORKS |  |

SHADOW MOUNTAIN ROAD

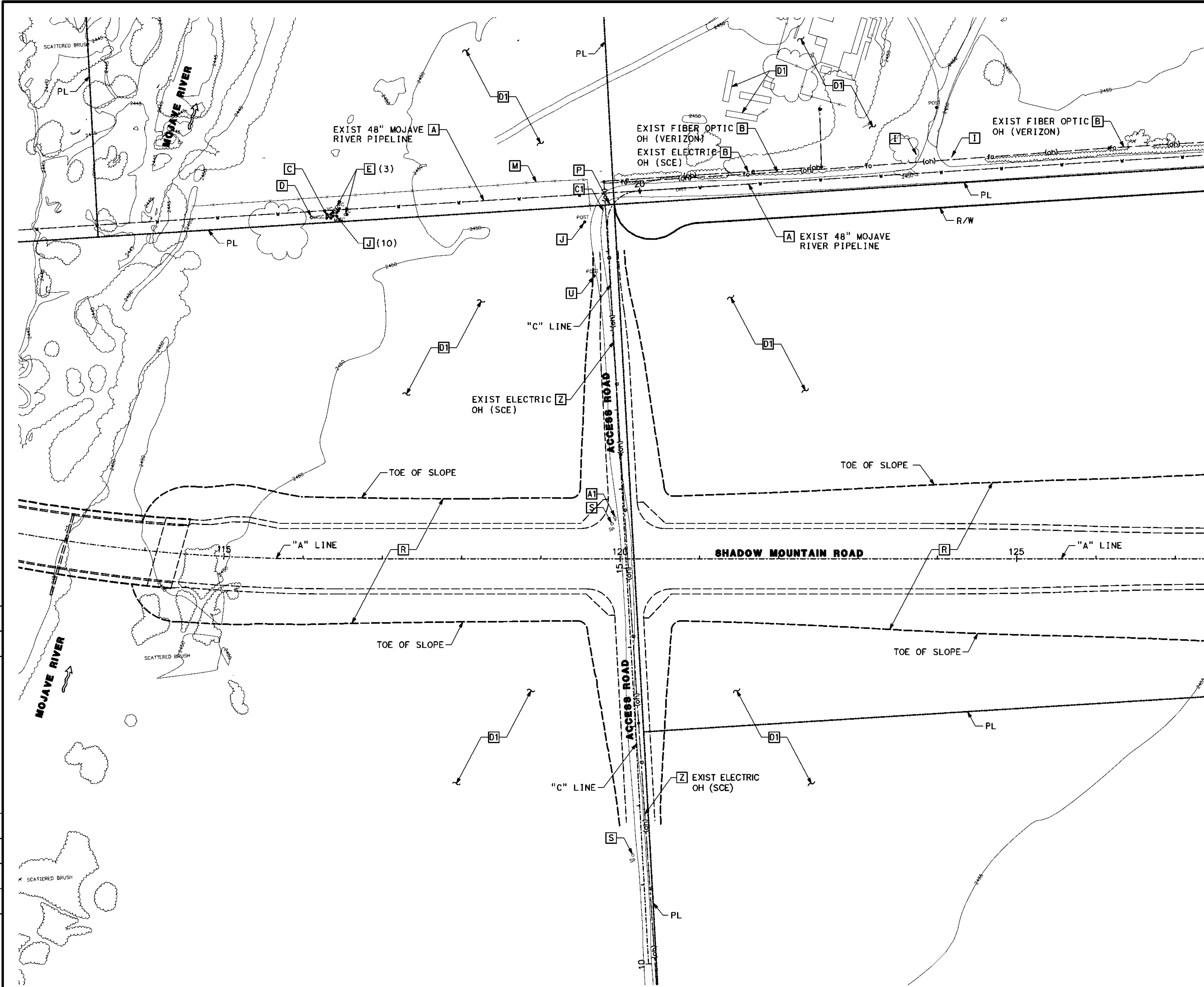
CONSTRUCTION DETAILS  
"A" LINE DEMOLITION

| J.L. REF. | W.O. NO.  | DRAWING NO. | SHEET NO. | TOTAL SHEETS |
|-----------|-----------|-------------|-----------|--------------|
| JL XXXX   | XX XXXXXX | C-01        | 33        | X            |

80% DRAFT SUBMITTAL - NOT FOR CONSTRUCTION

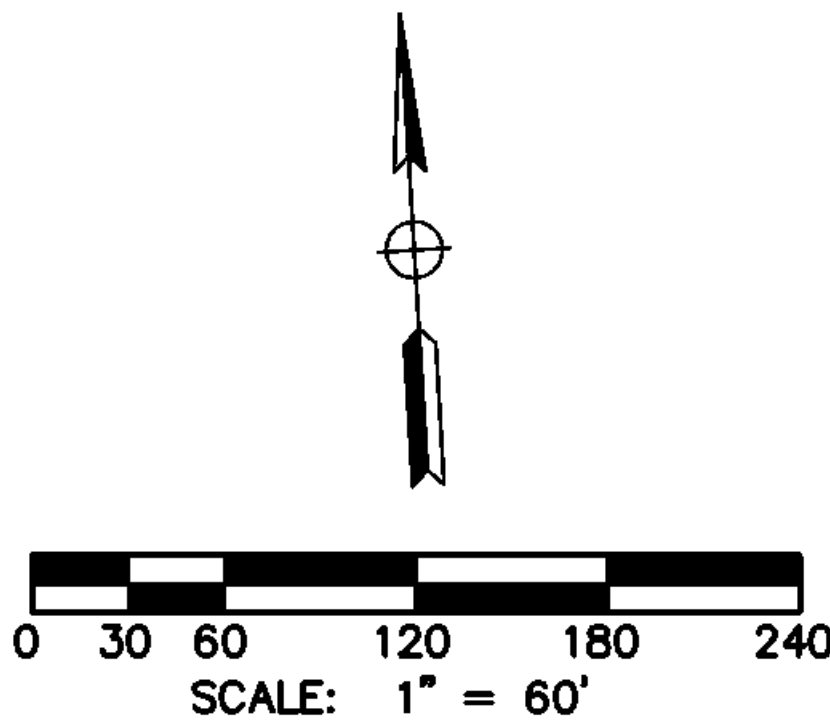
| MARK | REVISIONS | DATE |
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| MARK | REVISIONS | DATE |
|------|-----------|------|
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|      |           |      |



**DEMOLITION NOTES:**

- [A] PROTECT EXIST UNDERGROUND UTILITIES IN PLACE
- [B] PROTECT EXIST OVERHEAD UTILITIES IN PLACE
- [C] PROTECT EXIST MANHOLE IN PLACE
- [D] PROTECT EXIST BLOWOFF
- [E] PROTECT EXIST VALVE
- [F] PROTECT EXIST FLUSH OUT
- [G] PROTECT EXIST RISER
- [H] PROTECT EXIST STREET LIGHT
- [I] PROTECT EXIST SIGN/POST IN PLACE
- [J] PROTECT EXIST GUARD POST
- [K] PROTECT EXIST MONITORING WELL SITE IN PLACE
- [L] PROTECT EXIST CONC V-DITCH
- [M] PROTECT EXIST FENCING
- [N] PROTECT EXIST BUILDING STRUCTURE
- [O] PROTECT EXIST VAULT
- [P] REMOVE EXIST SIGN/POST
- [Q] REMOVE EXIST MANHOLE
- [R] REMOVE EXIST TREE/SHRUB AND ROOTS
- [S] REMOVE EXIST RISER
- [T] REMOVE EXIST FENCING
- [U] REMOVE EXIST GUARD POST
- [V] REMOVE EXIST AC PAVEMENT
- [W] RELOCATE EXIST POWER POLE AND OVERHEAD UTILITIES
- [X] RELOCATE EXIST UNDERGROUND UTILITIES
- [Y] RELOCATE EXIST POWER POLE AND ELECT LINES BY SCE
- [Z] RELOCATE EXIST POWER POLE AND ELECT LINES BY SCE
- [A1] RELOCATE EXIST FIRE HYDRANT/LATERAL AND VALVE
- [B1] RELOCATE EXIST SIGN/POST
- [C1] RELOCATE EXIST VAULT
- [D1] KEEP IN PLACE



ALL DIMENSIONS ARE IN FEET  
UNLESS OTHERWISE SHOWN



| MARK | CHANGES    | RESIDENT ENGINEER | DATE |
|------|------------|-------------------|------|
|      | NO CHANGES |                   |      |

**FIELD CHANGES**

PLANS PREPARED BY:  
**AECOM**  
999 W. TOWN AND COUNTRY ROAD  
ORANGE, CA 92668-4713  
(714) 567-2501

JAMES FABER R.C.E. 45668 EXPIRES 12-31-12

X  
DATE

COUNTY OF SAN BERNARDINO  
DEPARTMENT OF PUBLIC WORKS

RECOMMENDED / APPROVED BY

XXXX XXXX P.E. DEPUTY DIRECTOR \_\_\_\_\_ DATE \_\_\_\_\_

XXXX XXXX P.E. DIRECTOR OF PUBLIC WORKS \_\_\_\_\_ DATE \_\_\_\_\_

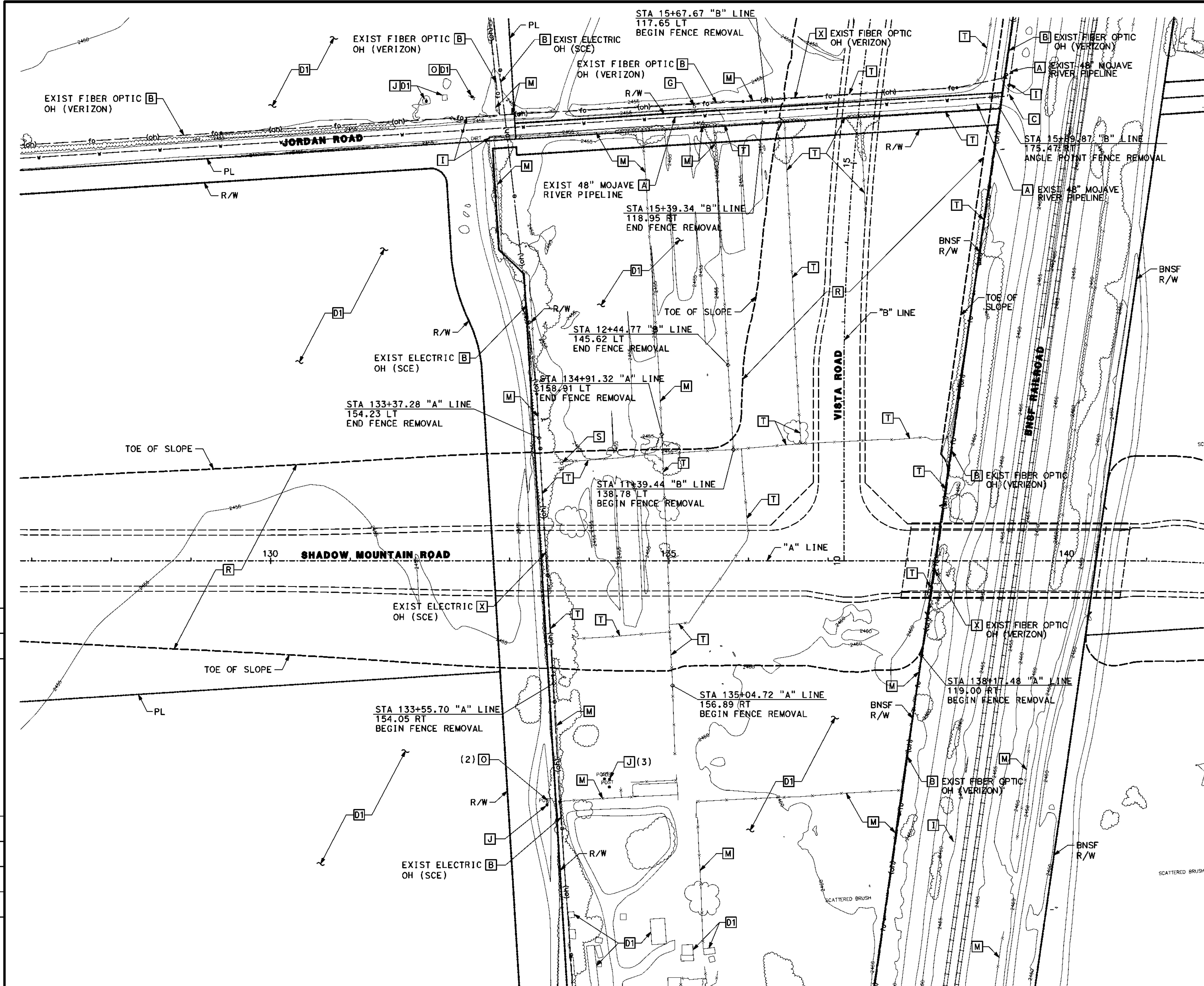
**SHADOW MOUNTAIN ROAD**

**CONSTRUCTION DETAILS  
"A" LINE AND "C" LINE DEMOLITION**

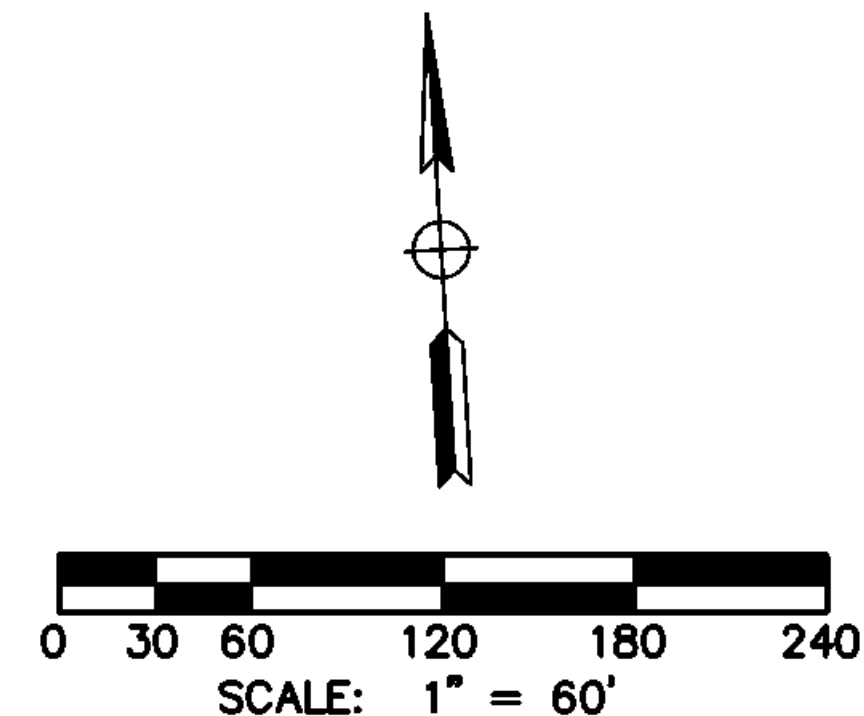
| J.L. REF. | W.O. NO.  | DRAWING NO. | SHEET NO. | TOTAL SHEETS |
|-----------|-----------|-------------|-----------|--------------|
| JL XXXX   | XX XXXXXX | C-02        | 34        | X            |

| MARK | REVISIONS | DATE |
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| MARK | REVISIONS | DATE |
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- DEMOLITION NOTES:**
- [A] PROTECT EXIST UNDERGROUND UTILITIES IN PLACE
  - [B] PROTECT EXIST OVERHEAD UTILITIES IN PLACE
  - [C] PROTECT EXIST MANHOLE IN PLACE
  - [D] PROTECT EXIST BLOWOFF
  - [E] PROTECT EXIST VALVE
  - [F] PROTECT EXIST FLUSH OUT
  - [G] PROTECT EXIST RISER
  - [H] PROTECT EXIST STREET LIGHT
  - [I] PROTECT EXIST SIGN/POST IN PLACE
  - [J] PROTECT EXIST GUARD POST
  - [K] PROTECT EXIST MONITORING WELL SITE IN PLACE
  - [L] PROTECT EXIST CONC V-DITCH
  - [M] PROTECT EXIST FENCING
  - [N] PROTECT EXIST BUILDING STRUCTURE
  - [O] PROTECT EXIST VAULT
  - [P] REMOVE EXIST SIGN/POST
  - [Q] REMOVE EXIST MANHOLE
  - [R] REMOVE EXIST TREE/SHRUB AND ROOTS
  - [S] REMOVE EXIST RISER
  - [T] REMOVE EXIST FENCING
  - [U] REMOVE EXIST GUARD POST
  - [V] REMOVE EXIST AC PAVEMENT
  - [W] RELOCATE EXIST POWER POLE AND OVERHEAD UTILITIES
  - [X] RELOCATE EXIST UNDERGROUND UTILITIES
  - [Y] RELOCATE EXIST POWER POLE AND ELECT LINES BY SCE
  - [Z] RELOCATE EXIST POWER POLE AND ELECT LINES BY SCE
  - [A1] RELOCATE EXIST FIRE HYDRANT/LATERAL AND VALVE
  - [B1] RELOCATE EXIST SIGN/POST
  - [C1] RELOCATE EXIST VAULT
  - [D1] KEEP IN PLACE
- NOTE:**  
REMOVALS WITHIN THE RAILROAD RIGHT OF WAY SHALL BE CONDUCTED BY BNSF.



ALL DIMENSIONS ARE IN FEET  
UNLESS OTHERWISE SHOWN



| MARK | CHANGES    | RESIDENT ENGINEER | DATE |
|------|------------|-------------------|------|
|      | NO CHANGES |                   |      |

FIELD CHANGES

PLANS PREPARED BY:  
**AECOM**  
999 W. TOWN AND COUNTRY ROAD  
ORANGE, CA 92868-4713  
(714) 567-2501

JAMES FABER R.C.E. 45668 EXPIRES 12-31-12 X DATE

COUNTY OF SAN BERNARDINO  
DEPARTMENT OF PUBLIC WORKS  
RECOMMENDED / APPROVED BY  
XXXX XXXX P.E. DEPUTY DIRECTOR DATE  
XXXX XXXX P.E. DIRECTOR OF PUBLIC WORKS DATE

SHADOW MOUNTAIN ROAD

CONSTRUCTION DETAILS  
"A" LINE AND "B" LINE DEMOLITION

| J.L. REF. | W.O. NO.  | DRAWING NO. | SHEET NO. | TOTAL SHEETS |
|-----------|-----------|-------------|-----------|--------------|
| JL XXXX   | XX XXXXXX | C-03        | 35        | X            |

| MARK | REVISIONS | APPR. | DATE |
|------|-----------|-------|------|
|      |           |       |      |

| MARK | REVISIONS | APPR. | DATE |
|------|-----------|-------|------|
|      |           |       |      |



# DEMOLITION NOTES:

- A** PROTECT EXIST UNDERGROUND UTILITIES IN PLACE
- B** PROTECT EXIST OVERHEAD UTILITIES IN PLACE
- C** PROTECT EXIST MANHOLE IN PLACE
- D** PROTECT EXIST BLOWOFF
- E** PROTECT EXIST VALVE
- F** PROTECT EXIST FLUSH OUT
- G** PROTECT EXIST RISER
- H** PROTECT EXIST STREET LIGHT
- I** PROTECT EXIST SIGN/POST IN PLACE
- J** PROTECT EXIST GUARD POST
- K** PROTECT EXIST MONITORING WELL SITE IN PLACE
- L** PROTECT EXIST CONC V-DITCH
- M** PROTECT EXIST FENCING
- N** PROTECT EXIST BUILDING STRUCTURE
- O** PROTECT EXIST VAULT
- P** REMOVE EXIST SIGN/POST
- Q** REMOVE EXIST MANHOLE
- R** REMOVE EXIST TREE/SHRUB AND ROOTS
- S** REMOVE EXIST RISER
- T** REMOVE EXIST FENCING
- U** REMOVE EXIST GUARD POST
- V** REMOVE EXIST AC PAVEMENT
- W** RELOCATE EXIST POWER POLE AND OVERHEAD UTILITIES
- X** RELOCATE EXIST UNDERGROUND UTILITIES
- Y** RELOCATE EXIST POWER POLE AND ELECT LINES BY SCE
- Z** RELOCATE EXIST POWER POLE AND ELECT LINES BY SCE
- A1** RELOCATE EXIST FIRE HYDRANT/LATERAL AND VALVE
- B1** RELOCATE EXIST SIGN/POST
- C1** RELOCATE EXIST VAULT
- D1** KEEP IN PLACE

# NOTE:

REMOVALS WITHIN THE RAILROAD RIGHT OF WAY SHALL BE CONDUCTED BY BNSF.

ALL DIMENSIONS ARE IN FEET  
UNLESS OTHERWISE SHOWN



| MARK | CHANGES    | RESIDENT ENGINEER | DATE |
|------|------------|-------------------|------|
|      | NO CHANGES |                   |      |

# FIELD CHANGES

PLANS PREPARED BY:  
**AECOM**  
999 W. TOWN AND COUNTRY ROAD  
ORANGE, CA 92668-4713  
(714) 567-2501

JAMES FABER R.C.E. 45668 EXPIRES 12-31-12

X  
DATE

COUNTY OF SAN BERNARDINO  
DEPARTMENT OF PUBLIC WORKS

RECOMMENDED / APPROVED BY

XXXX XXXX P.E. DEPUTY DIRECTOR \_\_\_\_\_ DATE \_\_\_\_\_

XXXX XXXX P.E. DIRECTOR OF PUBLIC WORKS \_\_\_\_\_ DATE \_\_\_\_\_

SHADOW MOUNTAIN ROAD

CONSTRUCTION DETAILS  
"A" LINE DEMOLITION

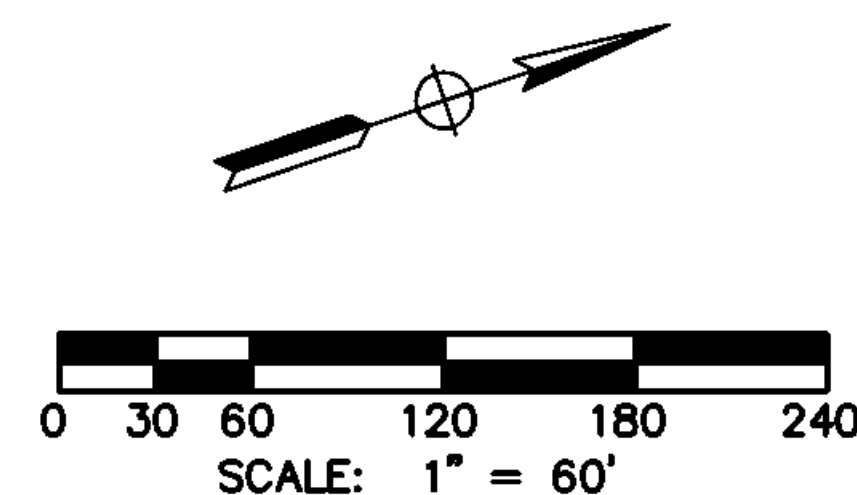
| J.L. REF. | W.O. NO.  | DRAWING NO. | SHEET NO. | TOTAL SHEETS |
|-----------|-----------|-------------|-----------|--------------|
| JL XXXX   | XX XXXXXX | C-04        | 36        | X            |

# DEMOLITION NOTES:

- [A] PROTECT EXIST UNDERGROUND UTILITIES IN PLACE
- [B] PROTECT EXIST OVERHEAD UTILITIES IN PLACE
- [C] PROTECT EXIST MANHOLE IN PLACE
- [D] PROTECT EXIST BLOWOFF
- [E] PROTECT EXIST VALVE
- [F] PROTECT EXIST FLUSH OUT
- [G] PROTECT EXIST RISER
- [H] PROTECT EXIST STREET LIGHT
- [I] PROTECT EXIST SIGN/POST IN PLACE
- [J] PROTECT EXIST GUARD POST
- [K] PROTECT EXIST MONITORING WELL SITE IN PLACE
- [L] PROTECT EXIST CONC V-DITCH
- [M] PROTECT EXIST FENCING
- [N] PROTECT EXIST BUILDING STRUCTURE
- [O] PROTECT EXIST VAULT
- [P] REMOVE EXIST SIGN/POST
- [Q] REMOVE EXIST MANHOLE
- [R] REMOVE EXIST TREE/SHRUB AND ROOTS
- [S] REMOVE EXIST RISER
- [T] REMOVE EXIST FENCING
- [U] REMOVE EXIST GUARD POST
- [V] REMOVE EXIST AC PAVEMENT
- [W] RELOCATE EXIST POWER POLE AND OVERHEAD UTILITIES
- [X] RELOCATE EXIST UNDERGROUND UTILITIES
- [Y] RELOCATE EXIST POWER POLE AND ELECT LINES BY SCE
- [Z] RELOCATE EXIST POWER POLE AND ELECT LINES BY SCE
- [A1] RELOCATE EXIST FIRE HYDRANT/LATERAL AND VALVE
- [B1] RELOCATE EXIST SIGN/POST
- [C1] RELOCATE EXIST VAULT
- [D1] KEEP IN PLACE

## NOTE:

REMOVALS WITHIN THE RAILROAD RIGHT OF WAY SHALL BE CONDUCTED BY BNSF.



ALL DIMENSIONS ARE IN FEET  
UNLESS OTHERWISE SHOWN

SHADOW MOUNTAIN ROAD

CONSTRUCTION DETAILS  
"B" LINE AND "D" LINE DEMOLITION

| J.L. REF. | W.O. NO.  | DRAWING NO. | SHEET NO. | TOTAL SHEETS |
|-----------|-----------|-------------|-----------|--------------|
| JL XXXX   | XX XXXXXX | C-05        | 37        | X            |

COUNTY OF SAN BERNARDINO  
DEPARTMENT OF PUBLIC WORKS

RECOMMENDED / APPROVED BY

|                |                          |      |
|----------------|--------------------------|------|
| XXXX XXXX P.E. | DEPUTY DIRECTOR          | DATE |
| XXXX XXXX P.E. | DIRECTOR OF PUBLIC WORKS | DATE |

PLANS PREPARED BY:

**AECOM**

999 W. TOWN AND COUNTRY ROAD  
ORANGE, CA 92668-4713  
(714) 567-2501

JAMES FABER R.C.E. 45668 EXPIRES 12-31-12

X  
DATE

| MARK | CHANGES    | RESIDENT ENGINEER | DATE |
|------|------------|-------------------|------|
|      | NO CHANGES |                   |      |

FIELD CHANGES

Don't Dig...Until You Call U.S.A. Toll Free

DIAL: 811

for the location of buried utility lines.

Don't disrupt vital services.

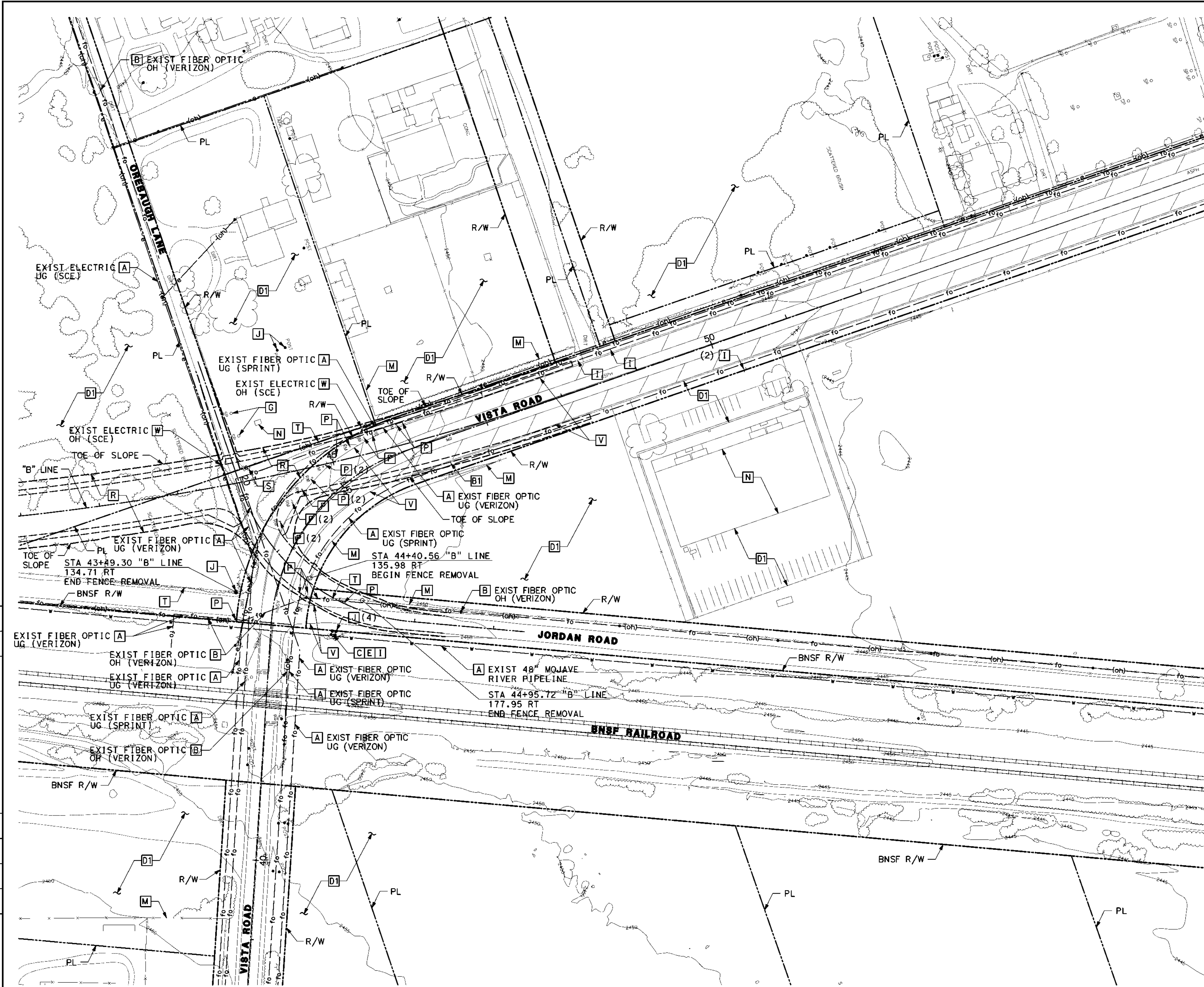


TWO WORKING DAYS BEFORE YOU DIG



| APPR.     | DATE |
|-----------|------|
|           |      |
| REVISIONS | MARK |
|           |      |

| APPR.     | DATE |
|-----------|------|
|           |      |
| REVISIONS | MARK |
|           |      |



**DEMOLITION NOTES:**

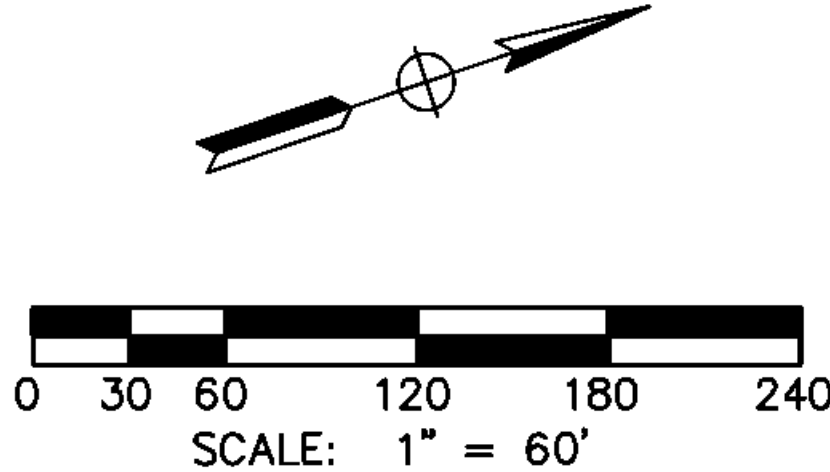
- [A] PROTECT EXIST UNDERGROUND UTILITIES IN PLACE
- [B] PROTECT EXIST OVERHEAD UTILITIES IN PLACE
- [C] PROTECT EXIST MANHOLE IN PLACE
- [D] PROTECT EXIST BLOWOFF
- [E] PROTECT EXIST VALVE
- [F] PROTECT EXIST FLUSH OUT
- [G] PROTECT EXIST RISER
- [H] PROTECT EXIST STREET LIGHT
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- [W] RELOCATE EXIST POWER POLE AND OVERHEAD UTILITIES
- [X] RELOCATE EXIST UNDERGROUND UTILITIES
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- [Z] RELOCATE EXIST POWER POLE AND ELECT LINES BY SCE
- [A1] RELOCATE EXIST FIRE HYDRANT/LATERAL AND VALVE
- [B1] RELOCATE EXIST SIGN/POST
- [C1] RELOCATE EXIST VAULT
- [D1] KEEP IN PLACE

**NOTE:**

REMOVALS WITHIN THE RAILROAD RIGHT OF WAY SHALL BE CONDUCTED BY BNSF.

**LEGEND:**

 REMOVE EXISTING AC PAVEMENT



ALL DIMENSIONS ARE IN FEET  
UNLESS OTHERWISE SHOWN



| MARK | CHANGES    | RESIDENT ENGINEER | DATE |
|------|------------|-------------------|------|
|      | NO CHANGES |                   |      |

**FIELD CHANGES**

PLANS PREPARED BY:  
**AECOM**  
999 W. TOWN AND COUNTRY ROAD  
ORANGE, CA 92668-4713  
(714) 567-2501

JAMES FABER R.C.E. 45668 EXPIRES 12-31-12

X  
DATE

COUNTY OF SAN BERNARDINO  
DEPARTMENT OF PUBLIC WORKS

RECOMMENDED / APPROVED BY

XXXX XXXX P.E. DEPUTY DIRECTOR \_\_\_\_\_ DATE \_\_\_\_\_

XXXX XXXX P.E. DIRECTOR OF PUBLIC WORKS \_\_\_\_\_ DATE \_\_\_\_\_

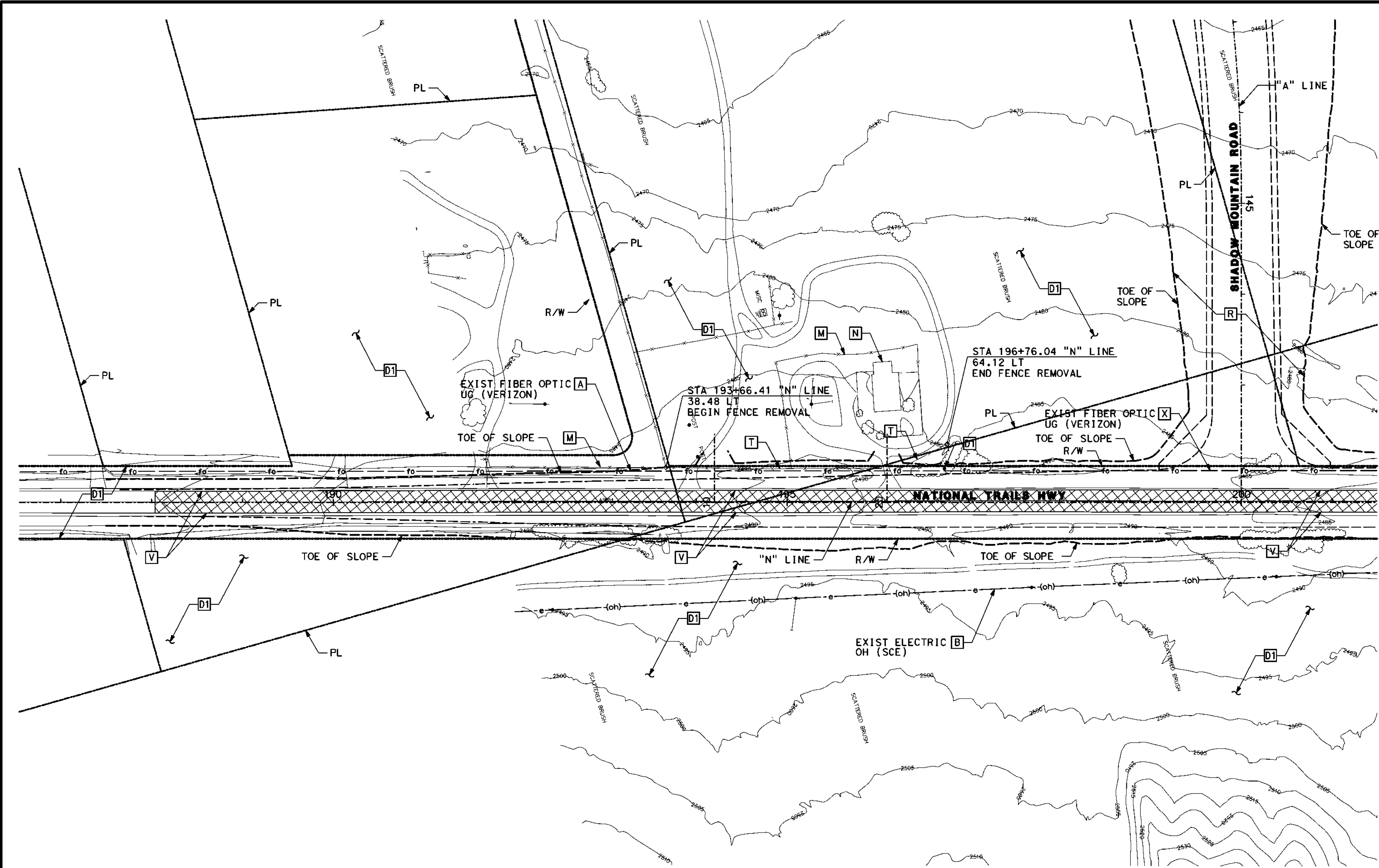
**SHADOW MOUNTAIN ROAD**

**CONSTRUCTION DETAILS  
"B" LINE DEMOLITION**

| J.L. REF. | W.O. NO.  | DRAWING NO. | SHEET NO. | TOTAL SHEETS |
|-----------|-----------|-------------|-----------|--------------|
| JL XXXX   | XX XXXXXX | C-07        | 39        | X            |

| MARK | REVISIONS | DATE |
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| MARK | REVISIONS | DATE |
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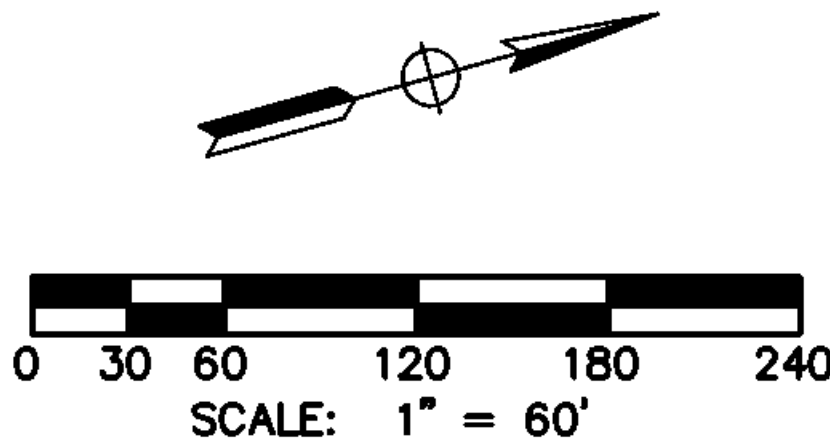


# DEMOLITION NOTES:

- [A] PROTECT EXIST UNDERGROUND UTILITIES IN PLACE
- [B] PROTECT EXIST OVERHEAD UTILITIES IN PLACE
- [C] PROTECT EXIST MANHOLE IN PLACE
- [D] PROTECT EXIST BLOWOFF
- [E] PROTECT EXIST VALVE
- [F] PROTECT EXIST FLUSH OUT
- [G] PROTECT EXIST RISER
- [H] PROTECT EXIST STREET LIGHT
- [I] PROTECT EXIST SIGN/POST IN PLACE
- [J] PROTECT EXIST GUARD POST
- [K] PROTECT EXIST MONITORING WELL SITE IN PLACE
- [L] PROTECT EXIST CONC V-DITCH
- [M] PROTECT EXIST FENCING
- [N] PROTECT EXIST BUILDING STRUCTURE
- [O] PROTECT EXIST VAULT
- [P] REMOVE EXIST SIGN/POST
- [Q] REMOVE EXIST MANHOLE
- [R] REMOVE EXIST TREE/SHRUB AND ROOTS
- [S] REMOVE EXIST RISER
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- [V] REMOVE EXIST AC PAVEMENT
- [W] RELOCATE EXIST POWER POLE AND OVERHEAD UTILITIES
- [X] RELOCATE EXIST UNDERGROUND UTILITIES
- [Y] RELOCATE EXIST POWER POLE AND ELECT LINES BY SCE
- [Z] RELOCATE EXIST POWER POLE AND ELECT LINES BY SCE
- [A1] RELOCATE EXIST FIRE HYDRANT/LATERAL AND VALVE
- [B1] RELOCATE EXIST SIGN/POST
- [C1] RELOCATE EXIST VAULT
- [D1] KEEP IN PLACE

# LEGEND:

- [X] REMOVE EXISTING AC PAVEMENT

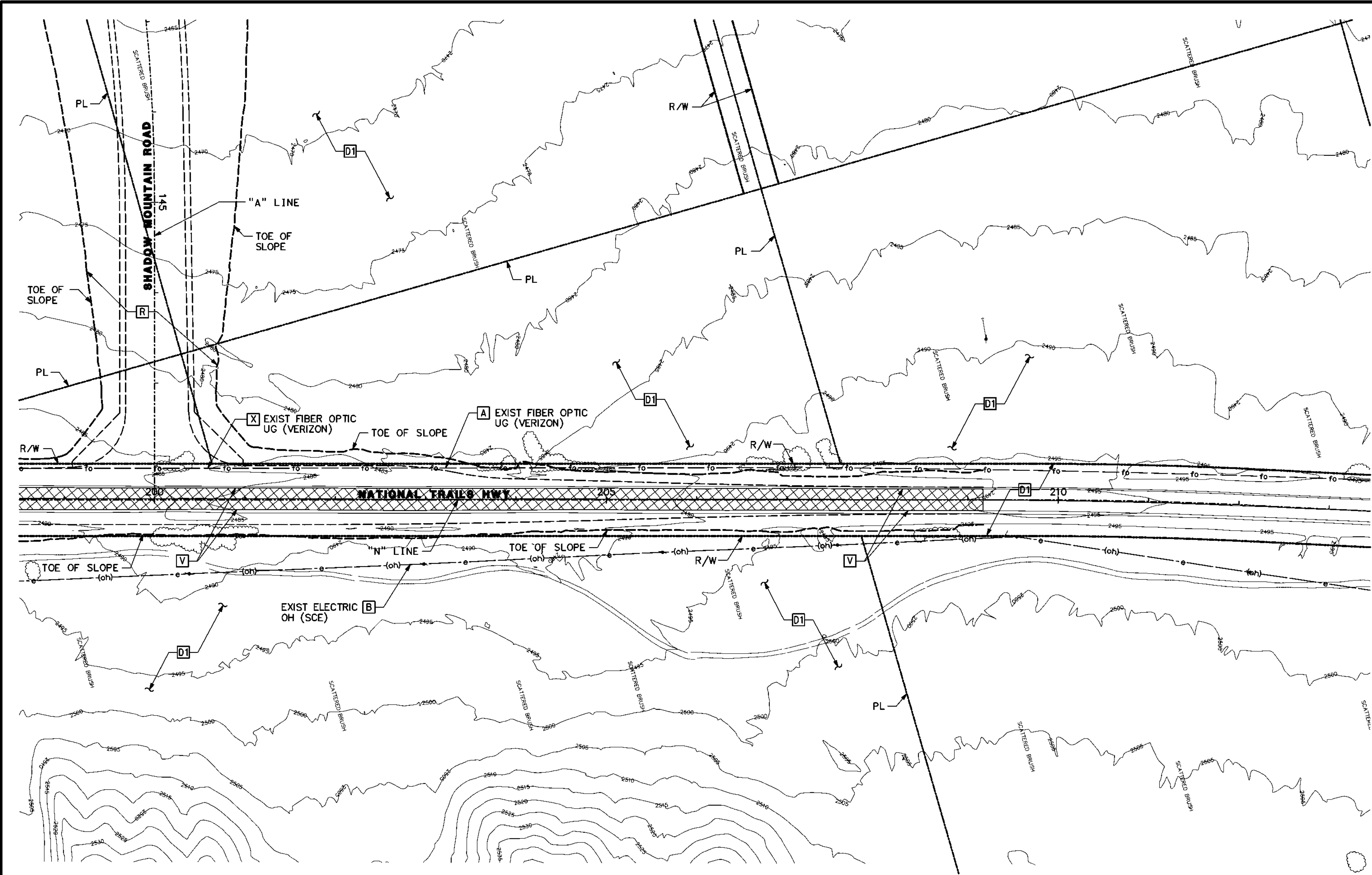


ALL DIMENSIONS ARE IN FEET  
UNLESS OTHERWISE SHOWN

|                                                                                                                                                                                                  |                     |  |                               |  |                                                                                                                          |  |                                                                                              |  |                                                                                         |  |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|--|-------------------------------|--|--------------------------------------------------------------------------------------------------------------------------|--|----------------------------------------------------------------------------------------------|--|-----------------------------------------------------------------------------------------|--|
| <p>Don't Dig...Until You Call U.S.A. Toll Free<br/>DIAL: 811<br/>for the location<br/>of buried<br/>utility lines.<br/>Don't disrupt<br/>vital services.<br/>TWO WORKING DAYS BEFORE YOU DIG</p> | <p>MARK CHANGES</p> |  | <p>RESIDENT ENGINEER DATE</p> |  | <p>PLANS PREPARED BY:<br/><b>AECOM</b><br/>999 W. TOWN AND COUNTRY ROAD<br/>ORANGE, CA 92868-4713<br/>(714) 567-2501</p> |  | <p>COUNTY OF SAN BERNARDINO<br/>DEPARTMENT OF PUBLIC WORKS<br/>RECOMMENDED / APPROVED BY</p> |  | <p>SHADOW MOUNTAIN ROAD<br/>CONSTRUCTION DETAILS<br/>NATIONAL TRAILS HWY DEMOLITION</p> |  |
|                                                                                                                                                                                                  | <p>MARK CHANGES</p> |  | <p>RESIDENT ENGINEER DATE</p> |  | <p>XXXX XXXX P.E. DEPUTY DIRECTOR DATE</p>                                                                               |  | <p>XXXX XXXX P.E. DIRECTOR OF PUBLIC WORKS DATE</p>                                          |  | <p>J.L. REF. W.O. NO. DRAWING NO. SHEET NO. TOTAL SHEETS</p>                            |  |
|                                                                                                                                                                                                  | <p>MARK CHANGES</p> |  | <p>RESIDENT ENGINEER DATE</p> |  | <p>XXXX XXXX P.E. DEPUTY DIRECTOR DATE</p>                                                                               |  | <p>XXXX XXXX P.E. DIRECTOR OF PUBLIC WORKS DATE</p>                                          |  | <p>JL XXXX XX XXXXXX C-08 40 X</p>                                                      |  |
|                                                                                                                                                                                                  | <p>MARK CHANGES</p> |  | <p>RESIDENT ENGINEER DATE</p> |  | <p>XXXX XXXX P.E. DEPUTY DIRECTOR DATE</p>                                                                               |  | <p>XXXX XXXX P.E. DIRECTOR OF PUBLIC WORKS DATE</p>                                          |  | <p>JL XXXX XX XXXXXX C-08 40 X</p>                                                      |  |

| MARK | REVISIONS | DATE |
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| MARK | REVISIONS | DATE |
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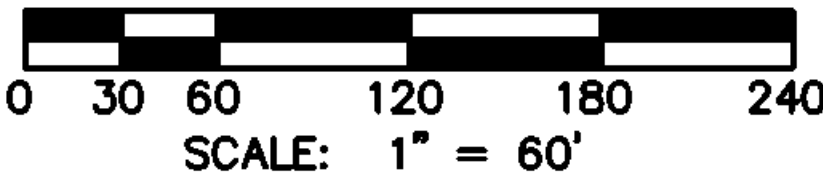
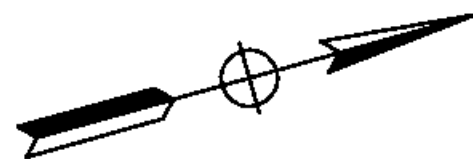


# DEMOLITION NOTES:

- A** PROTECT EXIST UNDERGROUND UTILITIES IN PLACE
- B** PROTECT EXIST OVERHEAD UTILITIES IN PLACE
- C** PROTECT EXIST MANHOLE IN PLACE
- D** PROTECT EXIST BLOWOFF
- E** PROTECT EXIST VALVE
- F** PROTECT EXIST FLUSH OUT
- G** PROTECT EXIST RISER
- H** PROTECT EXIST STREET LIGHT
- I** PROTECT EXIST SIGN/POST IN PLACE
- J** PROTECT EXIST GUARD POST
- K** PROTECT EXIST MONITORING WELL SITE IN PLACE
- L** PROTECT EXIST CONC V-DITCH
- M** PROTECT EXIST FENCING
- N** PROTECT EXIST BUILDING STRUCTURE
- O** PROTECT EXIST VAULT
- P** REMOVE EXIST SIGN/POST
- Q** REMOVE EXIST MANHOLE
- R** REMOVE EXIST TREE/SHRUB AND ROOTS
- S** REMOVE EXIST RISER
- T** REMOVE EXIST FENCING
- U** REMOVE EXIST GUARD POST
- V** REMOVE EXIST AC PAVEMENT
- W** RELOCATE EXIST POWER POLE AND OVERHEAD UTILITIES
- X** RELOCATE EXIST UNDERGROUND UTILITIES
- Y** RELOCATE EXIST POWER POLE AND ELECT LINES BY SCE
- Z** RELOCATE EXIST POWER POLE AND ELECT LINES BY SCE
- A1** RELOCATE EXIST FIRE HYDRANT/LATERAL AND VALVE
- B1** RELOCATE EXIST SIGN/POST
- C1** RELOCATE EXIST VAULT
- D1** KEEP IN PLACE

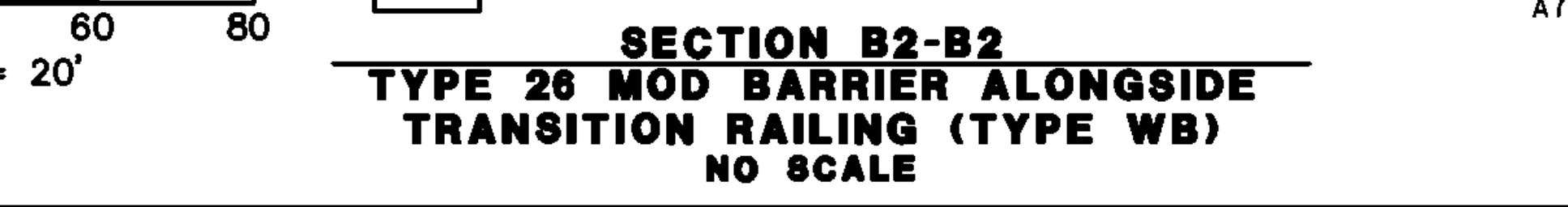
# LEGEND:

- REMOVE EXISTING AC PAVEMENT



ALL DIMENSIONS ARE IN FEET  
UNLESS OTHERWISE SHOWN

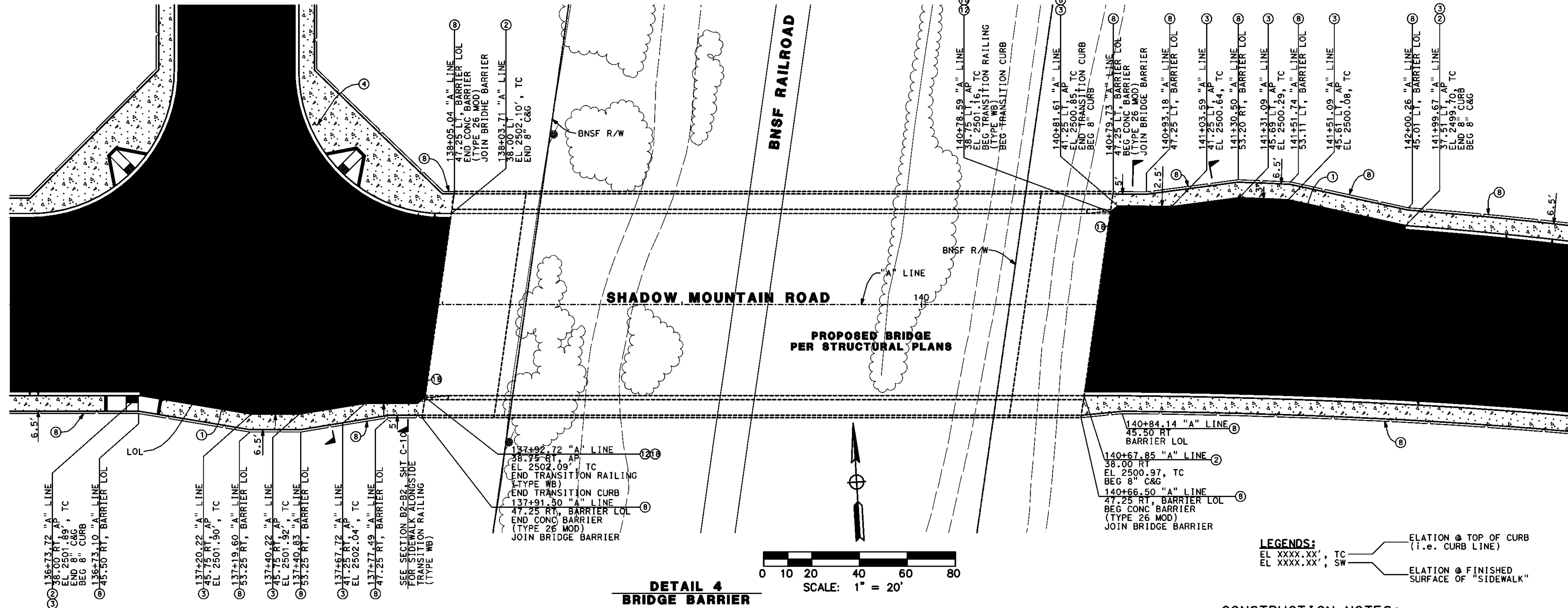
| <p>Don't Dig...Until You Call U.S.A. Toll Free<br/>DIAL: 811<br/>for the location<br/>of buried<br/>utility lines.<br/>Don't disrupt<br/>vital services.</p> <p> TWO WORKING DAYS BEFORE YOU DIG</p> | <table border="1"> <tr> <th>MARK</th> <th>CHANGES</th> <th>DATE</th> </tr> <tr> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> </tr> </table> |                                                  | MARK            | CHANGES                                                                                                                                                                                   | DATE |  |  |                      |                       |                     |                 | <p>PLANS PREPARED BY:<br/><b>AECOM</b><br/>999 W. TOWN AND COUNTRY ROAD<br/>ORANGE, CA 92868-4713<br/>(714) 567-2501</p> | <p>COUNTY OF SAN BERNARDINO<br/>DEPARTMENT OF PUBLIC WORKS</p> <p>RECOMMENDED / APPROVED BY</p> <table border="1"> <tr> <td>XXXX XXXX P.E. DEPUTY DIRECTOR</td> <td>DATE</td> </tr> <tr> <td>XXXX XXXX P.E. DIRECTOR OF PUBLIC WORKS</td> <td>DATE</td> </tr> </table> |  | XXXX XXXX P.E. DEPUTY DIRECTOR | DATE | XXXX XXXX P.E. DIRECTOR OF PUBLIC WORKS | DATE | <p>SHADOW MOUNTAIN ROAD</p> <p>CONSTRUCTION DETAILS<br/>NATIONAL TRAILS HWY DEMOLITION</p> |  |  |  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|--|--|----------------------|-----------------------|---------------------|-----------------|--------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--------------------------------|------|-----------------------------------------|------|--------------------------------------------------------------------------------------------|--|--|--|
|                                                                                                                                                                                                      | MARK                                                                                                                                                                  | CHANGES                                          | DATE            |                                                                                                                                                                                           |      |  |  |                      |                       |                     |                 |                                                                                                                          |                                                                                                                                                                                                                                                                        |  |                                |      |                                         |      |                                                                                            |  |  |  |
|                                                                                                                                                                                                      |                                                                                                                                                                       |                                                  |                 |                                                                                                                                                                                           |      |  |  |                      |                       |                     |                 |                                                                                                                          |                                                                                                                                                                                                                                                                        |  |                                |      |                                         |      |                                                                                            |  |  |  |
|                                                                                                                                                                                                      |                                                                                                                                                                       |                                                  |                 |                                                                                                                                                                                           |      |  |  |                      |                       |                     |                 |                                                                                                                          |                                                                                                                                                                                                                                                                        |  |                                |      |                                         |      |                                                                                            |  |  |  |
| XXXX XXXX P.E. DEPUTY DIRECTOR                                                                                                                                                                       | DATE                                                                                                                                                                  |                                                  |                 |                                                                                                                                                                                           |      |  |  |                      |                       |                     |                 |                                                                                                                          |                                                                                                                                                                                                                                                                        |  |                                |      |                                         |      |                                                                                            |  |  |  |
| XXXX XXXX P.E. DIRECTOR OF PUBLIC WORKS                                                                                                                                                              | DATE                                                                                                                                                                  |                                                  |                 |                                                                                                                                                                                           |      |  |  |                      |                       |                     |                 |                                                                                                                          |                                                                                                                                                                                                                                                                        |  |                                |      |                                         |      |                                                                                            |  |  |  |
| <p><b>FIELD CHANGES</b></p>                                                                                                                                                                          |                                                                                                                                                                       | <p>JAMES FABER R.C.E. 45668 EXPIRES 12-31-12</p> |                 | <table border="1"> <tr> <td>J.L. REF.<br/>JL XXXX</td> <td>W.O. NO.<br/>XX XXXXXX</td> <td>DRAWING NO.<br/>C-09</td> <td>SHEET NO.<br/>41</td> <td>TOTAL SHEETS<br/>X</td> </tr> </table> |      |  |  | J.L. REF.<br>JL XXXX | W.O. NO.<br>XX XXXXXX | DRAWING NO.<br>C-09 | SHEET NO.<br>41 | TOTAL SHEETS<br>X                                                                                                        |                                                                                                                                                                                                                                                                        |  |                                |      |                                         |      |                                                                                            |  |  |  |
| J.L. REF.<br>JL XXXX                                                                                                                                                                                 | W.O. NO.<br>XX XXXXXX                                                                                                                                                 | DRAWING NO.<br>C-09                              | SHEET NO.<br>41 | TOTAL SHEETS<br>X                                                                                                                                                                         |      |  |  |                      |                       |                     |                 |                                                                                                                          |                                                                                                                                                                                                                                                                        |  |                                |      |                                         |      |                                                                                            |  |  |  |
|                                                                                                                                                                                                      |                                                                                                                                                                       |                                                  |                 |                                                                                                                                                                                           |      |  |  |                      |                       |                     |                 |                                                                                                                          |                                                                                                                                                                                                                                                                        |  |                                |      |                                         |      |                                                                                            |  |  |  |



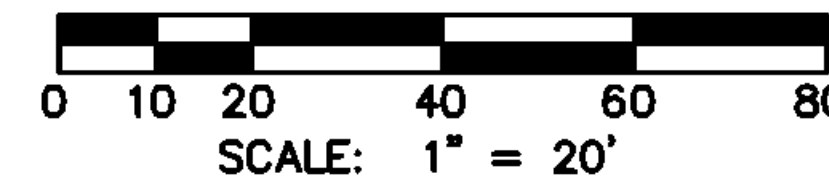
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|-------------------------------|-----------|-------------|-----------|--------------|
| SHADOW MOUNTAIN ROAD          |           |             |           |              |
| CONSTRUCTION DETAILS          |           |             |           |              |
| BRIDGE BARRIER END TREATMENTS |           |             |           |              |
| J.L. REF.                     | W.O. NO.  | DRAWING NO. | SHEET NO. | TOTAL SHEETS |
| JL XXXX                       | XX XXXXXX | C-10        | 42        | X            |

| MARK | REVISIONS | DATE |
|------|-----------|------|
|      |           |      |
|      |           |      |

| MARK | REVISIONS | DATE |
|------|-----------|------|
|      |           |      |
|      |           |      |



**DETAIL 4  
BRIDGE BARRIER  
END TREATMENT  
(3 OF 3)**

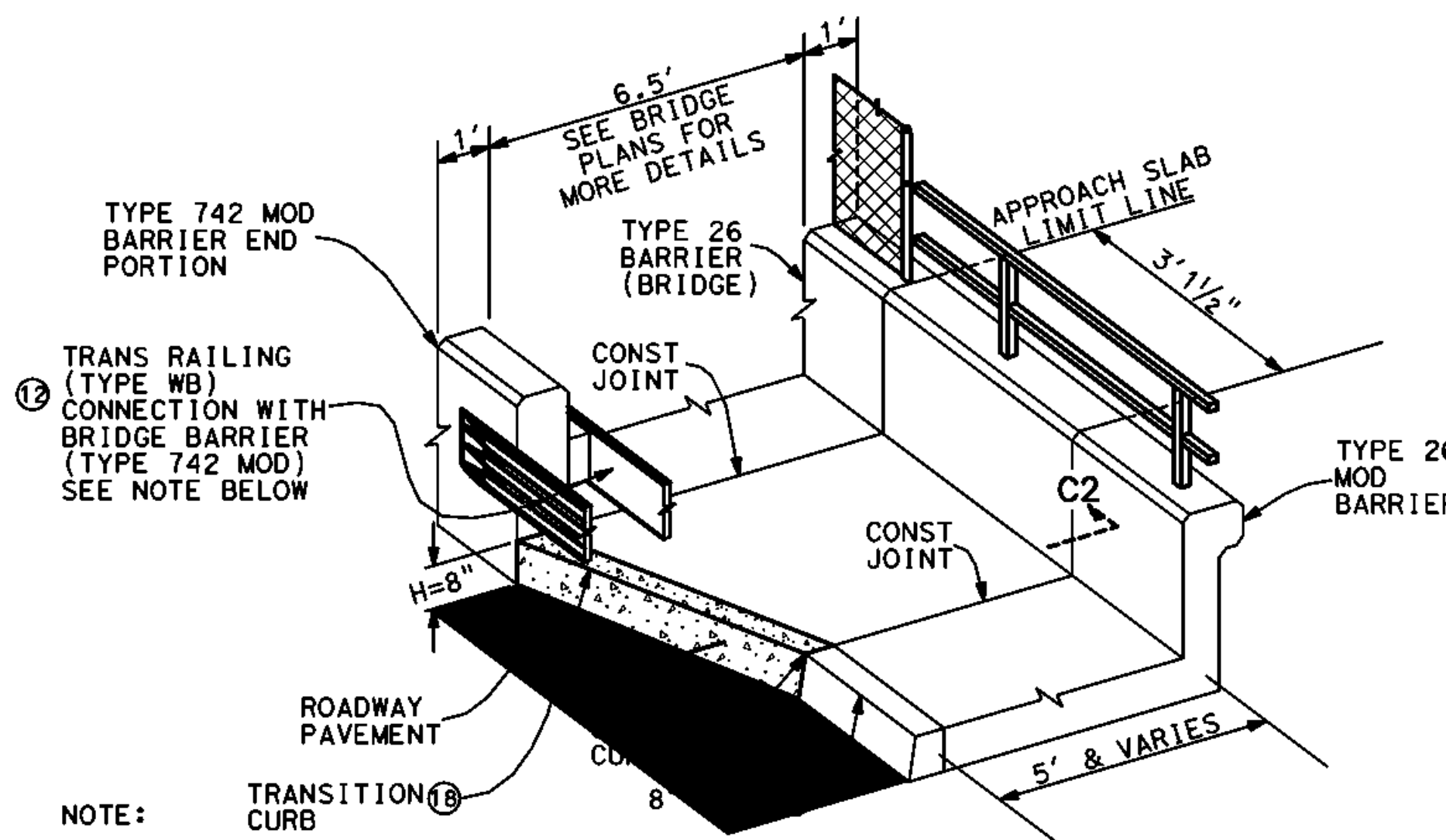


**LEGENDS:**  
 EL XXXX.XX', TC — ELATION @ TOP OF CURB (i.e. CURB LINE)  
 EL XXXX.XX', SW — ELATION @ FINISHED SURFACE OF "SIDEWALK"

**CONSTRUCTION NOTES:**

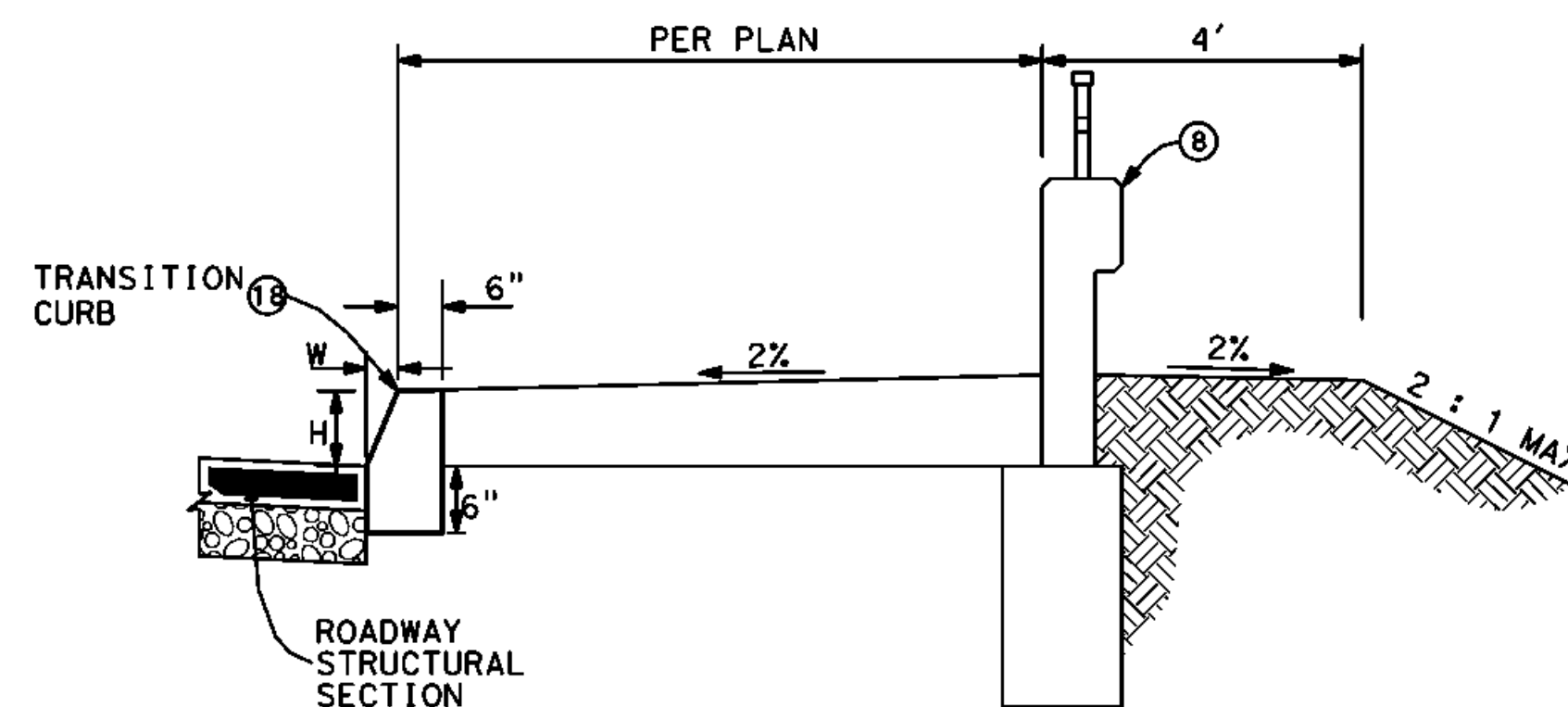
- CONST XX' HMA OVER XX' AB (CLASS 2)
- CONST 8" PCC CURB & GUTTER PER COUNTY STD NO. 115
- CONST 8" PCC CURB ONLY TYPE A1 PER CALTRANS STD PLAN NO. A87A
- CONST 4" PCC SIDEWALK PER COUNTY STD NO. 109 (WIDTH PER PLAN)
- CONST DWY APPROACH PER COUNTY STD NO. 128
- CONST CURB RAMP PER COUNTY STD NO. 110
- CONST CROSS GUTTER PER COUNTY STD NO. 119
- CONST CONC BARRIER (TYPE 26 MOD) PER DET 6, SHT C-12
- CONST CONC BARRIER (TYPE 26 MOD) END TRANSITION PER DET 6, SHT C-12
- CONST 8" HMA DIKE PER COUNTY STD NO. 117
- CONST XX" AB ONLY (CLASS 2)
- CONST METAL BEAM GUARD RAILING TRANSITION RAILING (TYPE WB) PER CALTRANS STD PLAN NO. A77J4
- CONST FLARED END METAL BEAM GUARD RAILING TERMINAL SYSTEM PER DETAIL ON SHT C-13
- CONST DWY APPROACH PER COUNTY STD NO. 128A
- CONST ROCK SLOPE PROTECTION PER DET 7, SHT C-12
- SAWCUT EXISTING PAVEMENT
- XX' MIN. COLD PLANE EXIST PAVEMENT AND OVERLAY WITH XX' MIN HMA FOR SMOOTH TRANSITION
- CONST TRANSITION CURB PER DET 3 & 5, SHT C-10 & C-11
- CONST XX' HMA OVER XX' AB (CLASS 2)

ALL DIMENSIONS ARE IN FEET  
UNLESS OTHERWISE SHOWN



NOTE:  
REFER TO 2010 CALTRANS STD PLAN B11-57 FOR (TYPE 742 MOD) BARRIER END PORTION DETAILS.  
FOR ALL CONNECTION DETAILS NOT SHOWN, REFER TO 2010 CALTRANS STD PLAN A77J2.

**DETAIL 5  
TRANSITION CURB  
(APPLY TO END TREATMENT  
DETAILS 2 & 4)  
NO SCALE**



NOTE:  
AT THE END WHERE THE TRANSITION CURB JOINS 8" CURB, H=8" & W=2"; H & W'S VALUES SMOOTHLY TRANSLATE TO MATCH BRIDGE BARRIER (TYPE 742 MOD) AT THE OTHER END.

**SECTION C2-C2 (LEFT)  
NO SCALE**



| MARK | CHANGES    | RESIDENT ENGINEER | DATE |
|------|------------|-------------------|------|
|      | NO CHANGES |                   |      |

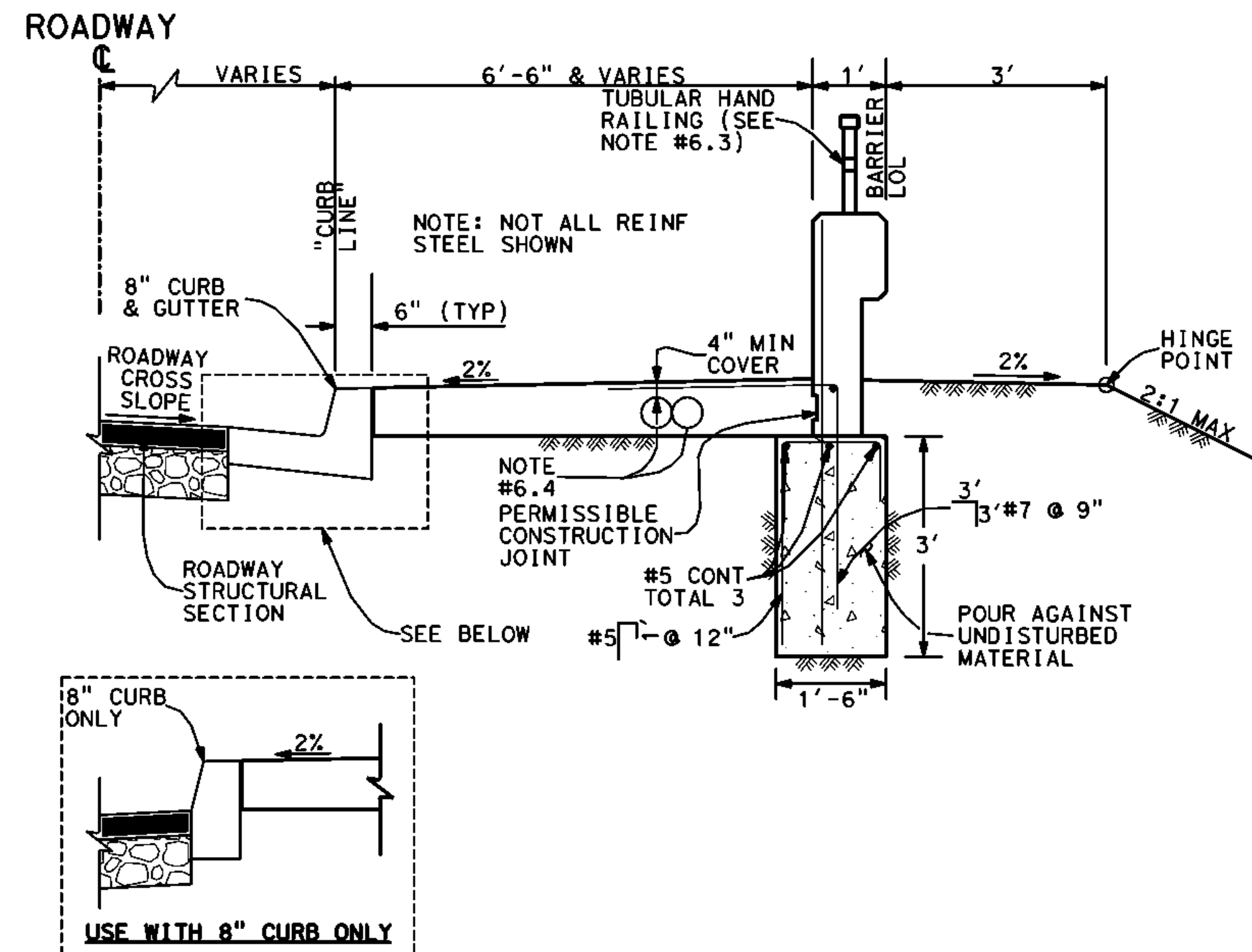
FIELD CHANGES

PLANS PREPARED BY:  
**AECOM**  
995 W. TOWN AND COUNTRY ROAD  
ORANGE, CA 92668-4713  
(714) 567-2501

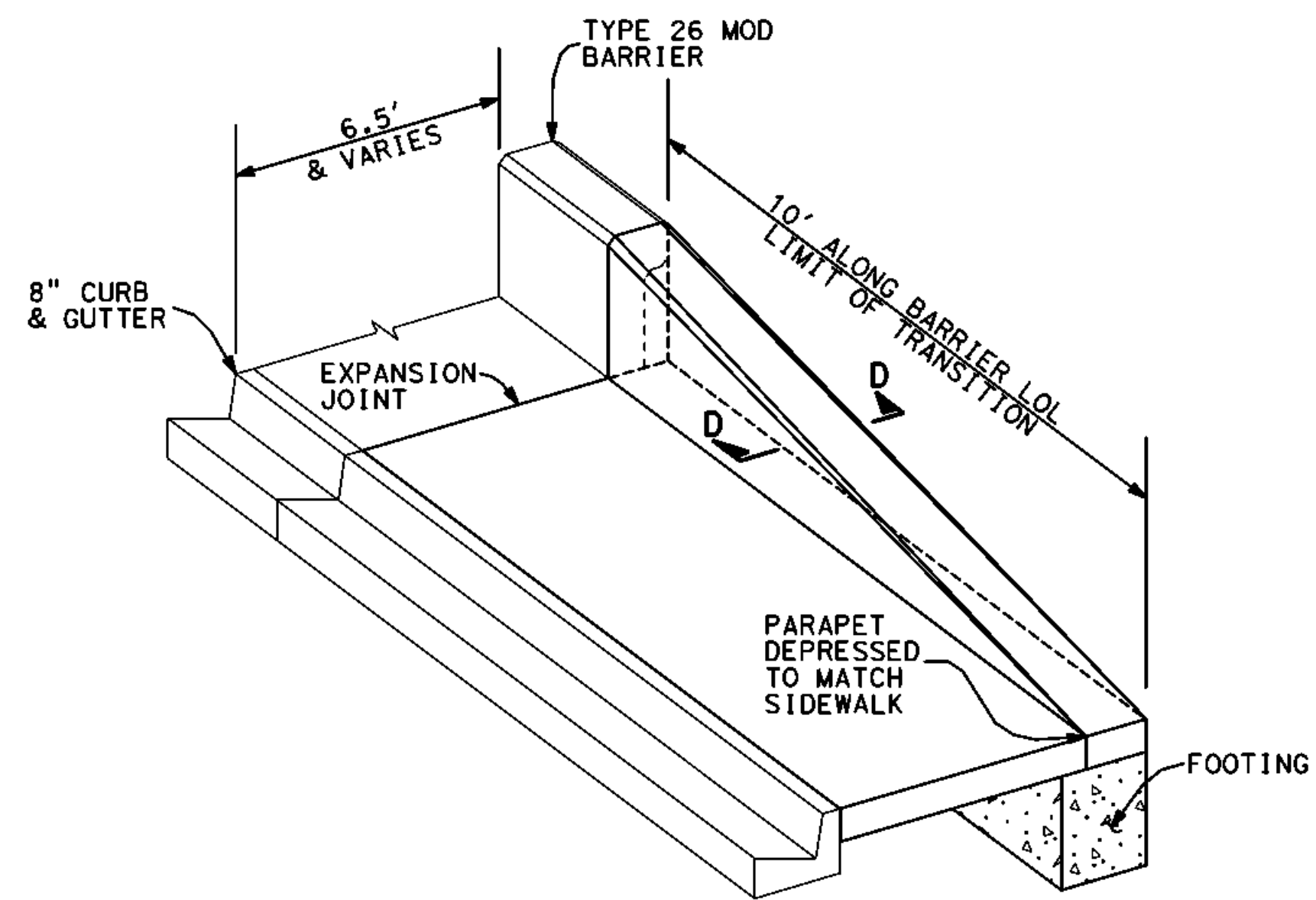
JAMES FABER R.C.E. 45668 EXPIRES 12-31-12

COUNTY OF SAN BERNARDINO  
DEPARTMENT OF PUBLIC WORKS  
RECOMMENDED / APPROVED BY  
XXXX XXXX P.E. DEPUTY DIRECTOR DATE  
XXXX XXXX P.E. DIRECTOR OF PUBLIC WORKS DATE

| J.L. REF. | W.O. NO.  | DRAWING NO. | SHEET NO. | TOTAL SHEETS |
|-----------|-----------|-------------|-----------|--------------|
| JL XXXX   | XX XXXXXX | C-11        | 43        | X            |

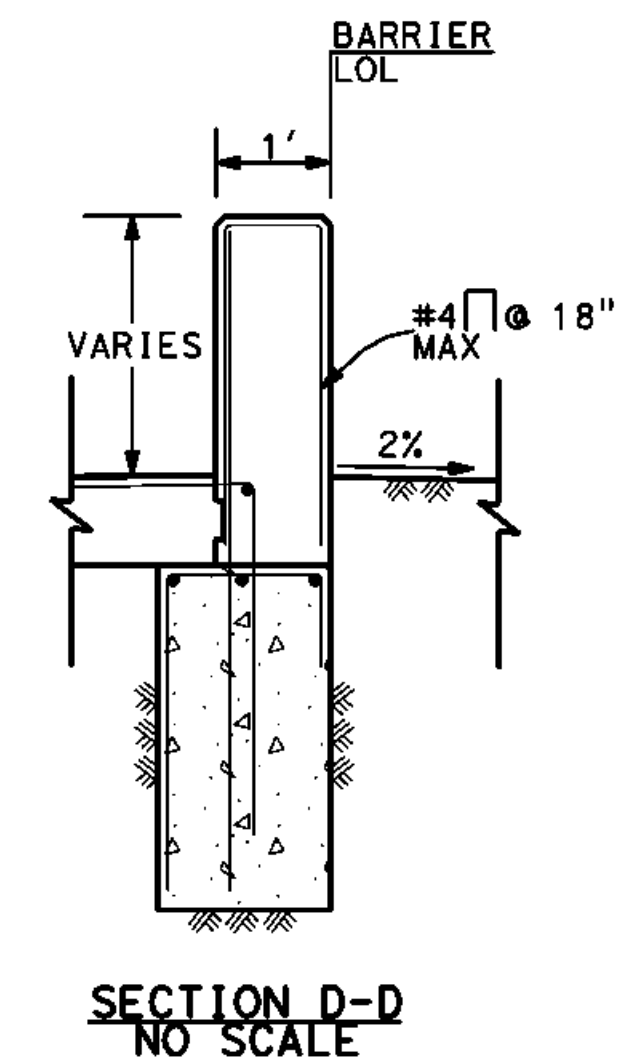


**TYPE 26 MOD BARRIER**  
NO SCALE



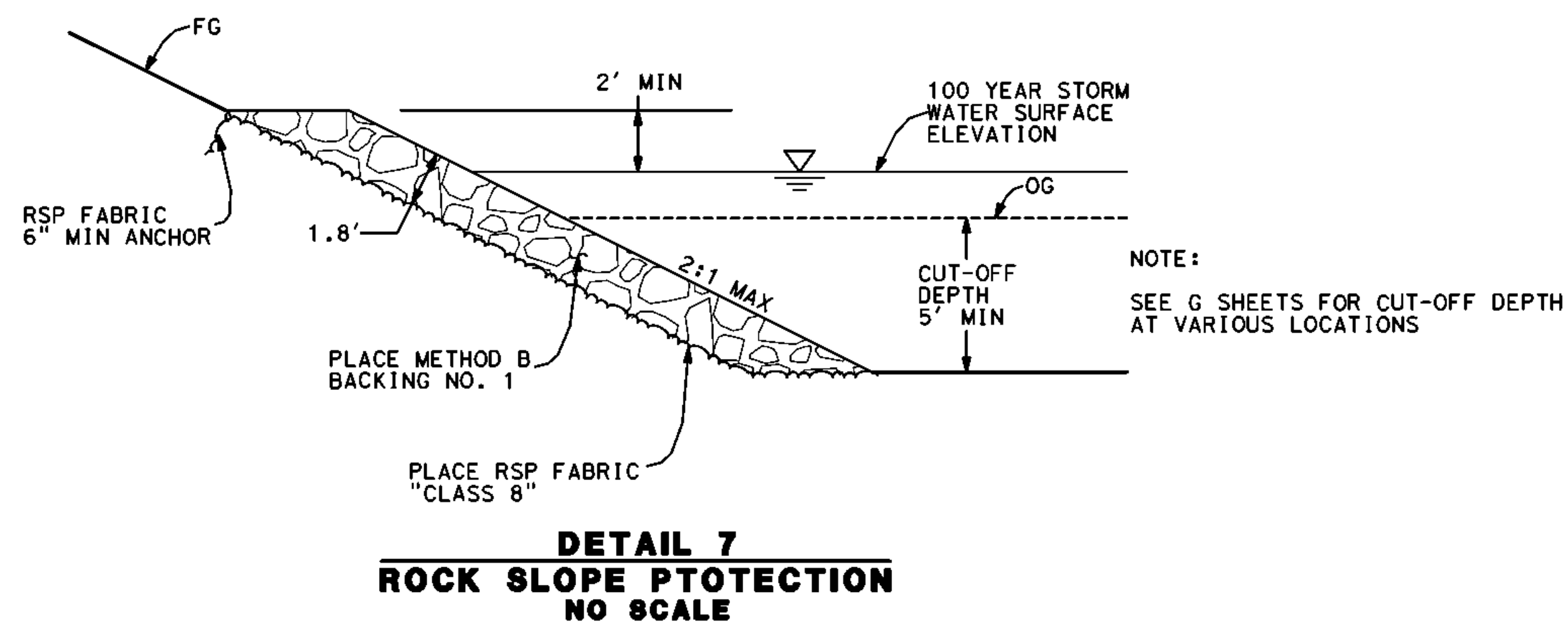
**BARRIER END TRANSITION**  
NO SCALE

**DETAIL 6**  
**CONCRETE BARRIER (TYPE 26 MOD)**  
**& END TRANSITION**  
**(FOR ROADWAY ONLY)**  
NO SCALE



**NOTES:**

- 6.1 ALL CONSTRUCTION DETAILS NOT SHOWN SHALL COMPLY WITH 2010 CALTRANS STD PLAN NO. B11-54.
- 6.2 EXPANSION JOINT CONSTRUCTED AT 10' INTERVAL (MATCH CURB & GUTTER). SEE 2010 CALTRANS STD PLAN NO. B6-21.
- 6.3 TUBULAR HAND RAILING SHALL BE CONSTRUCTED BY FOLLOWING 2010 CALTRANS STANDARD NO. B11-51.
- 6.4 A MIN OF TWO-5" ROUND OPENINGS ARE REQUIRED FOR FUTURE UTILITIES. OPENINGS ARE TO BE SEALED AT ENDS AND EXTENDED 8" MIN PAST END OF SIDEWALK IF NOT USED. DUCT FORMS ARE TO BE TIED DOWN. INSTALL CONDUIT EXPANSION FITTING OR EXPANSION-DEFLECTION FITTING PER STD PLAN ES-9B AT BRIDGE JOINTS.



**DETAIL 7**  
**ROCK SLOPE PROTECTION**  
NO SCALE

ALL DIMENSIONS ARE IN FEET  
UNLESS OTHERWISE SHOWN



| MARK | CHANGES    | RESIDENT ENGINEER | DATE |
|------|------------|-------------------|------|
|      | NO CHANGES |                   |      |

FIELD CHANGES

PLANS PREPARED BY:  
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ORANGE, CA 92868-4713  
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COUNTY OF SAN BERNARDINO  
DEPARTMENT OF PUBLIC WORKS

RECOMMENDED / APPROVED BY

XXXX XXXX P.E. DEPUTY DIRECTOR DATE

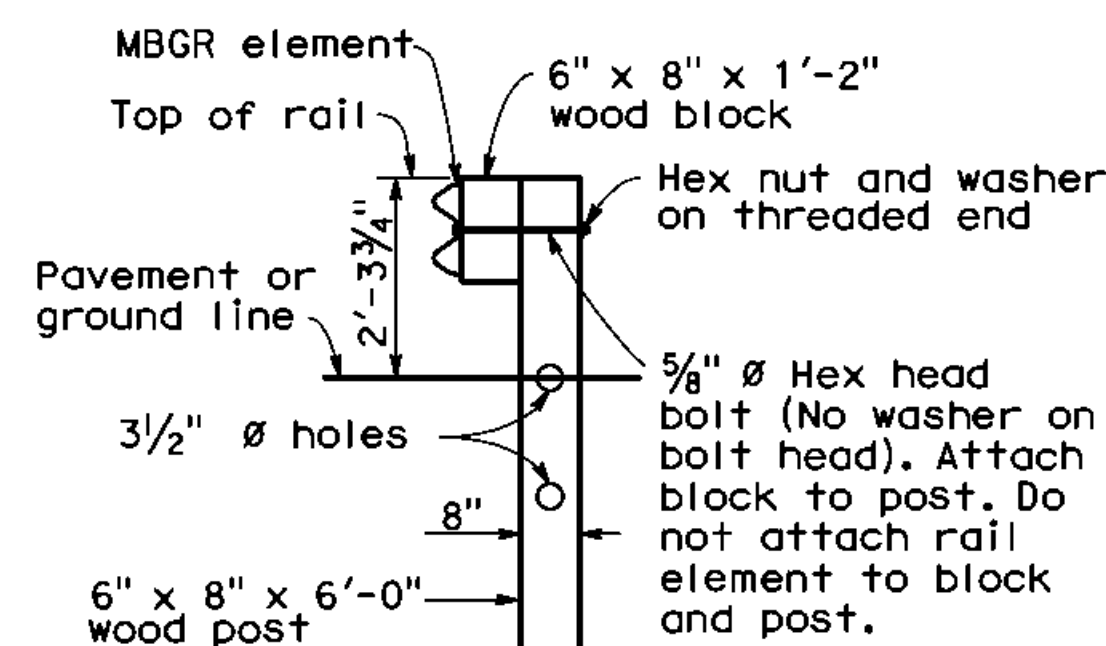
XXXX XXXX P.E. DIRECTOR OF PUBLIC WORKS DATE

SHADOW MOUNTAIN ROAD  
CONSTRUCTION DETAILS  
CONCRETE BARRIER (TYPE 26 MOD)  
ROCK SLOPE PROTECTION

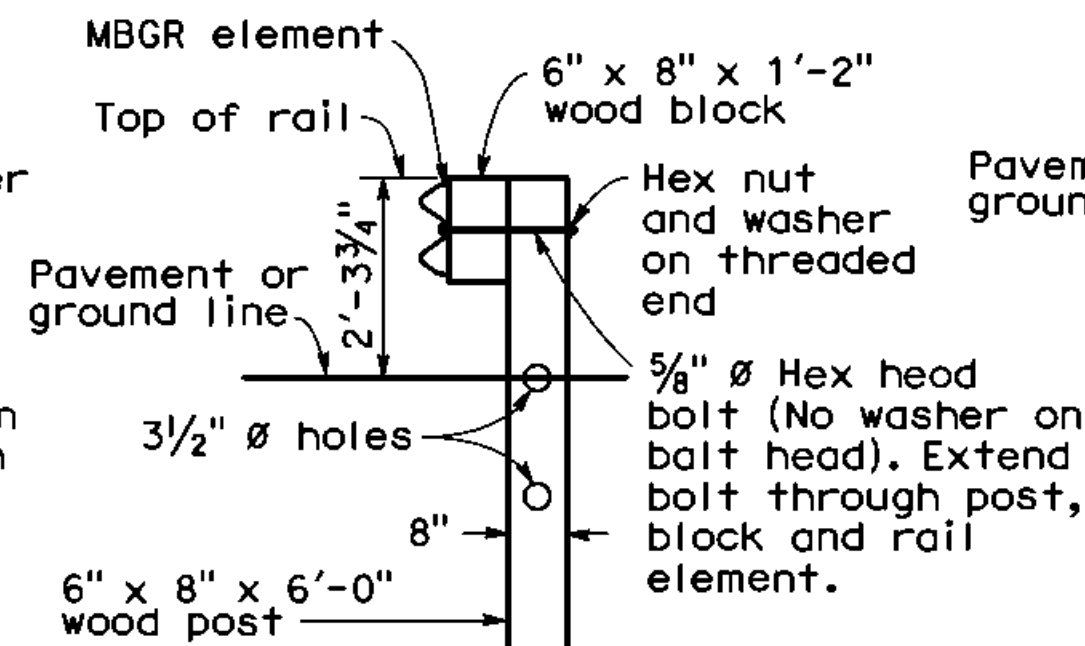
| J.L. REF. | W.O. NO.  | DRAWING NO. | SHEET NO. | TOTAL SHEETS |
|-----------|-----------|-------------|-----------|--------------|
| JL XXXX   | XX XXXXXX | C-12        | 44        | X            |

| TABLE A<br>POST OFFSET DIMENSIONS |                            |                            |
|-----------------------------------|----------------------------|----------------------------|
| Post No.                          | 3'-0" System<br>End Offset | 3'-6" System<br>End Offset |
| 1                                 | 36"                        | 42"                        |
| 2                                 | 22 7/8"                    | 27 7/8"                    |
| 3                                 | 11 3/4"                    | 16 7/8"                    |
| 4                                 | 6 3/4"                     | 10 5/8"                    |
| 5                                 | 3"                         | 6"                         |
| 6                                 | 7/4"                       | 2 3/4"                     |
| 7                                 | 0"                         | 7/4"                       |
| 8                                 | 0"                         | 0"                         |

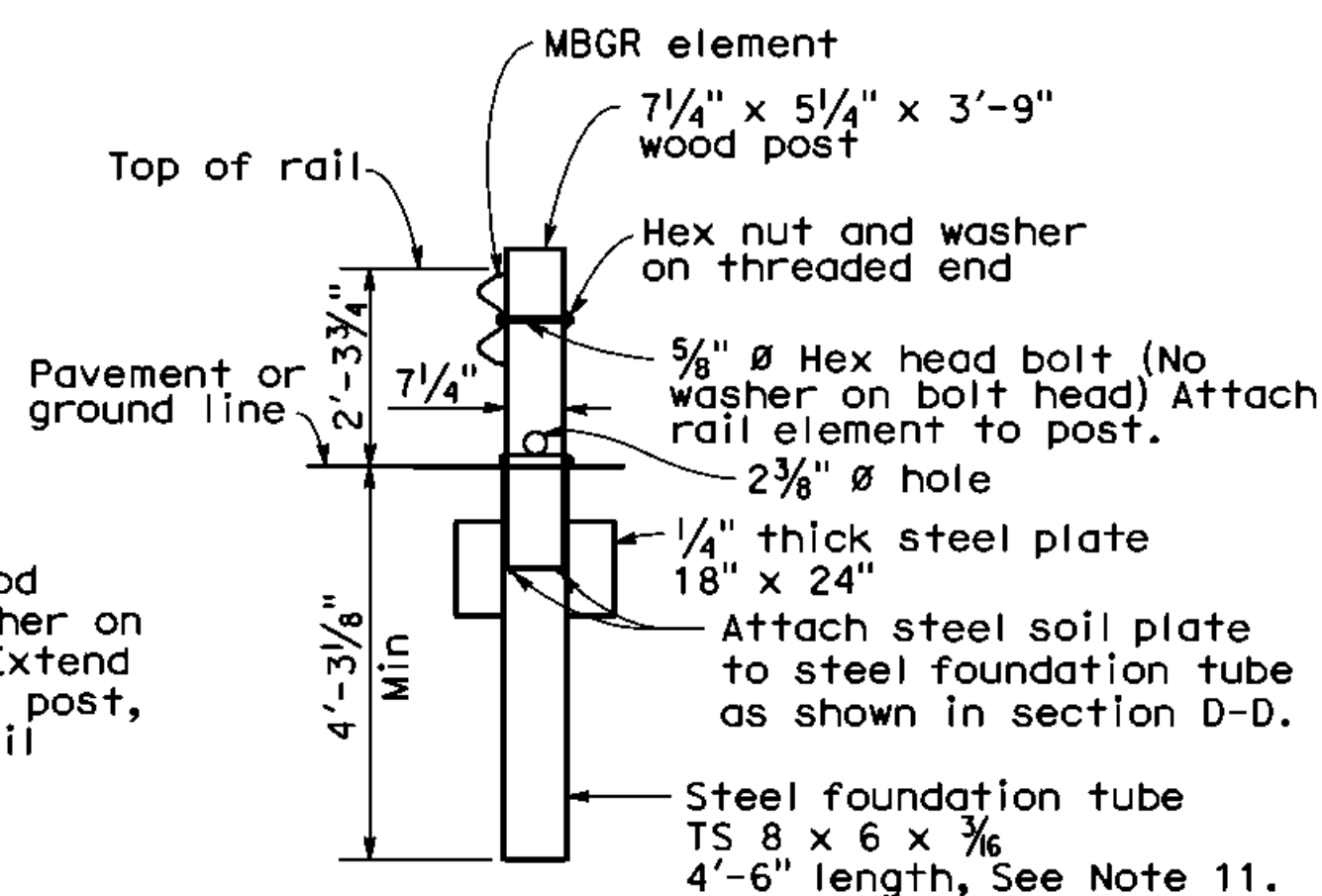
See Note 12



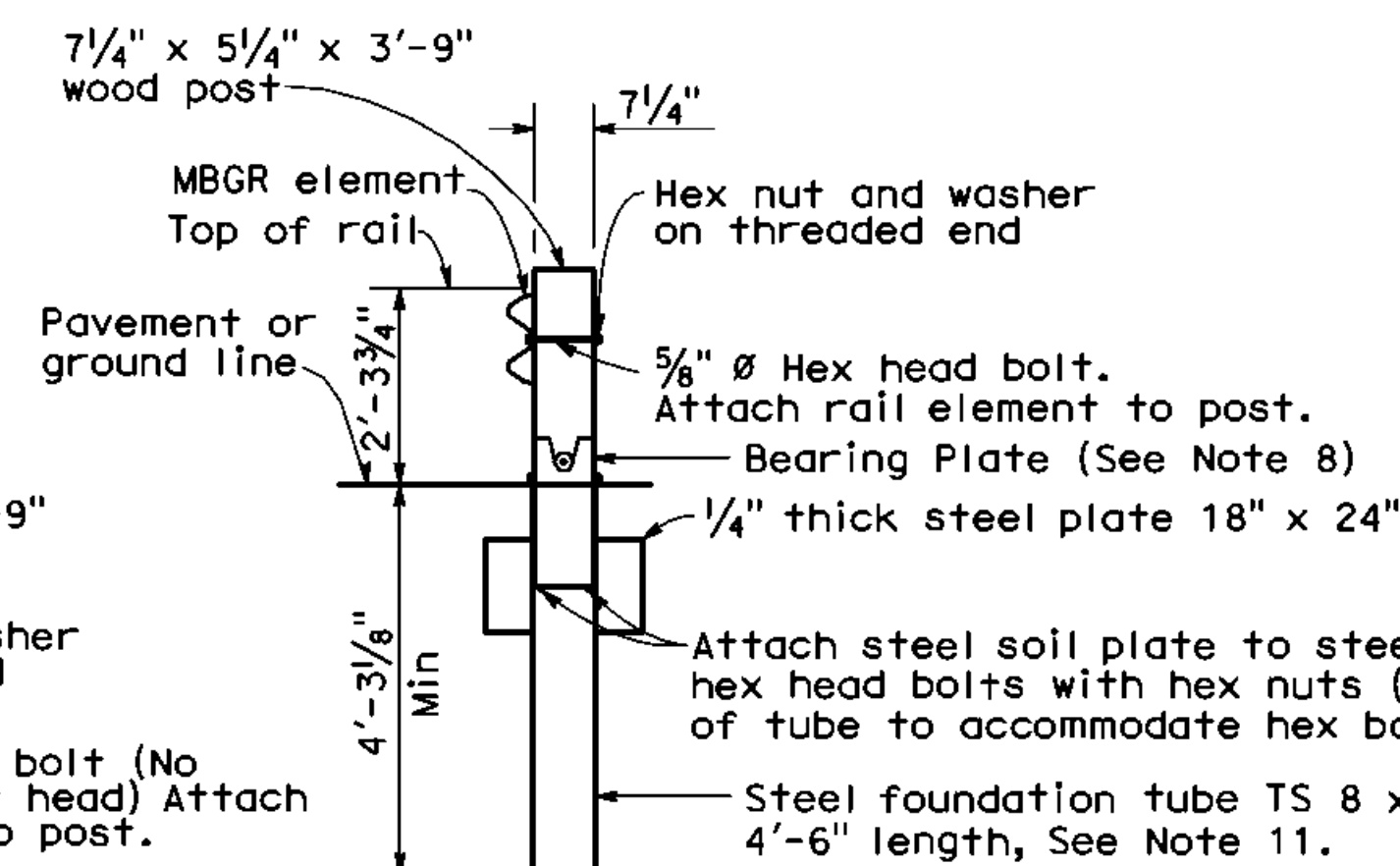
SECTION E-E  
NO SCALE



SECTION F-F  
NO SCALE



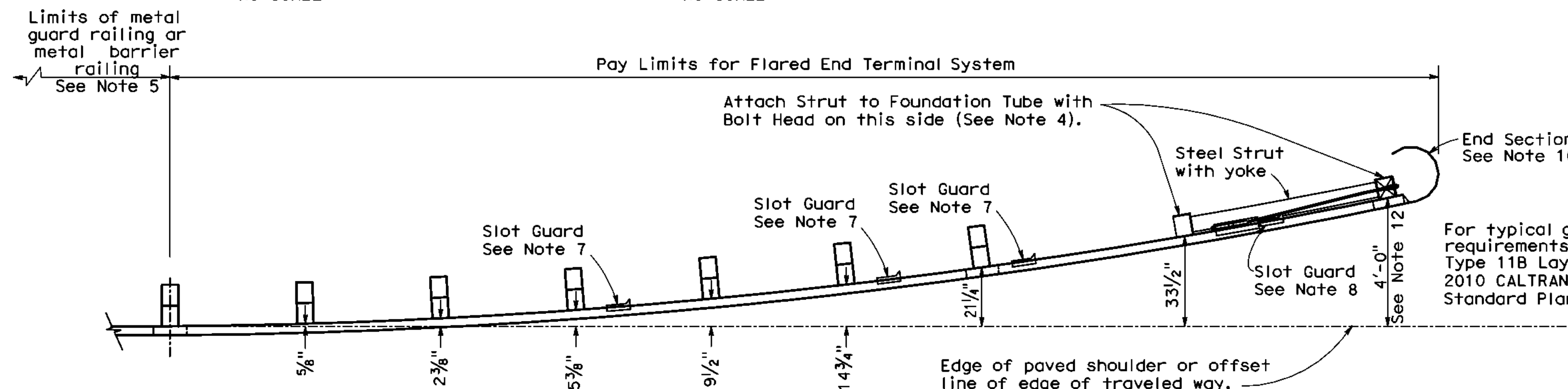
SECTION G-G



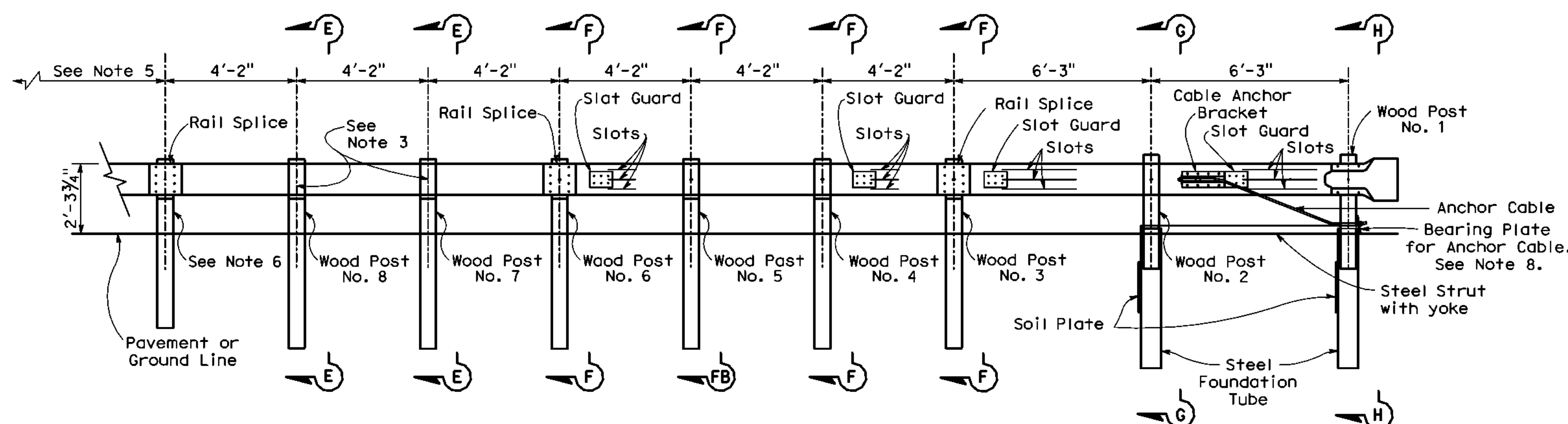
SECTION H-H  
(Terminal Section  
not shown)  
NO SCALE

#### NOTES:

- For additional details of Flared End Terminal System, refer to the manufacturer's installation instructions.
- The post offset dimensions are given to the center of the traffic face of the block, except at the first two posts, where the dimension is to the center of the traffic face of the post. Offset points are to be located by chord measurements at the back of the rail equal to the nominal post spacings shown. Posts are to be set approximately radial to the railing at each post locations.
- Do not attach rail elements to posts 7 and 8.
- Attach strut to Post Nos. 1 and 2 foundation tubes with 5/8" hex head bolts, washers and hex nuts. Bolts extend through the strut, steel foundation tube, and wood posts.
- For the length and type of metal beam guard railing or metal barrier railing the terminal system is attached to, see the Project Plans.
- Attach rail element to this post and block. Payment for this post, block and hardware is included in payment for the type of railing or barrier the terminal system is attached to, not part of payment for Flared End Terminal System.
- The deflector angle of the slot guard is to be positioned immediately downstream of the slots.
- For bearing plate orientation, refer to the manufacturer's installation instructions.
- For typical use of this terminal system with guard railing, see the A77E, A77F and A77G Series of 2010 CALTRANS Standard Plans. See 2010 CALTRANS Standard Plan A78E for typical use of this terminal system with single thrie beam barrier.
- A complete wrap around end section may be used in existing installations. New installations shall be constructed with the 3/4" wrap end section shown.
- A 6'-0" length steel foundation tube, TS 8 x 6 x 3/8" without a soil plate, may be furnished and installed in place of the 4'-6" length steel foundation tube and soil plate shown. Minimum embedment of the 6'-0" length tube shall be 5'-9". A 5/8" hex head bolt and nut shall be installed in the hole in 6'-0" length tube to keep the wood post from dropping into the tube.
- Where site conditions will not accommodate use of the standard 4'-0" system end offset, 3'-6" or 3'-0" system end offsets, as applicable, may be used. See Table A for post offset dimensions for 3'-6" and 3'-0" system end offsets.



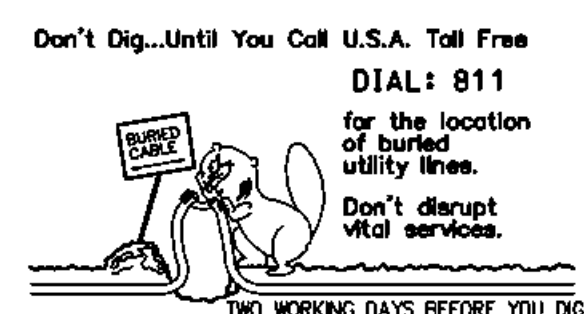
PLAN  
NO SCALE



ELEVATION  
NO SCALE

FLARED END TERMINAL SYSTEM  
(8 Post System)  
See Note 9

ALL DIMENSIONS ARE IN FEET  
UNLESS OTHERWISE SHOWN



| MARK | CHANGES    | RESIDENT ENGINEER | DATE |
|------|------------|-------------------|------|
|      | NO CHANGES |                   |      |

FIELD CHANGES

PLANS PREPARED BY:  
**AECOM**  
999 W. TOWN AND COUNTRY ROAD  
ORANGE, CA 92668-4713  
(714) 567-2501

JAMES FABER R.C.E. 45668 EXPIRES 12-31-12

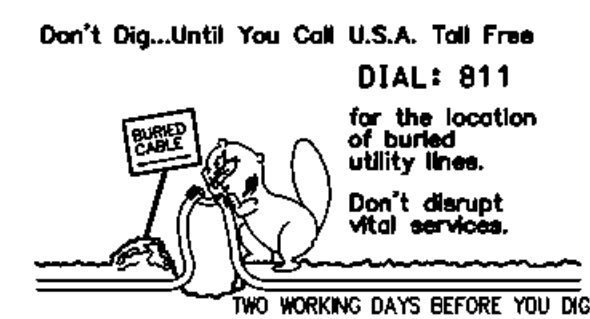
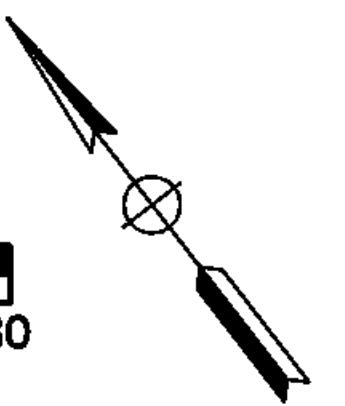
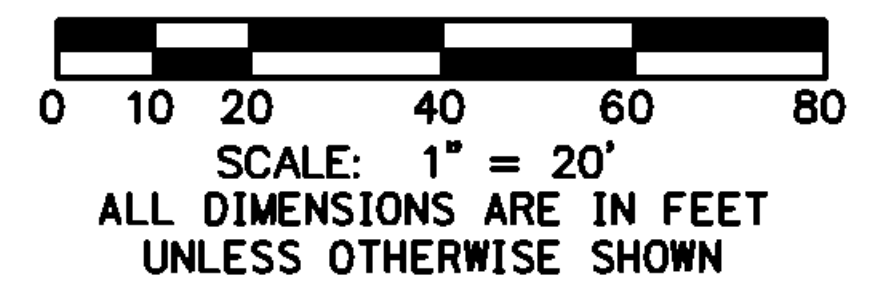
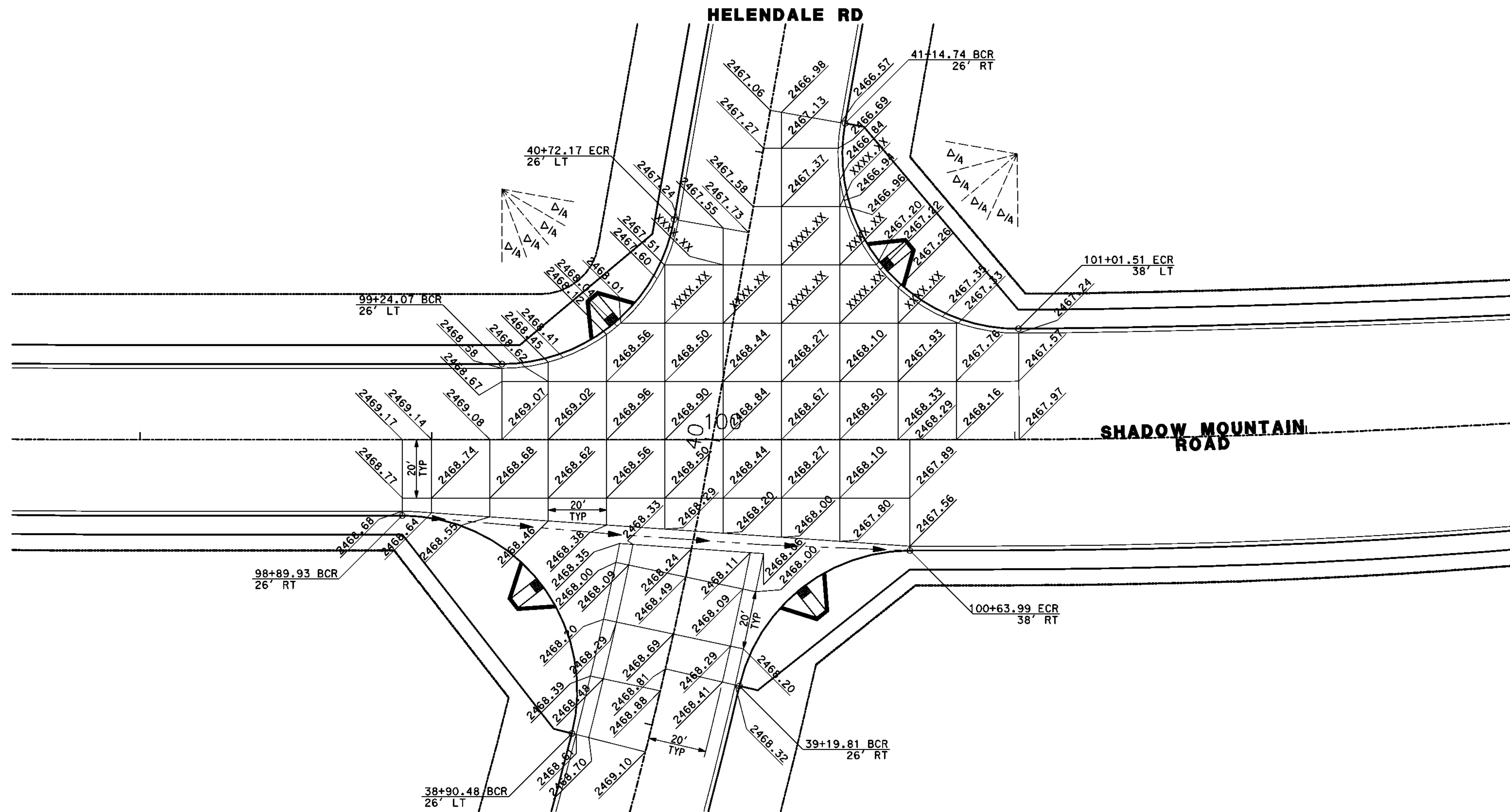
COUNTY OF SAN BERNARDINO  
DEPARTMENT OF PUBLIC WORKS  
RECOMMENDED / APPROVED BY  
XXXX XXXX P.E. DEPUTY DIRECTOR DATE  
XXXX XXXX P.E. DIRECTOR OF PUBLIC WORKS DATE

SHADOW MOUNTAIN ROAD  
FLARED END  
METAL BEAM GUARD RAILING  
TERMINAL SYSTEM

| J.L. REF. | W.O. NO.  | DRAWING NO. | SHEET NO. | TOTAL SHEETS |
|-----------|-----------|-------------|-----------|--------------|
| JL XXXX   | XX XXXXXX | C-13        | 45        | X            |

| MARK | REVISIONS | APPR. | DATE |
|------|-----------|-------|------|
|      |           |       |      |
|      |           |       |      |

| MARK | REVISIONS | APPR. | DATE |
|------|-----------|-------|------|
|      |           |       |      |
|      |           |       |      |



| MARK | CHANGES    | RESIDENT ENGINEER | DATE |
|------|------------|-------------------|------|
|      | NO CHANGES |                   |      |

FIELD CHANGES

PLANS PREPARED BY:  
**AECOM**  
 999 W. TOWN AND COUNTRY ROAD  
 ORANGE, CA 92668-4713  
 (714) 567-2501

JAMES FABER R.C.E. 45668 EXPIRES 12-31-12 X DATE

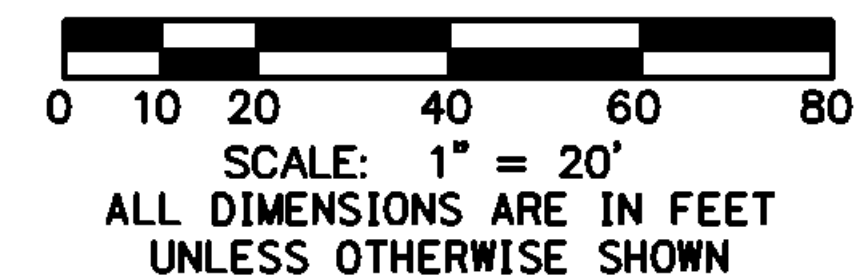
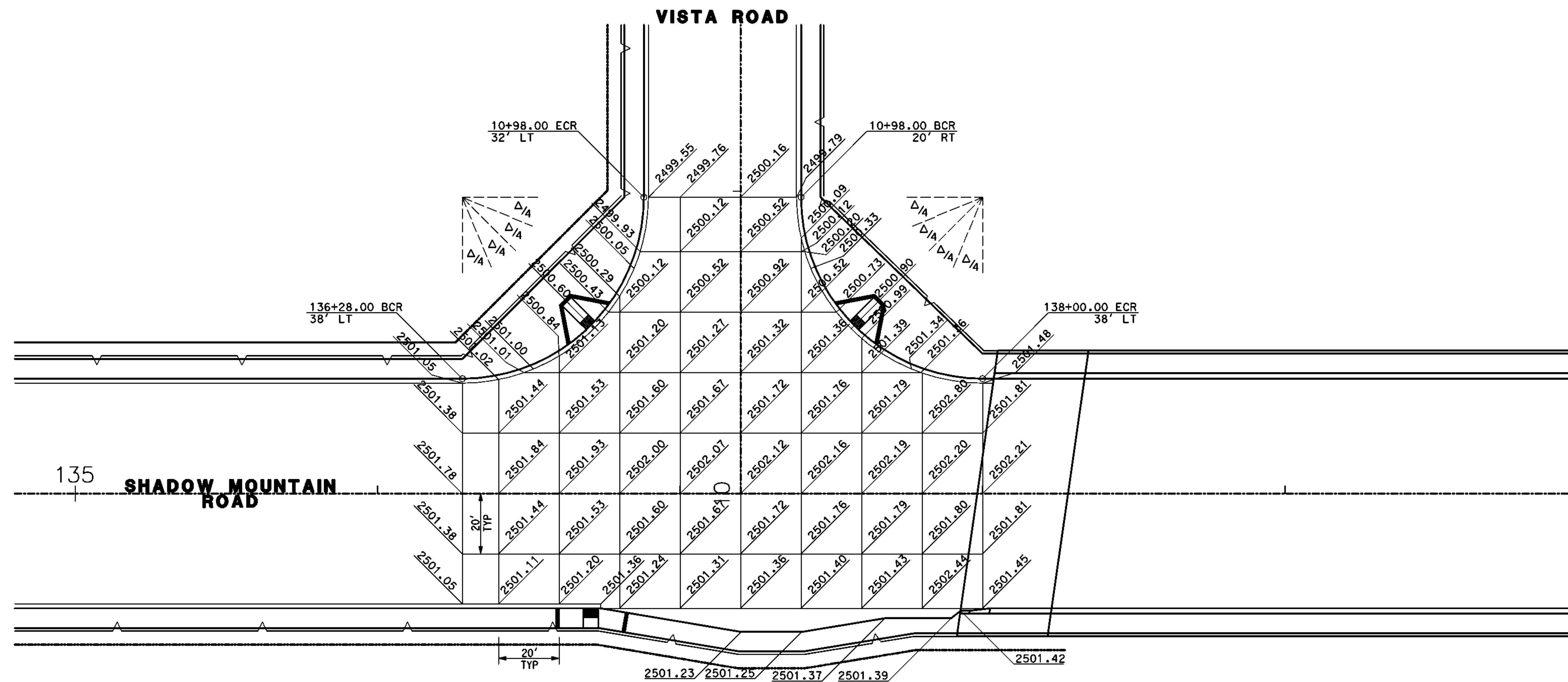
COUNTY OF SAN BERNARDINO  
 DEPARTMENT OF PUBLIC WORKS  
 RECOMMENDED / APPROVED BY  
 XXXX XXXX P.E. DEPUTY DIRECTOR DATE  
 XXXX XXXX P.E. DIRECTOR OF PUBLIC WORKS DATE

SHADOW MOUNTAIN ROAD  
 GRADING PLAN  
 SHADOW MOUNTAIN ROAD - HELENDALE ROAD  
 INTERSECTION DETAIL

| J.L. REF. | W.O. NO.  | DRAWING NO. | SHEET NO. | TOTAL SHEETS |
|-----------|-----------|-------------|-----------|--------------|
| JL XXXX   | XX XXXXXX | C-14        | 46        | X            |

| MARK | REVISIONS | APPR. | DATE |
|------|-----------|-------|------|
|      |           |       |      |
|      |           |       |      |

| MARK | REVISIONS | APPR. | DATE |
|------|-----------|-------|------|
|      |           |       |      |
|      |           |       |      |



| MARK | CHANGES | RESIDENT ENGINEER | DATE |
|------|---------|-------------------|------|
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FIELD CHANGES

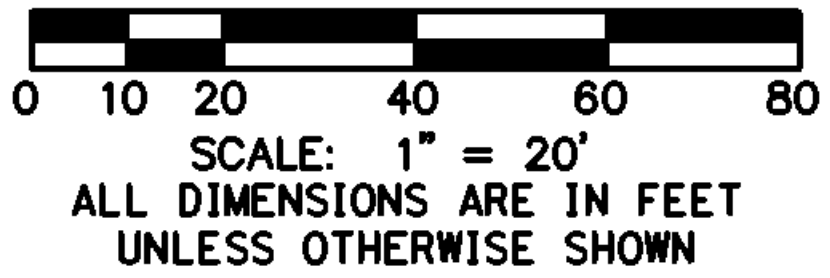
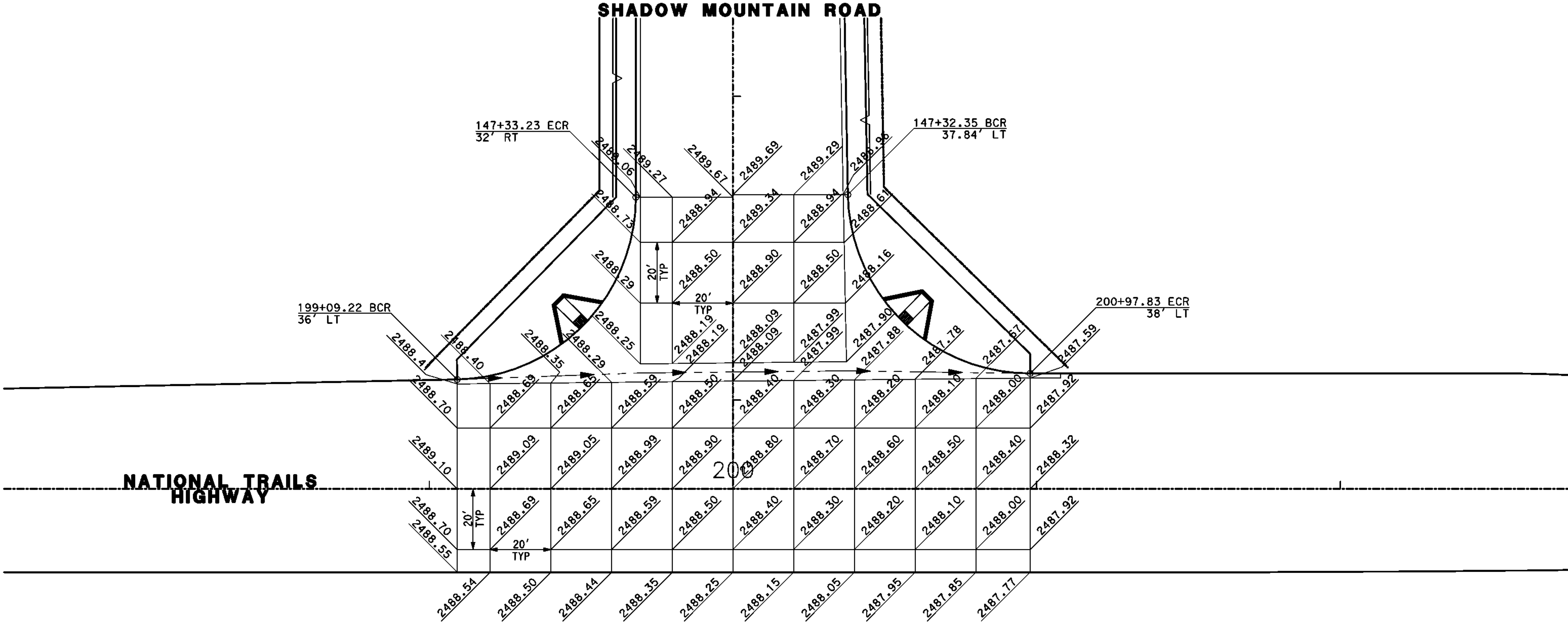
PLANS PREPARED BY:  
**AECOM**  
 999 W. TOWN AND COUNTRY ROAD  
 ORANGE, CA 92668-4713  
 (714) 567-2501  
 JAMES FABER R.C.E. 45668 EXPIRES 12-31-12

COUNTY OF SAN BERNARDINO  
 DEPARTMENT OF PUBLIC WORKS  
 RECOMMENDED / APPROVED BY  
 XXXX XXXX P.E. DEPUTY DIRECTOR \_\_\_\_\_ DATE \_\_\_\_\_  
 XXXX XXXX P.E. DIRECTOR OF PUBLIC WORKS \_\_\_\_\_ DATE \_\_\_\_\_

| SHADOW MOUNTAIN ROAD<br>GRADING PLAN<br>SHADOW MOUNTAIN ROAD - VISTA ROAD<br>INTERSECTION DETAIL |           |             |           |              |
|--------------------------------------------------------------------------------------------------|-----------|-------------|-----------|--------------|
| J.L. REF.                                                                                        | W.O. NO.  | DRAWING NO. | SHEET NO. | TOTAL SHEETS |
| JL XXXX                                                                                          | XX XXXXXX | C-15        | 47        | X            |

| MARK | REVISIONS | APPR. | DATE |
|------|-----------|-------|------|
|      |           |       |      |
|      |           |       |      |

| MARK | REVISIONS | APPR. | DATE |
|------|-----------|-------|------|
|      |           |       |      |
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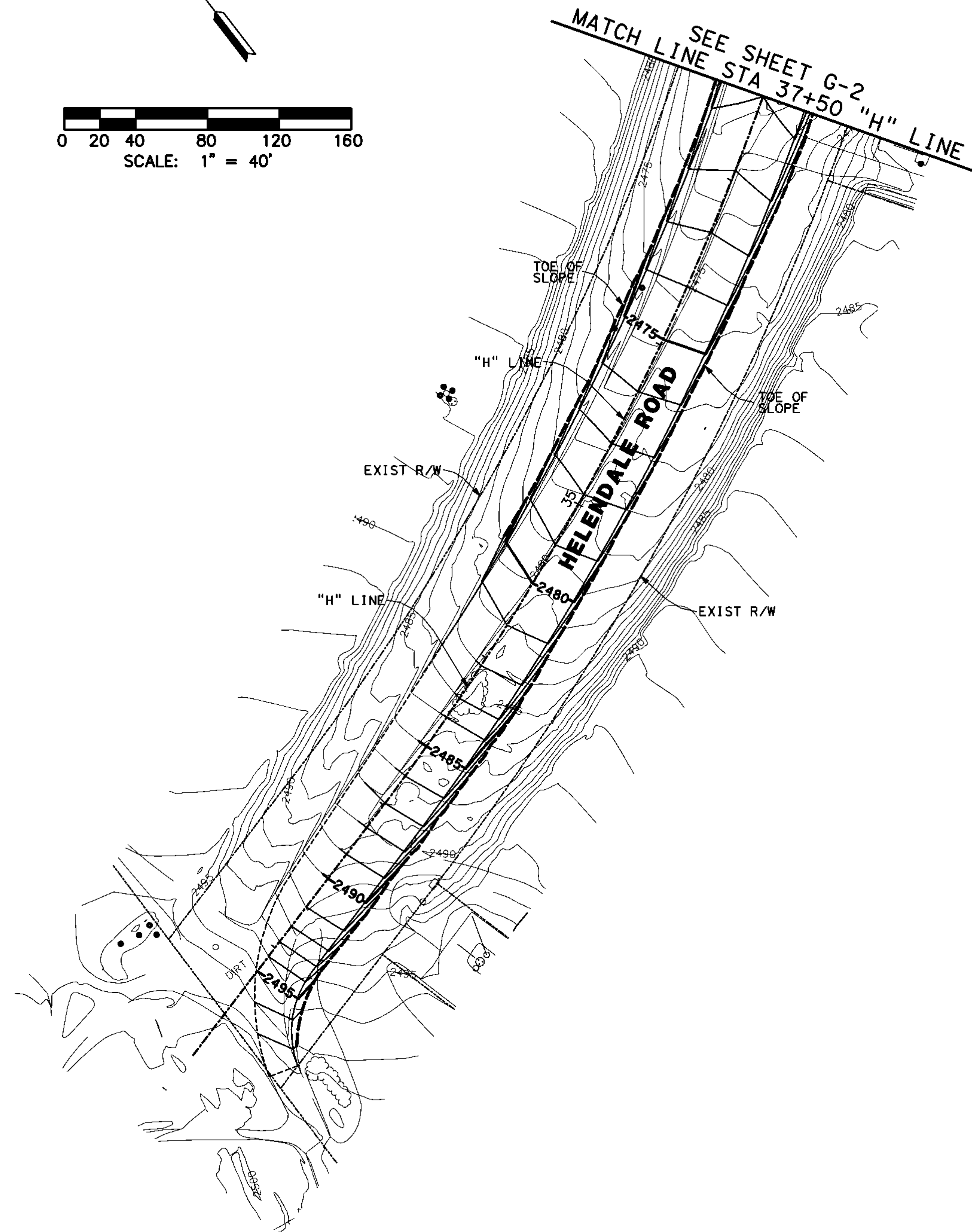
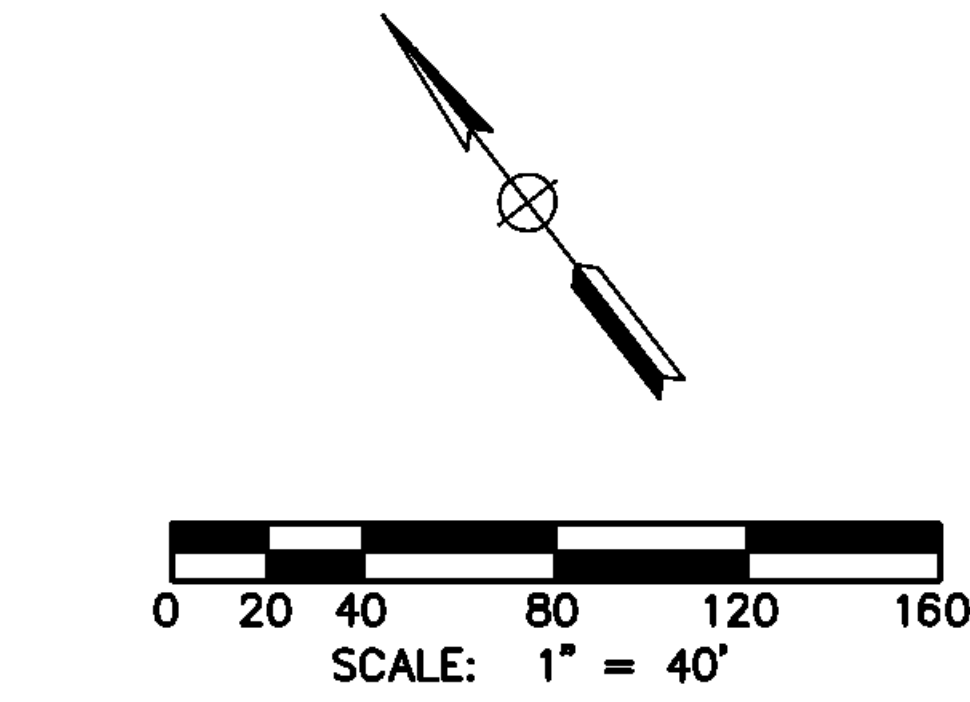
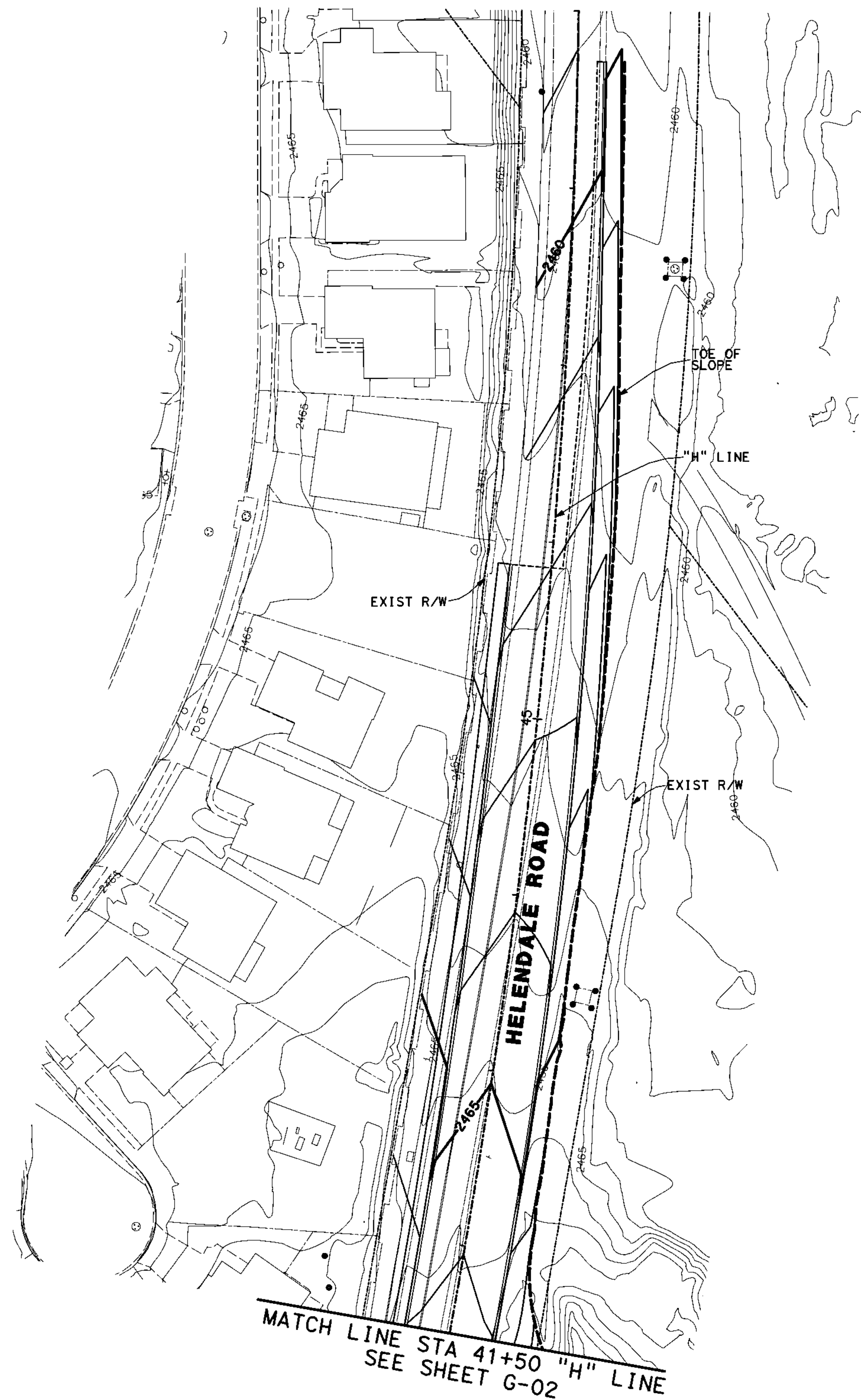
| MARK | CHANGES    | RESIDENT ENGINEER | DATE |
|------|------------|-------------------|------|
|      | NO CHANGES |                   |      |

FIELD CHANGES

PLANS PREPARED BY:  
**AECOM**  
 999 W. TOWN AND COUNTRY ROAD  
 ORANGE, CA 92668-4713  
 (714) 567-2501  
 JAMES FABER R.C.E. 45668 EXPIRES 12-31-12 X  
 DATE

COUNTY OF SAN BERNARDINO  
 DEPARTMENT OF PUBLIC WORKS  
 RECOMMENDED / APPROVED BY  
 XXXX XXXX P.E. DEPUTY DIRECTOR DATE  
 XXXX XXXX P.E. DIRECTOR OF PUBLIC WORKS DATE

| SHADOW MOUNTAIN ROAD<br>GRADING PLAN<br>SHADOW MOUNTAIN ROAD - NATIONAL TRAILS HIGHWAY<br>INTERSECTION DETAIL |           |             |           |              |
|---------------------------------------------------------------------------------------------------------------|-----------|-------------|-----------|--------------|
| J.L. REF.                                                                                                     | W.O. NO.  | DRAWING NO. | SHEET NO. | TOTAL SHEETS |
| JL XXXX                                                                                                       | XX XXXXXX | C-16        | 48        | X            |



ALL DIMENSIONS ARE IN FEET  
UNLESS OTHERWISE SHOWN

Don't Dig...Until You Call U.S.A. Toll Free

**DIAL: 811**

for the location  
of buried  
utility lines.

Don't disrupt  
vital services.



TWO WORKING DAYS BEFORE YOU DIG

|               |            |                   |      |
|---------------|------------|-------------------|------|
| MARK          | CHANGES    |                   |      |
|               | NO CHANGES | RESIDENT ENGINEER | DATE |
| FIELD CHANGES |            |                   |      |

PLANS PREPARED BY:  
**AECOM**  
999 W. TOWN AND COUNTRY ROAD  
ORANGE, CA 92868-4713  
(714) 567-2501

**JAMES FABER R.C.E. 45668 EXPIRES 12-31-12**

COUNTY OF SAN BERNARDINO  
DEPARTMENT OF PUBLIC WORKS

RECOMMENDED / APPROVED BY

XXXX XXXX P.E.      DEPUTY DIRECTOR      DATE

XXXX XXXX P.E.      DIRECTOR OF PUBLIC WORKS      DATE

SHADOW MOUNTAIN ROAD

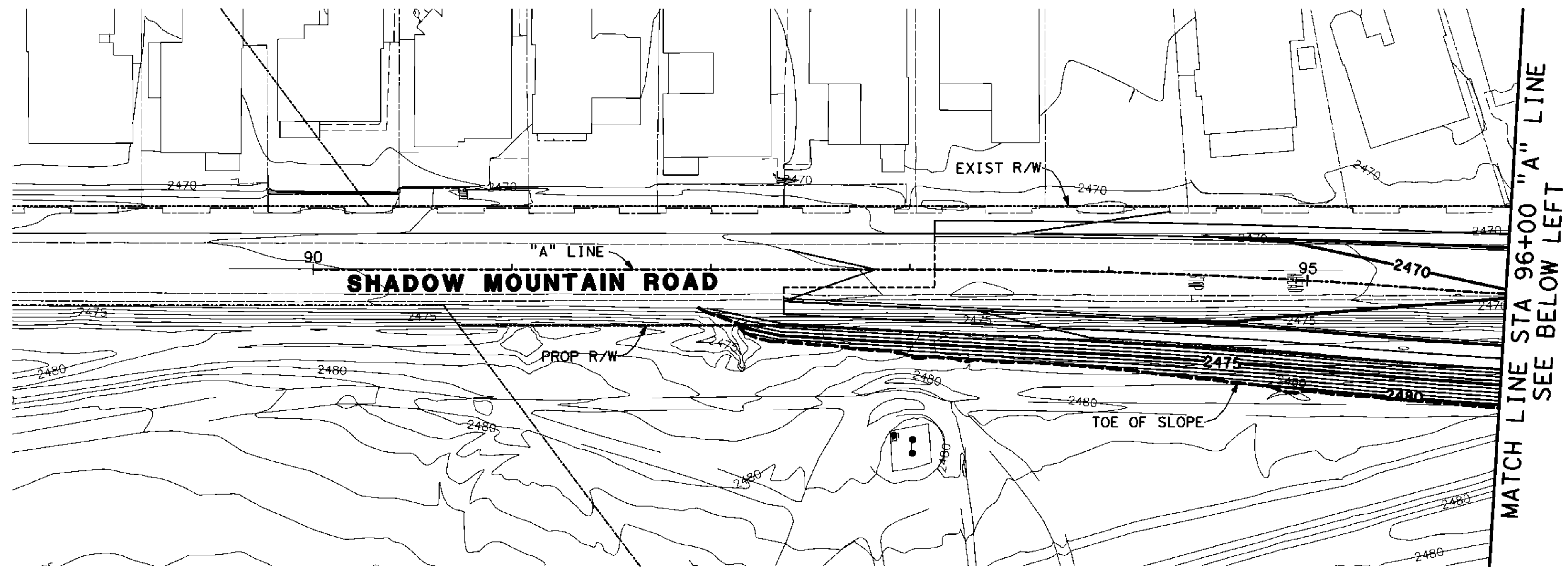
## GRADING PLAN

STA 30+40 "H" LINE TO STA 37+50 "H" LINE  
STA 41+50 "H" LINE TO STA 48+80 "H" LINE

|           |           |             |           |              |
|-----------|-----------|-------------|-----------|--------------|
| J.L. REF. | W.O. NO.  | DRAWING NO. | SHEET NO. | TOTAL SHEETS |
| JL XXXX   | XX XXXXXX | G-01        | 49        | X            |

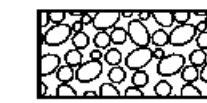
R:\60188668 Shadow Mountain GS\000\_CAD\006\_Civil\Sheets\49\_G-01.dgn  
6/22/2012

**80% DRAFT SUBMITTAL - NOT FOR CONSTRUCTION**

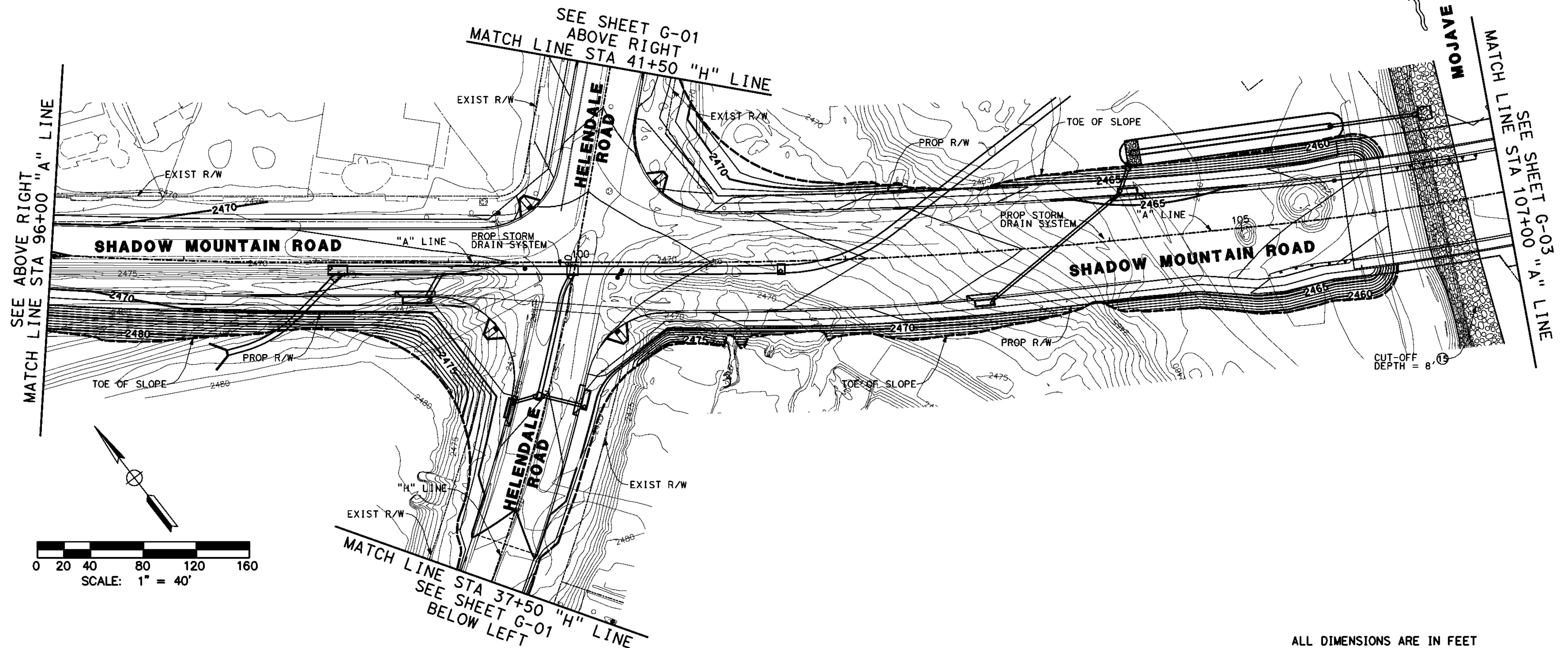


# CONSTRUCTION NOTES:

13 CONST ROCK SLOPE PROTECTION PER DET 4, SHT C-11



PROPOSED ROCK  
SLOPE PROTECTION



CUT-OFF  
DEPTH = 8' 13

ALL DIMENSIONS ARE IN FEET  
UNLESS OTHERWISE SHOWN



| MARK | CHANGES    | RESIDENT ENGINEER | DATE |
|------|------------|-------------------|------|
|      | NO CHANGES |                   |      |

FIELD CHANGES

PLANS PREPARED BY:  
**AECOM**  
999 W. TOWN AND COUNTRY ROAD  
ORANGE, CA 92668-4713  
(714) 567-2501

JAMES FABER R.C.E. 45668 EXPIRES 12-31-12

X  
DATE

COUNTY OF SAN BERNARDINO  
DEPARTMENT OF PUBLIC WORKS

RECOMMENDED / APPROVED BY

XXXX XXXX P.E. DEPUTY DIRECTOR DATE

XXXX XXXX P.E. DIRECTOR OF PUBLIC WORKS DATE

SHADOW MOUNTAIN ROAD  
GRADING PLAN  
STA 92+00 "A" LINE TO 107+00 "A" LINE  
STA 37+50 "H" LINE TO STA 41+50 "H" LINE

| J.L. REF. | W.O. NO.  | DRAWING NO. | SHEET NO. | TOTAL SHEETS |
|-----------|-----------|-------------|-----------|--------------|
| JL XXXX   | XX XXXXXX | G-02        | 50        | X            |

CONSTRUCTION NOTES:

19 CONST ROCK SLOPE PROTECTION PER DET 4, SHT C-11



PROPOSED ROCK  
SLOPE PROTECTION

MOJAVE RIVER



PROP STORM  
DRAIN SYSTEM

TOE OF SLOPE

SHADOW MOUNTAIN ROAD

TOE OF SLOPE

PROP R/W

SEE STRUCTURAL PLANS

PROP R/W

19  
CUT-OFF  
DEPTH = 8'

0 20 40 80 120 160  
SCALE: 1" = 40'



Don't Dig...Until You Call U.S.A. Toll Free

DIAL: 811

for the location

of buried

utility lines.

Don't disrupt

vital services.

NO WORKING DAYS BEFORE YOU DIG

| MARK | CHANGES    | RESIDENT ENGINEER | DATE |
|------|------------|-------------------|------|
|      | NO CHANGES |                   |      |

FIELD CHANGES

PLANS PREPARED BY:

**AECOM**

999 W. TOWN AND COUNTRY ROAD  
ORANGE, CA 92668-4713  
(714) 567-2501

JAMES FABER R.C.E. 45668 EXPIRES 12-31-12

X

DATE

COUNTY OF SAN BERNARDINO  
DEPARTMENT OF PUBLIC WORKS

RECOMMENDED / APPROVED BY

XXXX XXXX P.E. DEPUTY DIRECTOR

DATE

XXXX XXXX P.E. DIRECTOR OF PUBLIC WORKS

DATE

ALL DIMENSIONS ARE IN FEET  
UNLESS OTHERWISE SHOWN

SHADOW MOUNTAIN ROAD

GRADING PLAN

STA 107+00 "A" LINE TO 119+00 "A" LINE

| J.L. REF. | W.O. NO.  | DRAWING NO. | SHEET NO. | TOTAL SHEETS |
|-----------|-----------|-------------|-----------|--------------|
| JL XXXX   | XX XXXXXX | G-03        | 51        | X            |

CONSTRUCTION NOTES:

13 CONST ROCK SLOPE PROTECTION PER DET 4, SHT C-11



PROPOSED ROCK  
SLOPE PROTECTION

| MARK | REVISIONS | APPR. | DATE |
|------|-----------|-------|------|
|      |           |       |      |
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|      |           |       |      |

| MARK | REVISIONS | APPR. | DATE |
|------|-----------|-------|------|
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|      |           |       |      |



| MARK | CHANGES    | RESIDENT ENGINEER | DATE |
|------|------------|-------------------|------|
|      | NO CHANGES |                   |      |

FIELD CHANGES

PLANS PREPARED BY:  
**AECOM**  
999 W. TOWN AND COUNTRY ROAD  
ORANGE, CA 92668-4713  
(714) 567-2501

JAMES FABER R.C.E. 45668 EXPIRES 12-31-12

X  
DATE

COUNTY OF SAN BERNARDINO  
DEPARTMENT OF PUBLIC WORKS

RECOMMENDED / APPROVED BY

XXXX XXXX P.E. DEPUTY DIRECTOR DATE

XXXX XXXX P.E. DIRECTOR OF PUBLIC WORKS DATE

ALL DIMENSIONS ARE IN FEET  
UNLESS OTHERWISE SHOWN

SHADOW MOUNTAIN ROAD

GRADING PLAN

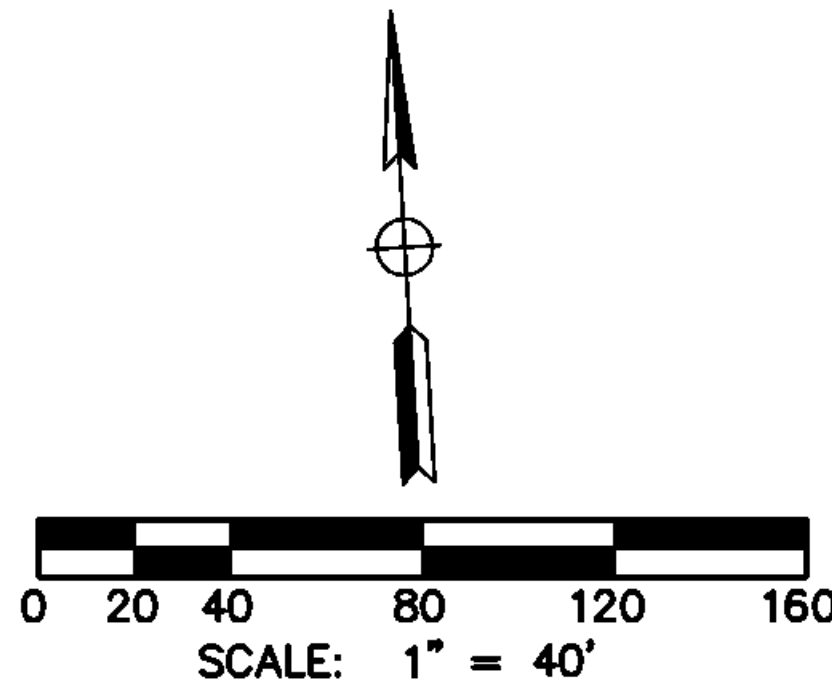
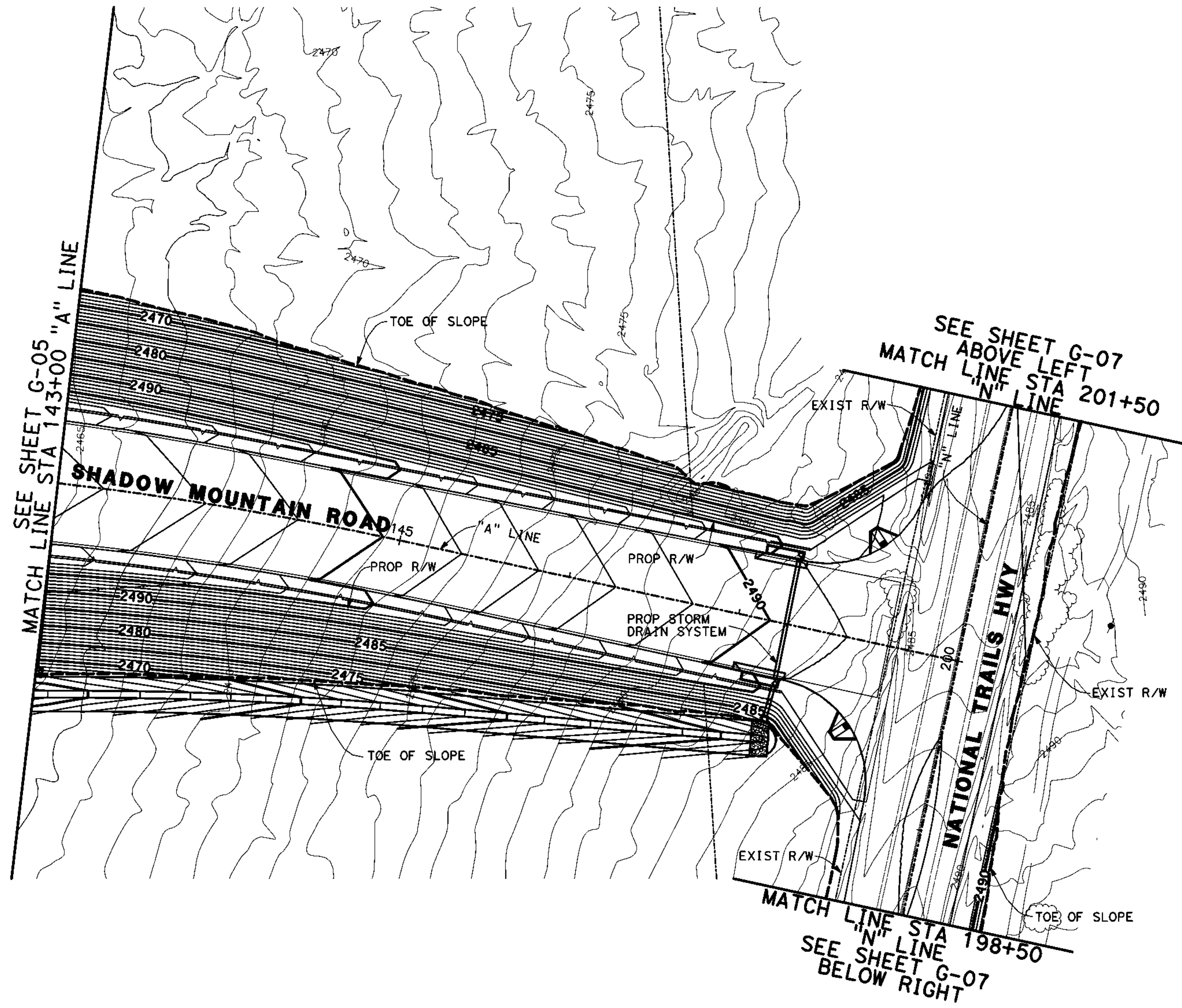
STA 119+00 "A" LINE TO 131+00 "A" LINE  
STA 10+00 "C" LINE TO 20+00 "C" LINE

| J.L. REF. | W.O. NO.  | DRAWING NO. | SHEET NO. | TOTAL SHEETS |
|-----------|-----------|-------------|-----------|--------------|
| JL XXXX   | XX XXXXXX | G-04        | 52        | X            |

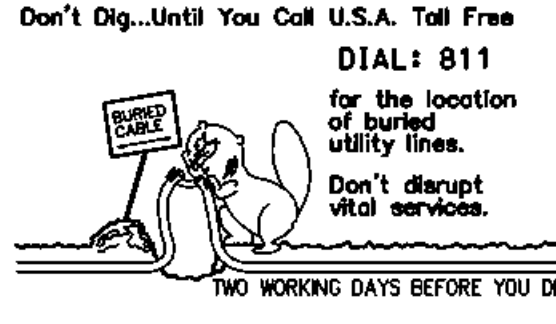


| MARK | REVISIONS | APPR. | DATE |
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| MARK | REVISIONS | APPR. | DATE |
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|      |           |       |      |
|      |           |       |      |



ALL DIMENSIONS ARE IN FEET  
UNLESS OTHERWISE SHOWN



| MARK | CHANGES    | RESIDENT ENGINEER | DATE |
|------|------------|-------------------|------|
|      | NO CHANGES |                   |      |

FIELD CHANGES

PLANS PREPARED BY:  
**AECOM**  
999 W. TOWN AND COUNTRY ROAD  
ORANGE, CA 92668-4713  
(714) 567-2501

JAMES FABER R.C.E. 45668 EXPIRES 12-31-12

X

DATE

COUNTY OF SAN BERNARDINO  
DEPARTMENT OF PUBLIC WORKS

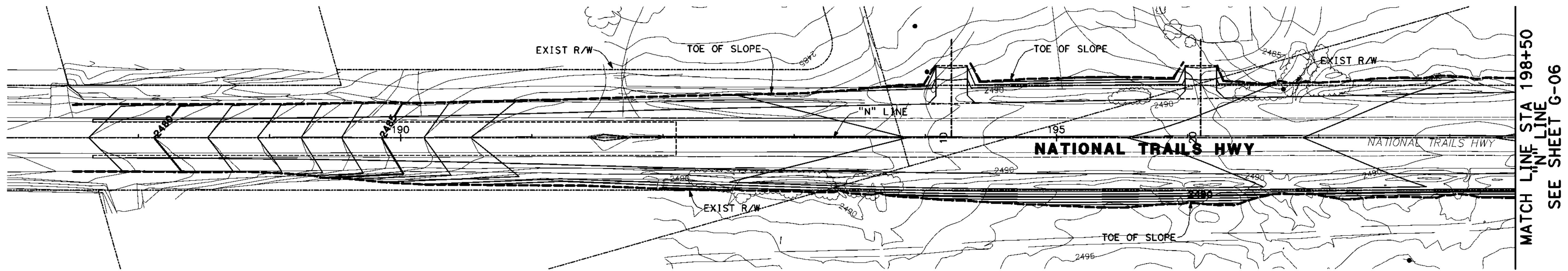
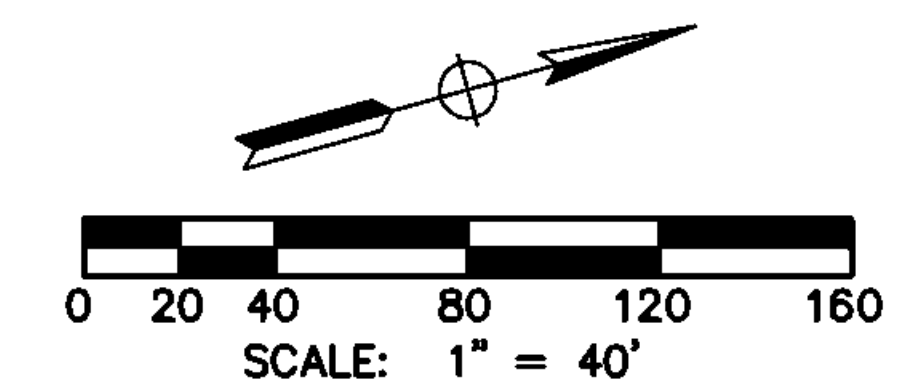
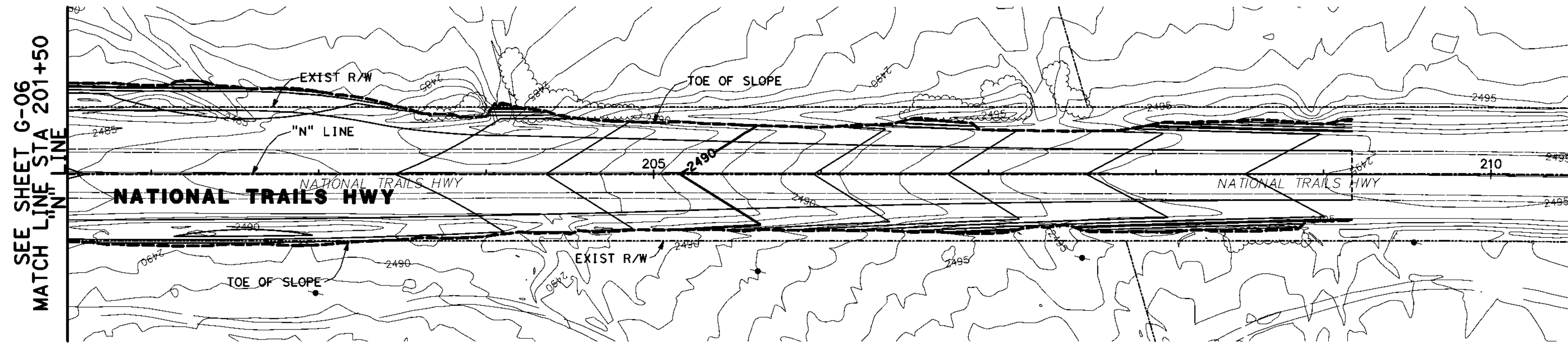
RECOMMENDED / APPROVED BY

XXXX XXXX P.E. DEPUTY DIRECTOR DATE

XXXX XXXX P.E. DIRECTOR OF PUBLIC WORKS DATE

SHADOW MOUNTAIN ROAD  
GRADING PLAN  
STA 143+00 "A" LINE TO 148+30 "A" LINE  
STA 198+50 "N" LINE TO 201+50 "N" LINE

| J.L. REF. | W.O. NO.  | DRAWING NO. | SHEET NO. | TOTAL SHEETS |
|-----------|-----------|-------------|-----------|--------------|
| JL XXXX   | XX XXXXXX | G-06        | 54        | X            |



MATCH LINE STA 198+50  
"N" LINE  
SEE SHEET G-06

| MARK | REVISIONS | APPR. | DATE |
|------|-----------|-------|------|
|      |           |       |      |
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| MARK | REVISIONS | APPR. | DATE |
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| MARK | CHANGES    | RESIDENT ENGINEER | DATE |
|------|------------|-------------------|------|
|      | NO CHANGES |                   |      |

FIELD CHANGES

PLANS PREPARED BY:  
**AECOM**  
999 W. TOWN AND COUNTRY ROAD  
ORANGE, CA 92668-4713  
(714) 567-2501

JAMES FABER R.C.E. 45668 EXPIRES 12-31-12

X  
DATE

COUNTY OF SAN BERNARDINO  
DEPARTMENT OF PUBLIC WORKS

RECOMMENDED / APPROVED BY

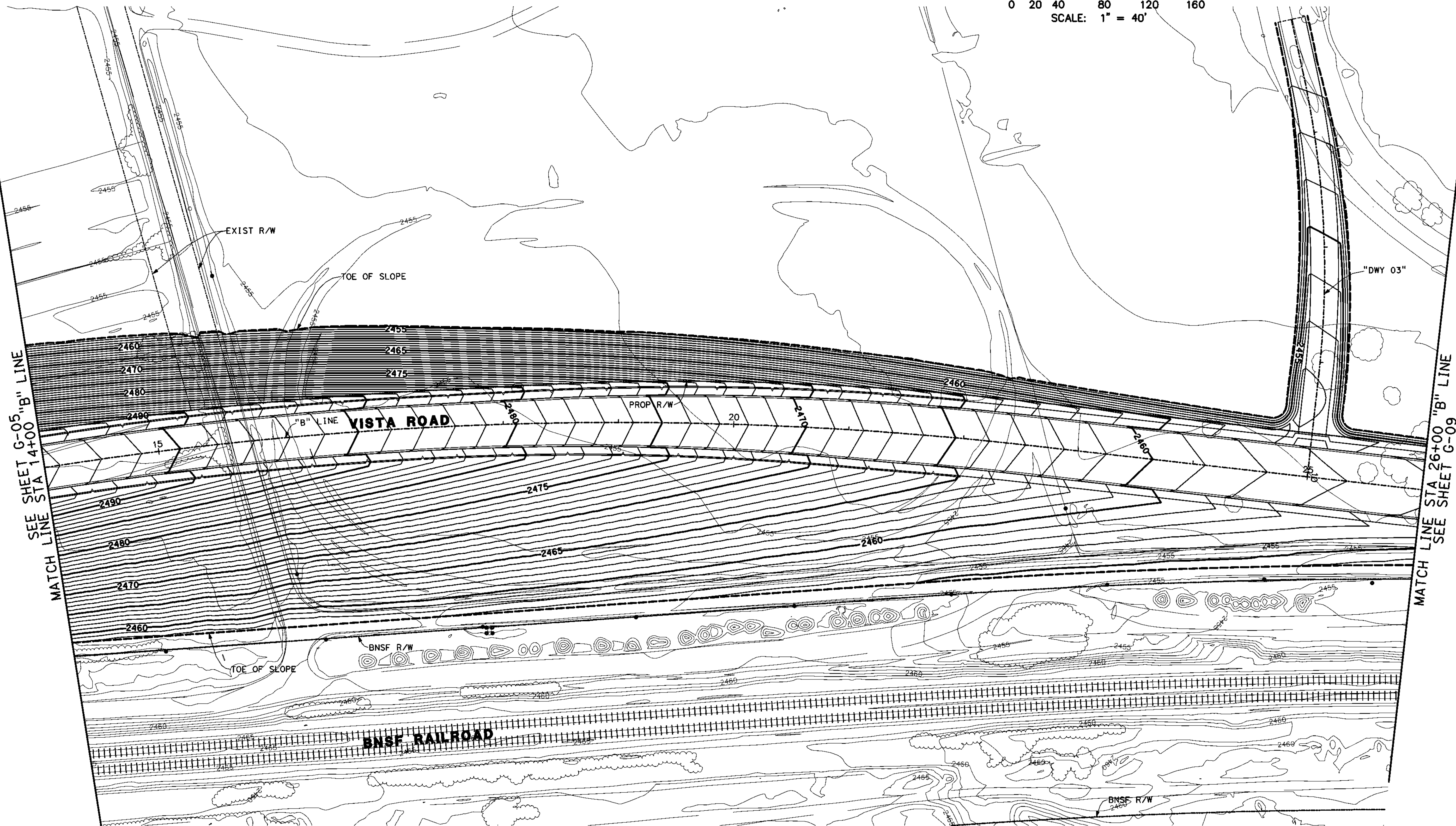
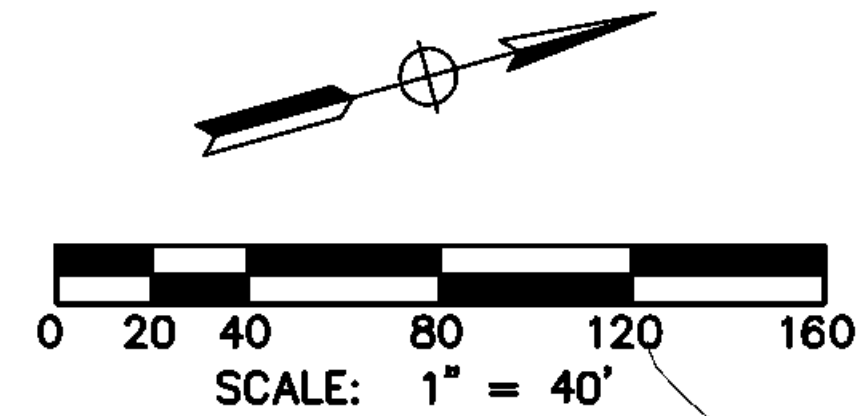
XXXX XXXX P.E. DEPUTY DIRECTOR DATE

XXXX XXXX P.E. DIRECTOR OF PUBLIC WORKS DATE

ALL DIMENSIONS ARE IN FEET  
UNLESS OTHERWISE SHOWN

SHADOW MOUNTAIN ROAD  
GRADING PLAN  
STA 189+00 "N" LINE TO 198+50 "N" LINE  
STA 201+50 "N" LINE TO 210+00 "N" LINE

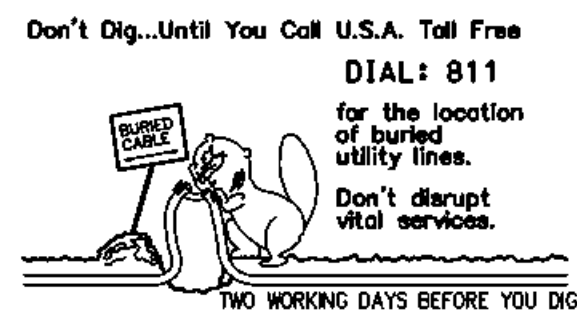
|                      |                       |                     |                 |                   |
|----------------------|-----------------------|---------------------|-----------------|-------------------|
| J.L. REF.<br>JL XXXX | W.O. NO.<br>XX XXXXXX | DRAWING NO.<br>G-07 | SHEET NO.<br>55 | TOTAL SHEETS<br>X |
|----------------------|-----------------------|---------------------|-----------------|-------------------|



ALL DIMENSIONS ARE IN FEET  
UNLESS OTHERWISE SHOWN

| MARK | REVISIONS | APPR. | DATE |
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| MARK | REVISIONS | APPR. | DATE |
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| MARK | CHANGES | RESIDENT ENGINEER | DATE |
|------|---------|-------------------|------|
|      |         |                   |      |
|      |         |                   |      |

FIELD CHANGES

PLANS PREPARED BY:  
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ORANGE, CA 92668-4713  
(714) 567-2501

JAMES FABER R.C.E. 45668 EXPIRES 12-31-12

X  
DATE

COUNTY OF SAN BERNARDINO  
DEPARTMENT OF PUBLIC WORKS

RECOMMENDED / APPROVED BY

XXXX XXXX P.E. DEPUTY DIRECTOR DATE

XXXX XXXX P.E. DIRECTOR OF PUBLIC WORKS DATE

SHADOW MOUNTAIN ROAD

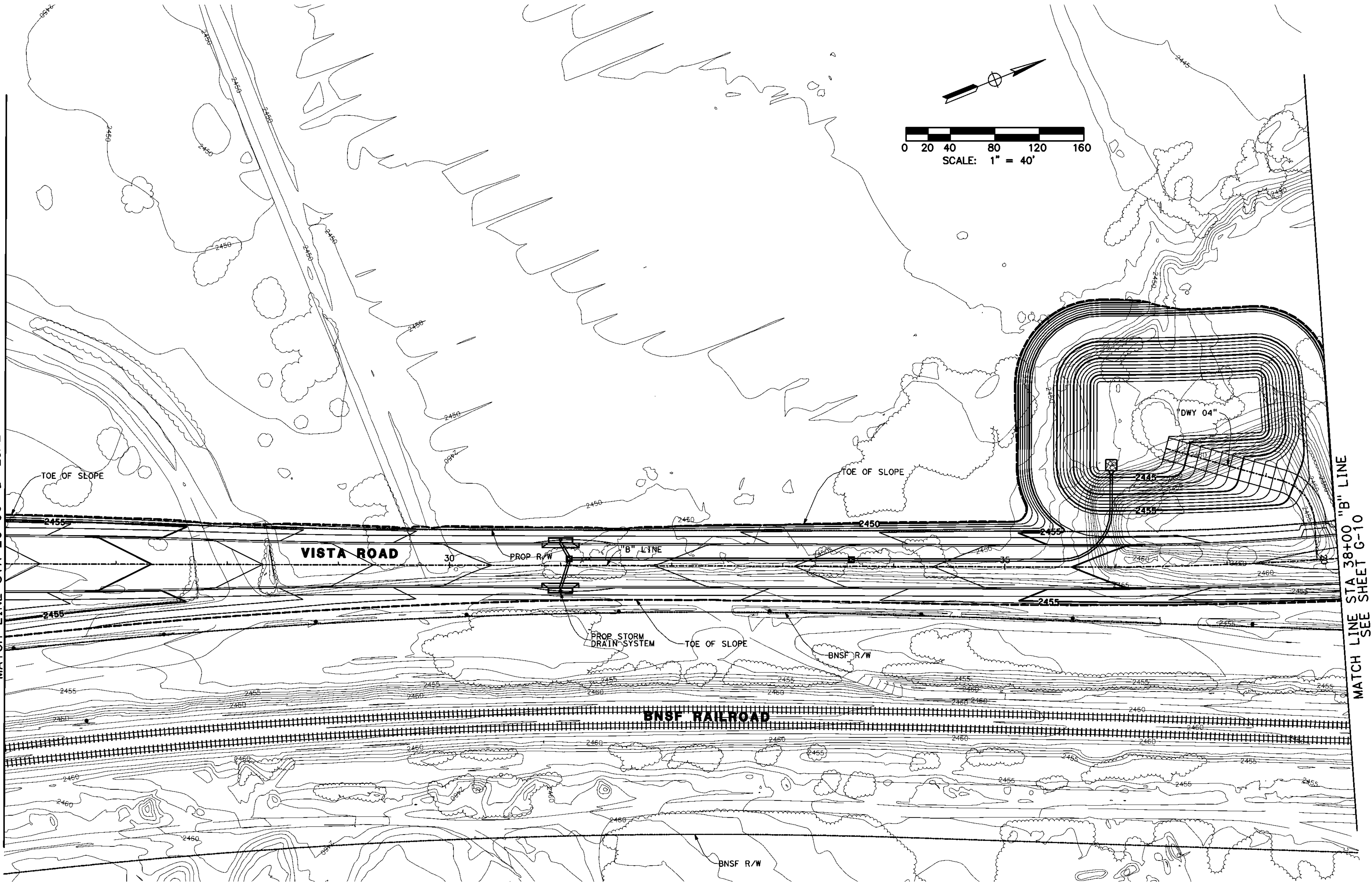
GRADING PLAN  
STA 14+00 "B" LINE TO 26+00 "B" LINE,  
AND "DWY 03"

| J.L. REF. | W.O. NO.  | DRAWING NO. | SHEET NO. | TOTAL SHEETS |
|-----------|-----------|-------------|-----------|--------------|
| JL XXXX   | XX XXXXXX | G-08        | 56        | X            |

| MARK | REVISIONS | APPR. | DATE |
|------|-----------|-------|------|
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|      |           |       |      |

| MARK | REVISIONS | APPR. | DATE |
|------|-----------|-------|------|
|      |           |       |      |
|      |           |       |      |

SEE SHEET G-08  
MATCH LINE STA 26+00 "B" LINE



MATCH LINE STA 38+00 "B" LINE  
SEE SHEET G-10

ALL DIMENSIONS ARE IN FEET  
UNLESS OTHERWISE SHOWN



| MARK | CHANGES | RESIDENT ENGINEER | DATE |
|------|---------|-------------------|------|
|      |         |                   |      |
|      |         |                   |      |

FIELD CHANGES

PLANS PREPARED BY:  
**AECOM**  
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ORANGE, CA 92668-4713  
(714) 567-2501

JAMES FABER R.C.E. 45668 EXPIRES 12-31-12

X  
DATE

COUNTY OF SAN BERNARDINO  
DEPARTMENT OF PUBLIC WORKS

RECOMMENDED / APPROVED BY

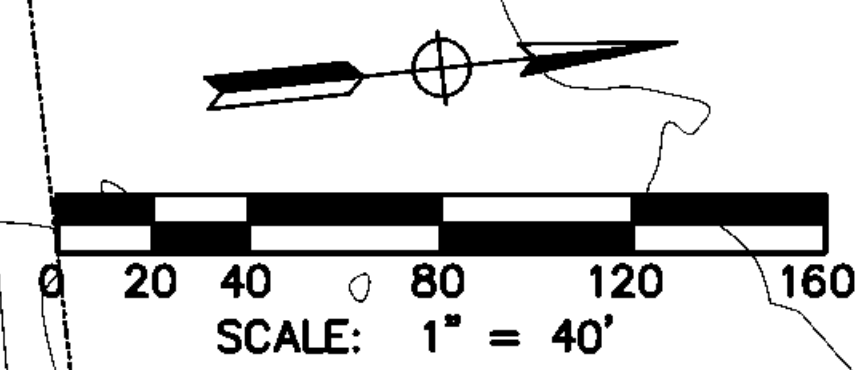
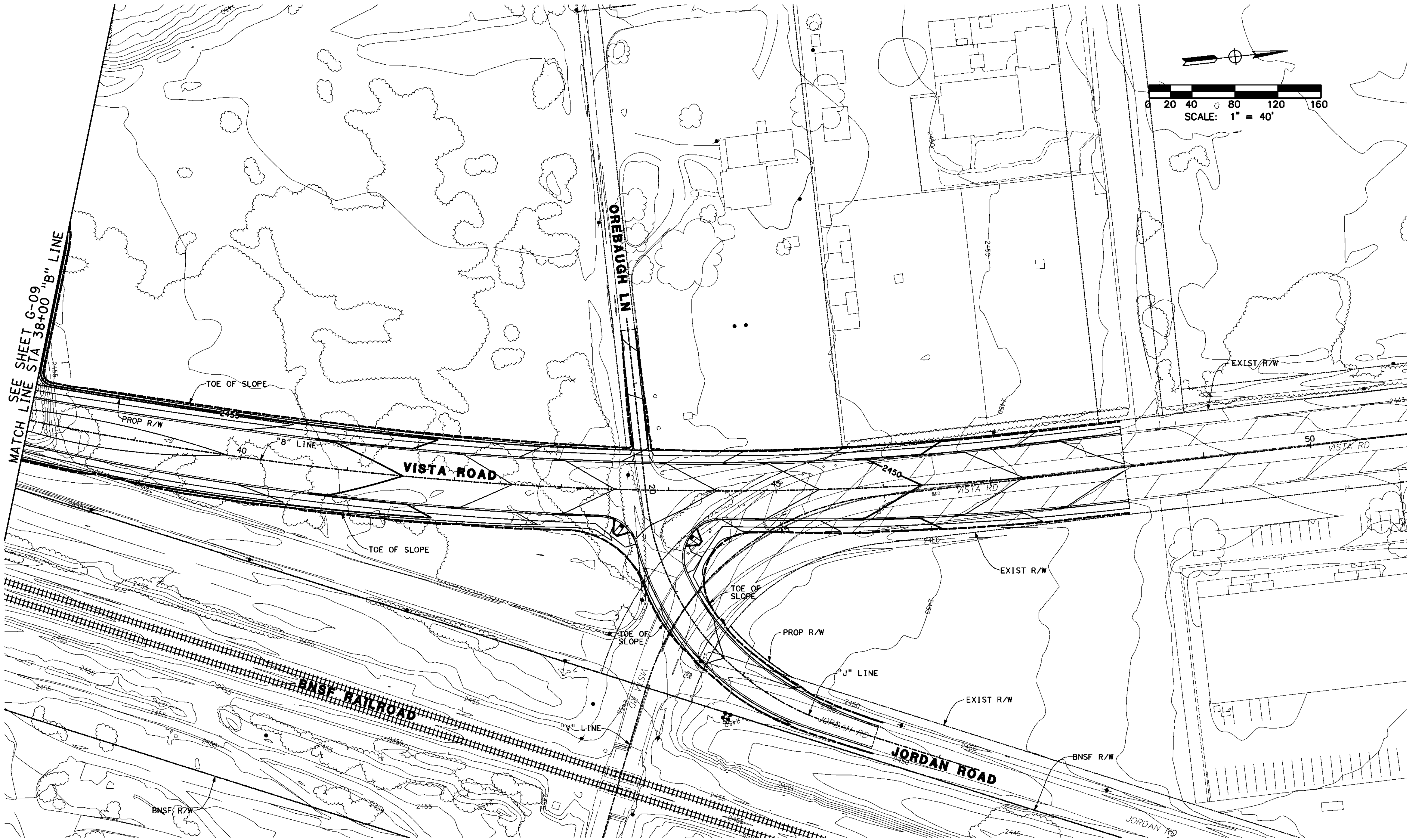
XXXX XXXX P.E. DEPUTY DIRECTOR DATE

XXXX XXXX P.E. DIRECTOR OF PUBLIC WORKS DATE

SHADOW MOUNTAIN ROAD

GRADING PLAN  
STA 26+00 "B" LINE TO 38+00 "B" LINE,  
AND "DWY 04"

| J.L. REF. | W.O. NO.  | DRAWING NO. | SHEET NO. | TOTAL SHEETS |
|-----------|-----------|-------------|-----------|--------------|
| JL XXXX   | XX XXXXXX | G-09        | 57        | X            |



| REVISIONS | DATE |
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| REVISIONS | DATE |
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|           |      |
|           |      |



| MARK | CHANGES    | RESIDENT ENGINEER | DATE |
|------|------------|-------------------|------|
|      | NO CHANGES |                   |      |

FIELD CHANGES

PLANS PREPARED BY:  
**AECOM**  
 999 W. TOWN AND COUNTRY ROAD  
 ORANGE, CA 92668-4713  
 (714) 567-2501

JAMES FABER R.C.E. 45668 EXPIRES 12-31-12

X  
DATE

COUNTY OF SAN BERNARDINO  
 DEPARTMENT OF PUBLIC WORKS  
 RECOMMENDED / APPROVED BY

|                                         |      |
|-----------------------------------------|------|
| XXXX XXXX P.E. DEPUTY DIRECTOR          | DATE |
| XXXX XXXX P.E. DIRECTOR OF PUBLIC WORKS | DATE |

ALL DIMENSIONS ARE IN FEET  
 UNLESS OTHERWISE SHOWN

SHADOW MOUNTAIN ROAD  
 GRADING PLAN  
 STA 38+00 "B" LINE TO 48+25.74 "B" LINE

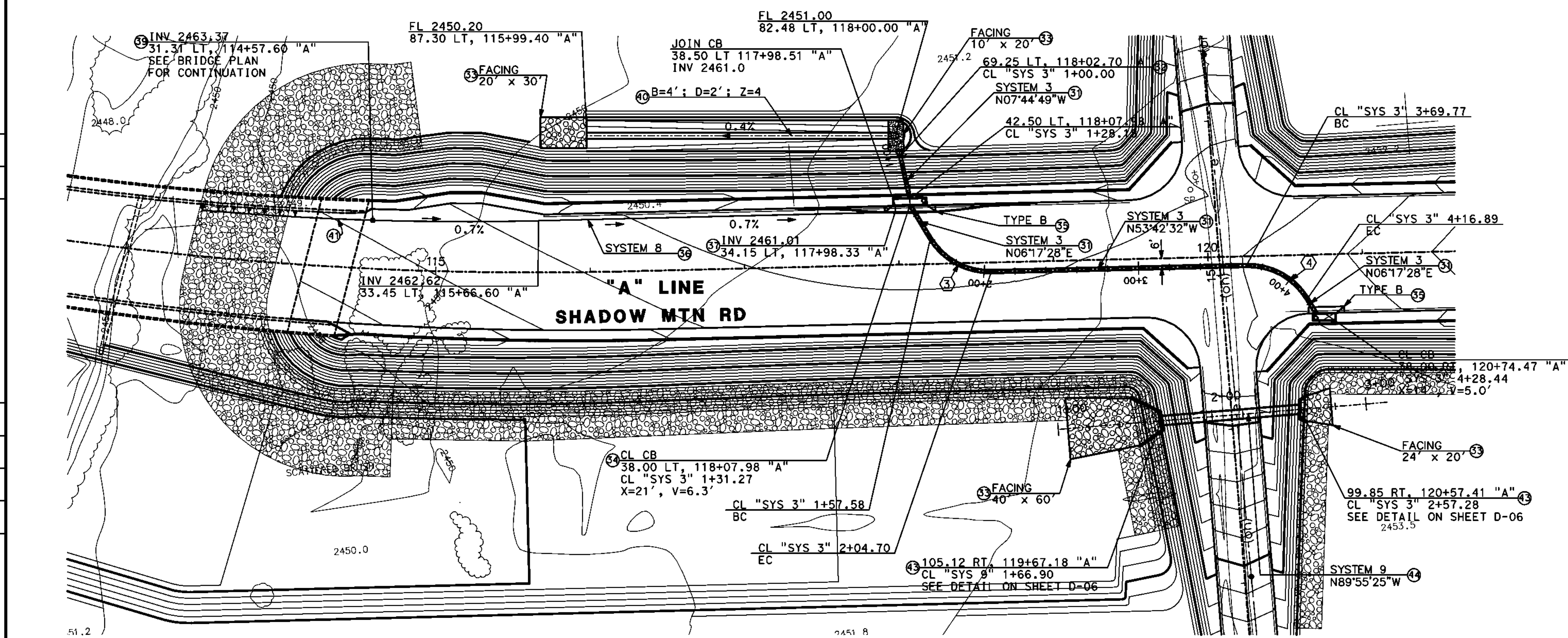
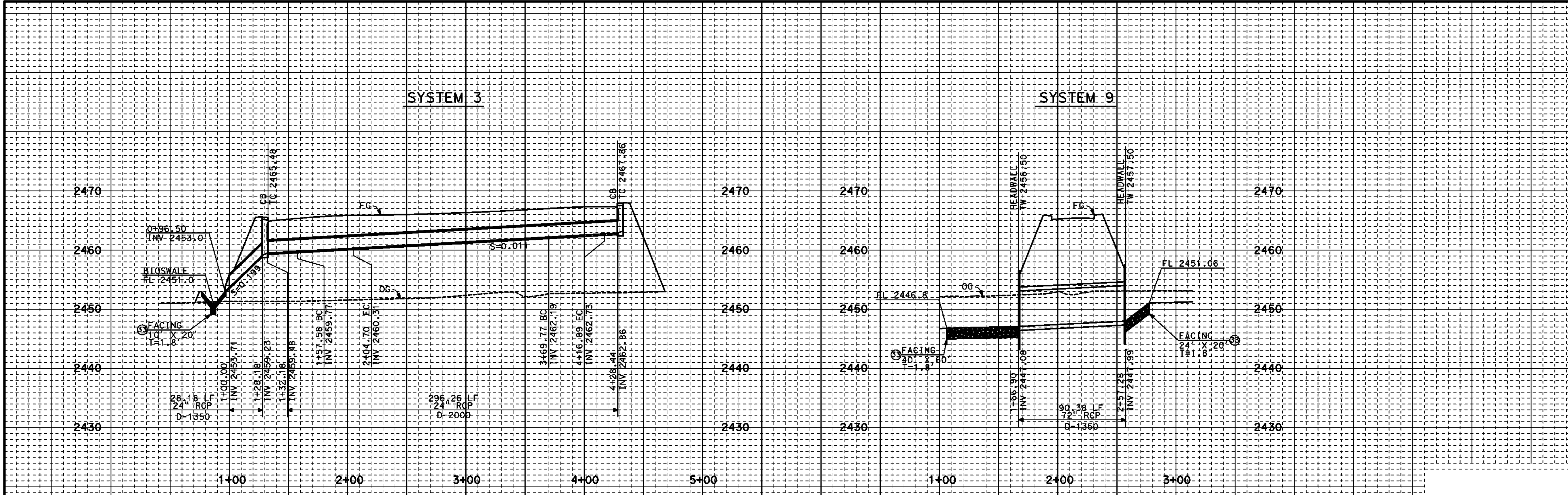
| J.L. REF. | W.O. NO.  | DRAWING NO. | SHEET NO. | TOTAL SHEETS |
|-----------|-----------|-------------|-----------|--------------|
| JL XXXX   | XX XXXXXX | G-10        | 58        | X            |

80% DRAFT SUBMITTAL - NOT FOR CONSTRUCTION



| APPR.     | DATE |
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| REVISIONS |      |
|           |      |
|           |      |
| MARK      |      |

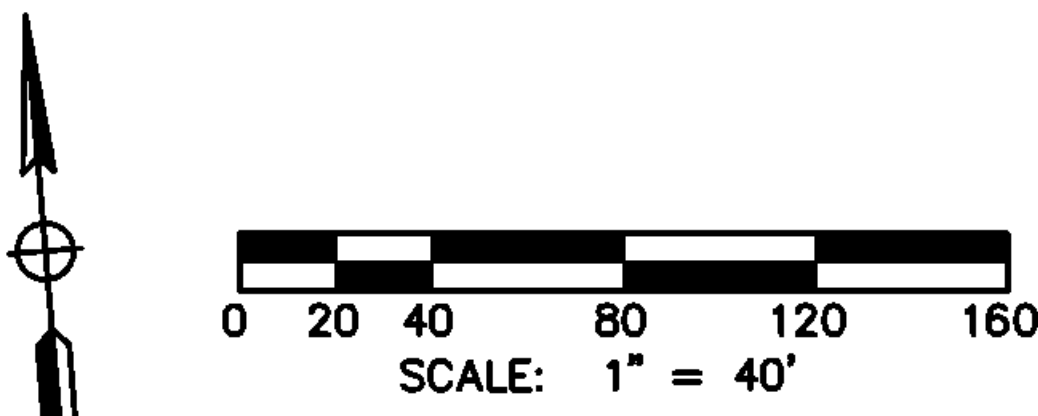
| APPR.     | DATE |
|-----------|------|
|           |      |
| REVISIONS |      |
|           |      |
|           |      |
| MARK      |      |



**DRAINAGE CONSTRUCTION NOTES:**

- ③ CONST 24" RCP
- ④ CONST 24" CONCRETE FES PER CALTRANS STD PLAN NO. D94B
- ⑤ CONST RSP TYPE AND DIMENSIONS PER PLAN
- ⑥ CONST TYPE "A" CB PER COUNTY STD 206, "X" PER PLAN
- ⑦ CONST LOCAL DEPRESSION PER COUNTY STD 203B, TYPE PER PLAN
- ⑧ CONST 8" STEEL PIPE
- ⑨ CONST 8" - 90° ELBOW
- ⑩ CONST CLEANOUT PER DETAIL 1 SHOWN ON SHEET D-06
- ⑪ CONST TRAPEZOIDAL BIOSWALE PER DETAIL 2 SHOWN ON SHEET D-06, DIMENSIONS PER PLAN
- ⑫ CONST 8" STEEL PIPE PER BRIDGE PLAN
- ⑬ CONST TYPE "A" HEADWALL PER CALTRANS STD PLAN NO. D90
- ⑭ CONST 72" RCP

| CURVE DATA |        |           |        |        |
|------------|--------|-----------|--------|--------|
| No.        | R      | Δ         | T      | L      |
| ③          | 45.00' | 60°00'00" | 29.98' | 47.12' |
| ④          | 45.00' | 60°00'00" | 29.98' | 47.12' |



ALL DIMENSIONS ARE IN FEET  
UNLESS OTHERWISE SHOWN



| MARK | CHANGES    | RESIDENT ENGINEER | DATE |
|------|------------|-------------------|------|
|      | NO CHANGES |                   |      |

**FIELD CHANGES**

PLANS PREPARED BY:  
**AECOM**  
999 W. TOWN AND COUNTRY ROAD  
ORANGE, CA 92668-4713  
(714) 567-2501

JAMES FABER R.C.E. 45668 EXPIRES 12-31-12

COUNTY OF SAN BERNARDINO  
DEPARTMENT OF PUBLIC WORKS

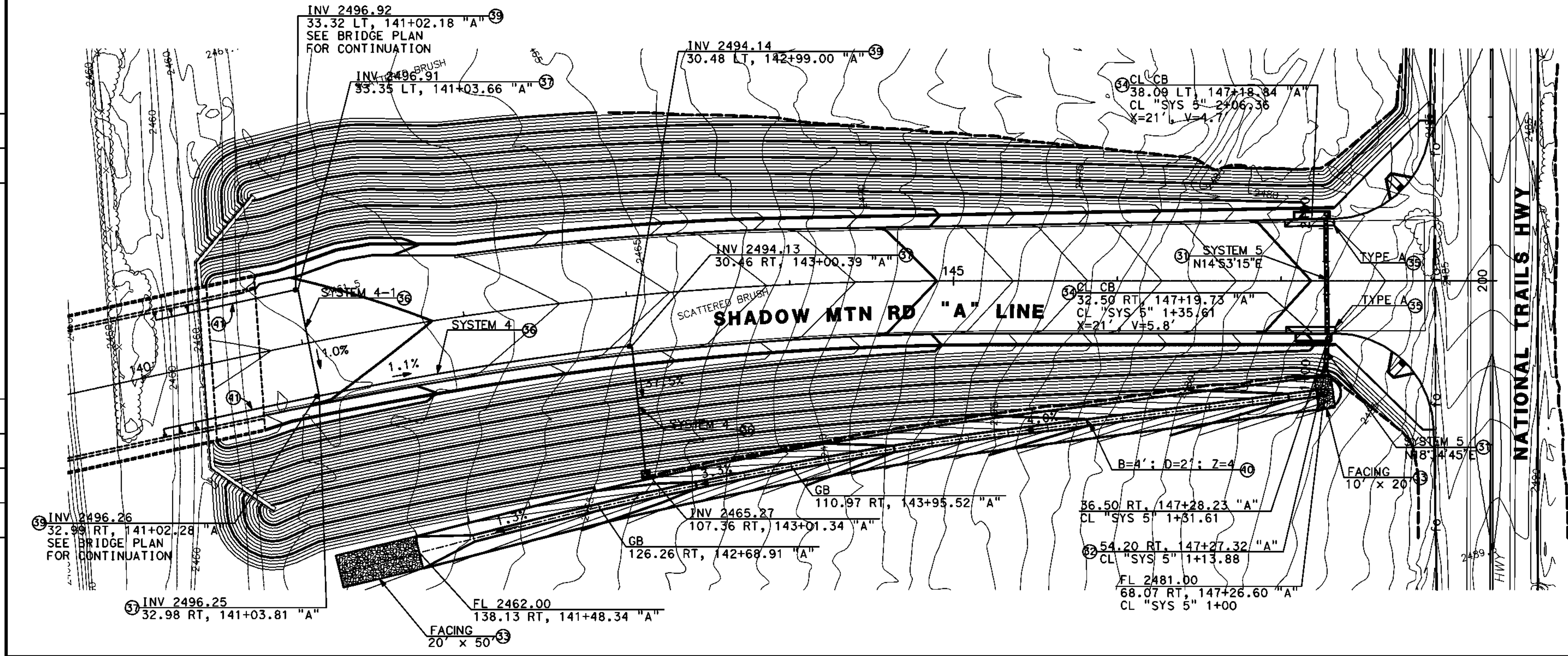
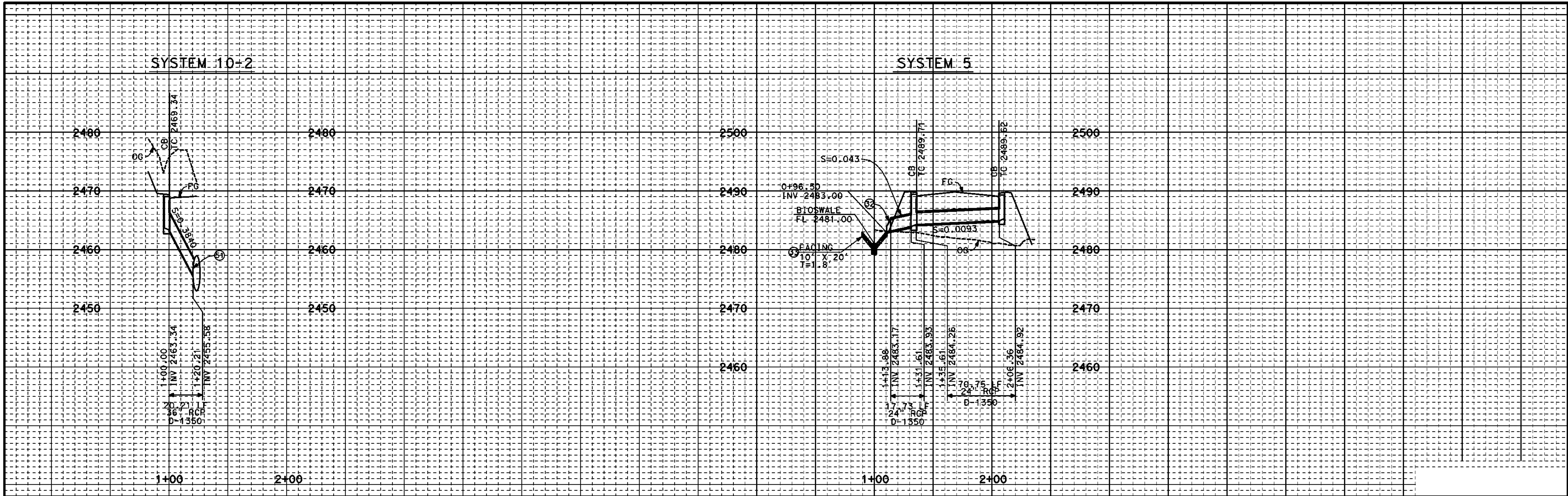
RECOMMENDED / APPROVED BY

XXXX XXXX P.E. DEPUTY DIRECTOR DATE

XXXX XXXX P.E. DIRECTOR OF PUBLIC WORKS DATE

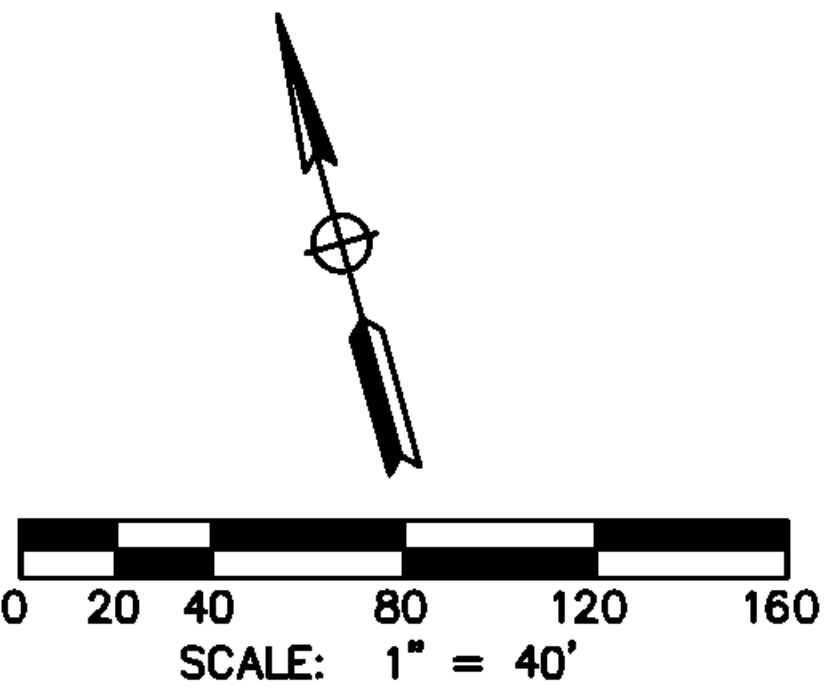
| J.L. REF. | W.O. NO.  | DRAWING NO. | SHEET NO. | TOTAL SHEETS |
|-----------|-----------|-------------|-----------|--------------|
| JL XXXX   | XX XXXXXX | D-02        | 60        | X            |

80% DRAFT SUBMITTAL - NOT FOR CONSTRUCTION



**DRAINAGE CONSTRUCTION NOTES:**

- ③ CONST 24" RCP
- ④ CONST 24" CONCRETE FES PER CALTRANS STD PLAN NO. D94B
- ⑤ CONST RSP TYPE AND DIMENSIONS PER PLAN
- ⑥ CONST TYPE "A" CB PER COUNTY STD 206, "X" PER PLAN
- ⑦ CONST LOCAL DEPRESSION PER COUNTY STD 203B, TYPE PER PLAN
- ⑧ CONST 8" STEEL PIPE
- ⑨ CONST 8" - 90° ELBOW
- ⑩ CONST CLEANOUT PER DETAIL 1 SHOWN ON SHEET D-06
- ⑪ CONST TRAPEZOIDAL BIOSWALE PER DETAIL 2 SHOWN ON SHEET D-06, DIMENSIONS PER PLAN
- ⑫ CONST 8" STEEL PIPE PER BRIDGE PLAN
- ⑬ CONST JUNCTION STRUCTURE PER SPPWC STD PLAN 332-2



ALL DIMENSIONS ARE IN FEET  
UNLESS OTHERWISE SHOWN

| MARK | REVISIONS | DATE |
|------|-----------|------|
|      |           |      |
|      |           |      |
|      |           |      |

| MARK | REVISIONS | DATE |
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| MARK | CHANGES | RESIDENT ENGINEER | DATE |
|------|---------|-------------------|------|
|      |         |                   |      |
|      |         |                   |      |
|      |         |                   |      |

**FIELD CHANGES**

PLANS PREPARED BY:  
**AECOM**  
999 W. TOWN AND COUNTRY ROAD  
ORANGE, CA 92668-4713  
(714) 567-2501

JAMES FABER R.C.E. 45668 EXPIRES 12-31-12

COUNTY OF SAN BERNARDINO  
DEPARTMENT OF PUBLIC WORKS

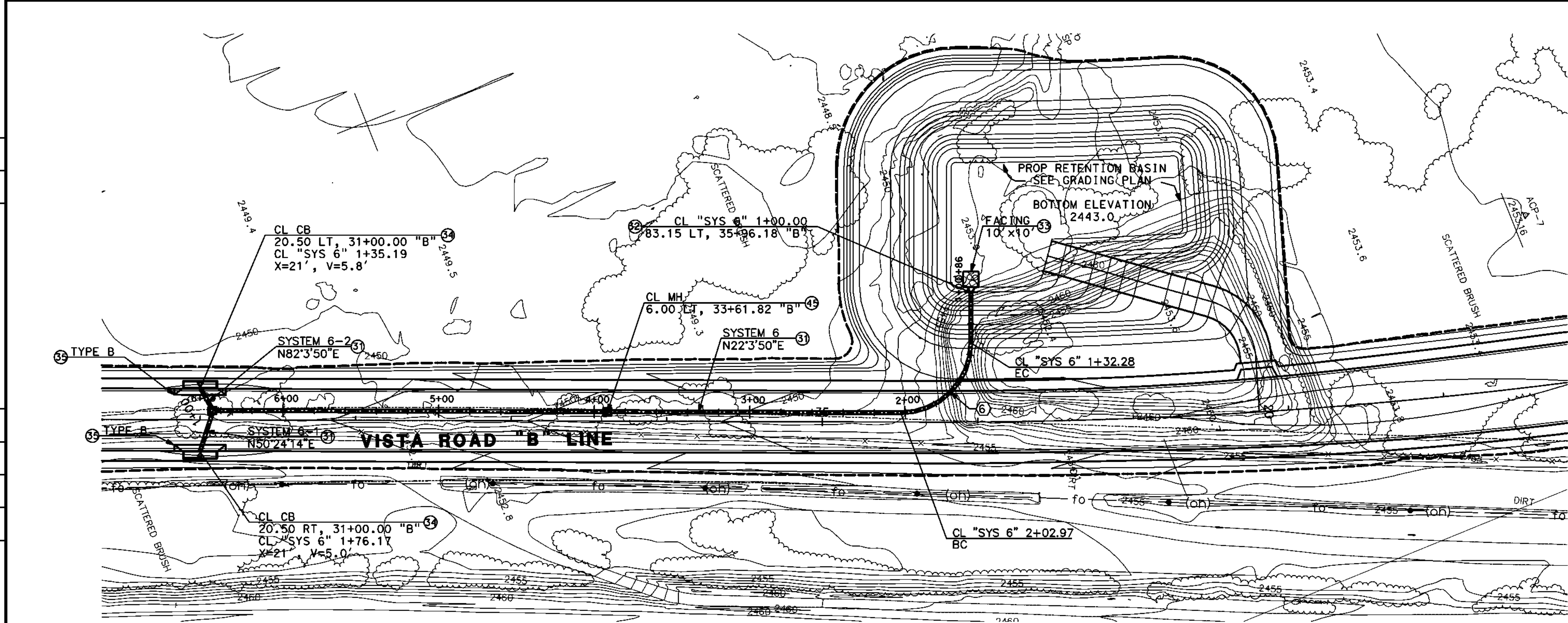
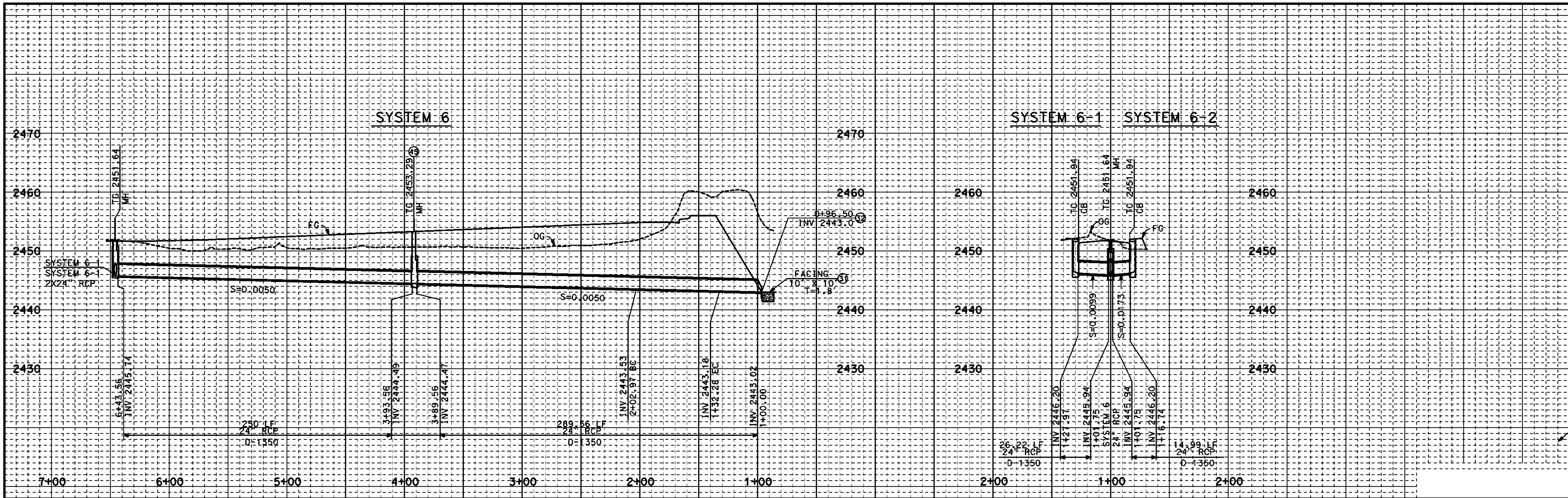
RECOMMENDED / APPROVED BY

XXXX XXXX P.E. DEPUTY DIRECTOR \_\_\_\_\_ DATE \_\_\_\_\_

XXXX XXXX P.E. DIRECTOR OF PUBLIC WORKS \_\_\_\_\_ DATE \_\_\_\_\_

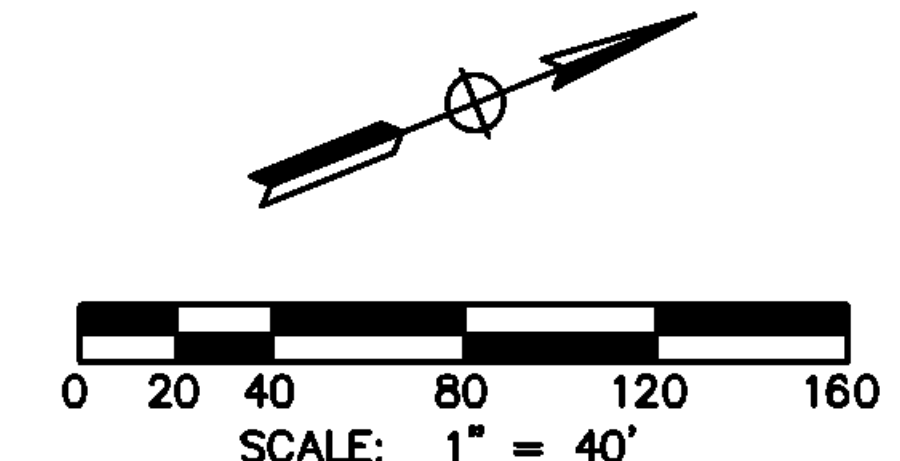
SHADOW MOUNTAIN ROAD  
STORM DRAIN IMPROVEMENT PLAN  
PLAN AND PROFILE  
SYSTEM 4, 4-1 AND 5

|                      |                       |                     |                 |                   |
|----------------------|-----------------------|---------------------|-----------------|-------------------|
| J.L. REF.<br>JL XXXX | W.O. NO.<br>XX XXXXXX | DRAWING NO.<br>D-03 | SHEET NO.<br>61 | TOTAL SHEETS<br>X |
|----------------------|-----------------------|---------------------|-----------------|-------------------|



- DRAINAGE CONSTRUCTION NOTES:**
- ③ CONST 24" RCP
  - ④ CONST 24" CONCRETE FES PER CALTRANS STD PLAN NO. D94B
  - ⑤ CONST RSP TYPE AND DIMENSIONS PER PLAN
  - ⑥ CONST TYPE "A" CB PER COUNTY STD 206, "X" PER PLAN
  - ⑦ CONST LOCAL DEPRESSION PER COUNTY STD 203B, TYPE PER PLAN
  - ⑧ CONST MANHOLE PER SPPWC STD PLAN NO. 321-2

| CURVE DATA |        |          |        |        |
|------------|--------|----------|--------|--------|
| No.        | R      | Δ        | T      | L      |
| (6)        | 45.00' | 90°0'13" | 45.00' | 70.69' |



ALL DIMENSIONS ARE IN FEET  
UNLESS OTHERWISE SHOWN

| MARK | REVISIONS | DATE |
|------|-----------|------|
|      |           |      |

| MARK | REVISIONS | DATE |
|------|-----------|------|
|      |           |      |



| MARK | CHANGES | RESIDENT ENGINEER | DATE |
|------|---------|-------------------|------|
|      |         |                   |      |

FIELD CHANGES

PLANS PREPARED BY:  
**AECOM**  
999 W. TOWN AND COUNTRY ROAD  
ORANGE, CA 92668-4713  
(714) 567-2501

JAMES FABER R.C.E. 45668 EXPIRES 12-31-12

COUNTY OF SAN BERNARDINO  
DEPARTMENT OF PUBLIC WORKS

RECOMMENDED / APPROVED BY

XXXX XXXX P.E. DEPUTY DIRECTOR DATE

XXXX XXXX P.E. DIRECTOR OF PUBLIC WORKS DATE

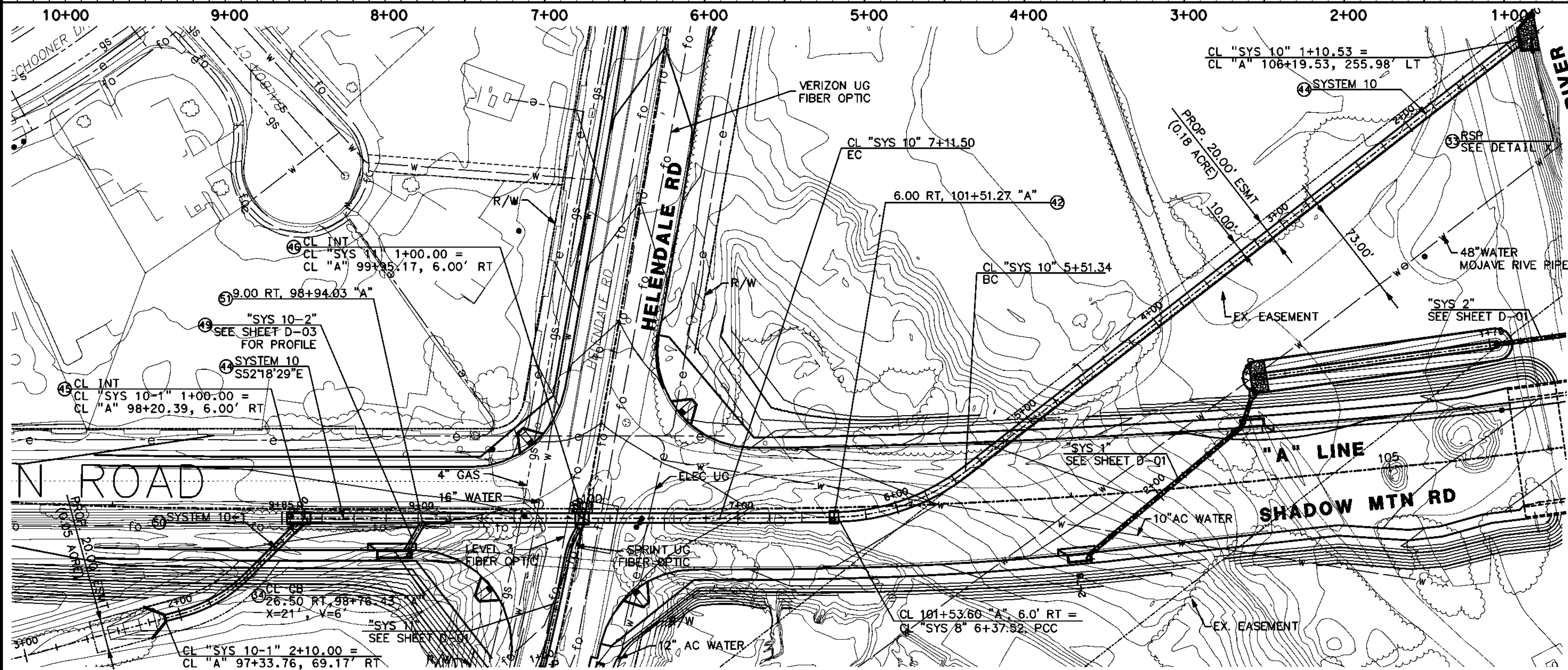
SHADOW MOUNTAIN ROAD  
STORM DRAIN IMPROVEMENT PLAN  
PLAN AND PROFILE  
SYSTEM 6 AND 7

|                      |                       |                     |                 |                   |
|----------------------|-----------------------|---------------------|-----------------|-------------------|
| J.L. REF.<br>JL XXXX | W.O. NO.<br>XX XXXXXX | DRAWING NO.<br>D-04 | SHEET NO.<br>62 | TOTAL SHEETS<br>X |
|----------------------|-----------------------|---------------------|-----------------|-------------------|

80% DRAFT SUBMITTAL - NOT FOR CONSTRUCTION

| APPR.     | DATE |
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|           |      |
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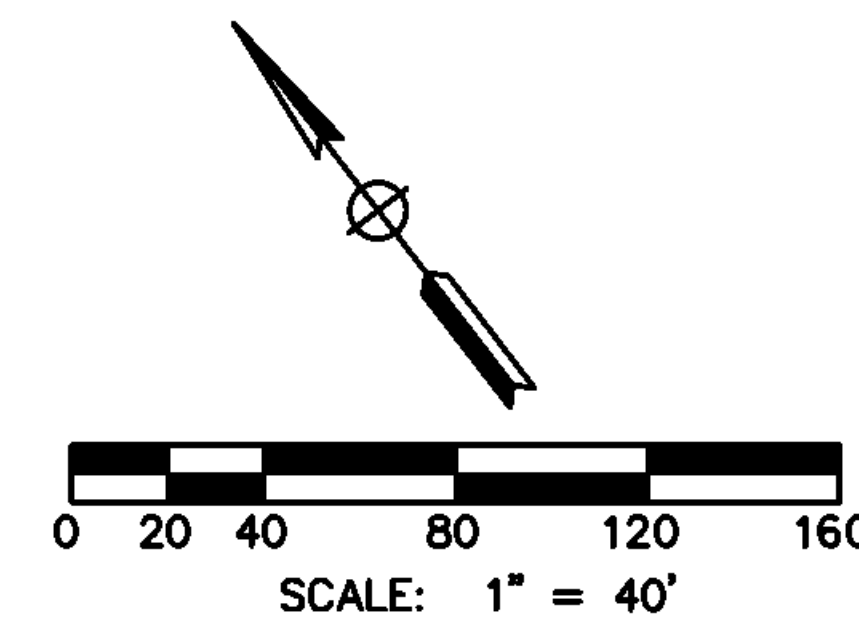


# DRAINAGE CONSTRUCTION NOTES:

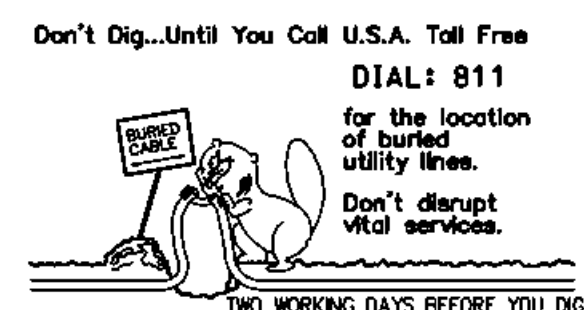
- ③ CONST RSP TYPE AND DIMENSIONS PER PLAN
- ④ CONST MANHOLE PER SPPWC STD PLAN NO. 320-2
- ⑤ CONST TYPE "A" HEADWALL PER CALTRANS STD PLAN NO. D90
- ⑥ CONST 72" RCP
- ⑦ CONST MANHOLE PER SPPWC STD PLAN NO. 322-2
- ⑧ CONST TRANSITION STRUCTURE PER SPPWC STD PLAN NO. 340-2
- ⑨ CONST 36" RCP
- ⑩ CONST 48" RCP
- ⑪ CONST JUNCTION STRUCTURE PER SPPWC STD PLAN 332-2

## CURVE DATA

| No. | R        | Δ         | T      | L      |
|-----|----------|-----------|--------|--------|
| (1) | 135.00'  | 53°25'23" | 44.62' | 86.18' |
| (2) | 3206.00' | 88°40'40" | 36.99' | 73.98' |
| (3) | 90.00'   | 60°5'17"  | 24.04' | 46.99' |



ALL DIMENSIONS ARE IN FEET  
UNLESS OTHERWISE SHOWN



| MARK | CHANGES    | RESIDENT ENGINEER | DATE |
|------|------------|-------------------|------|
|      | NO CHANGES |                   |      |

## FIELD CHANGES

PLANS PREPARED BY:  
**AECOM**  
995 W. TOWN AND COUNTRY ROAD  
ORANGE, CA 92668-4713  
(714) 567-2501

JAMES FABER R.C.E. 45668 EXPIRES 12-31-12

COUNTY OF SAN BERNARDINO  
DEPARTMENT OF PUBLIC WORKS

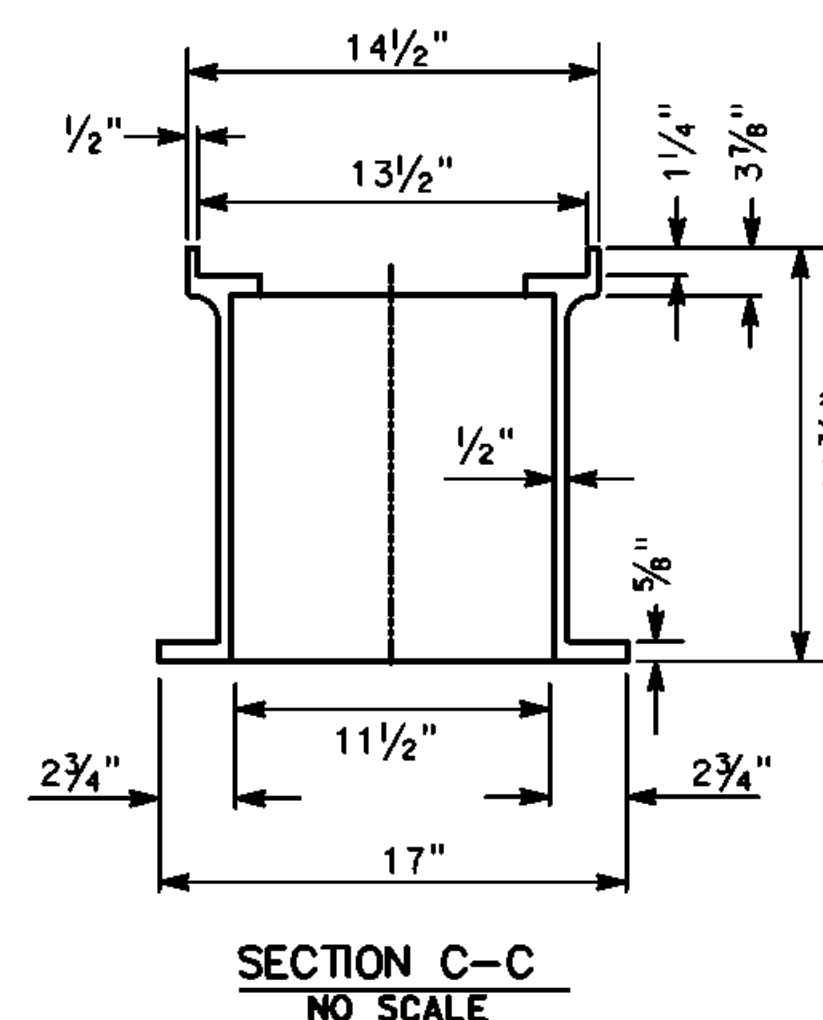
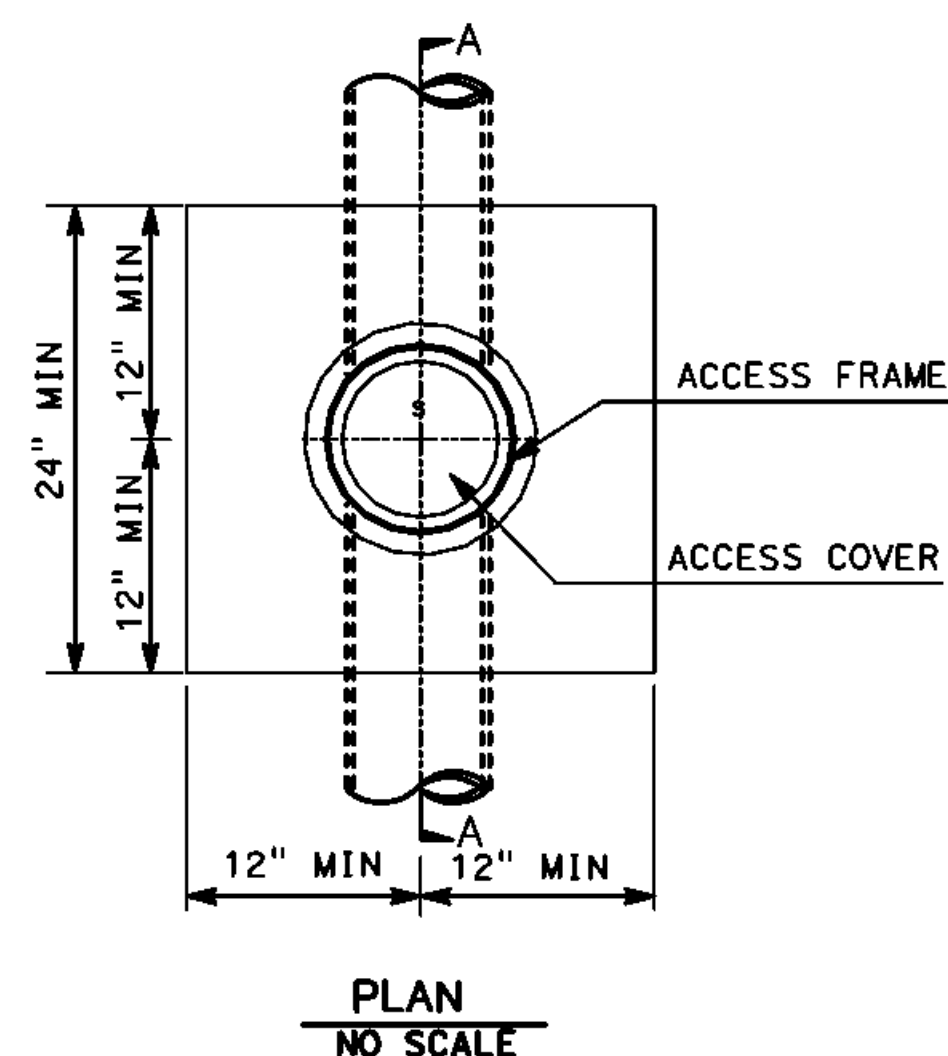
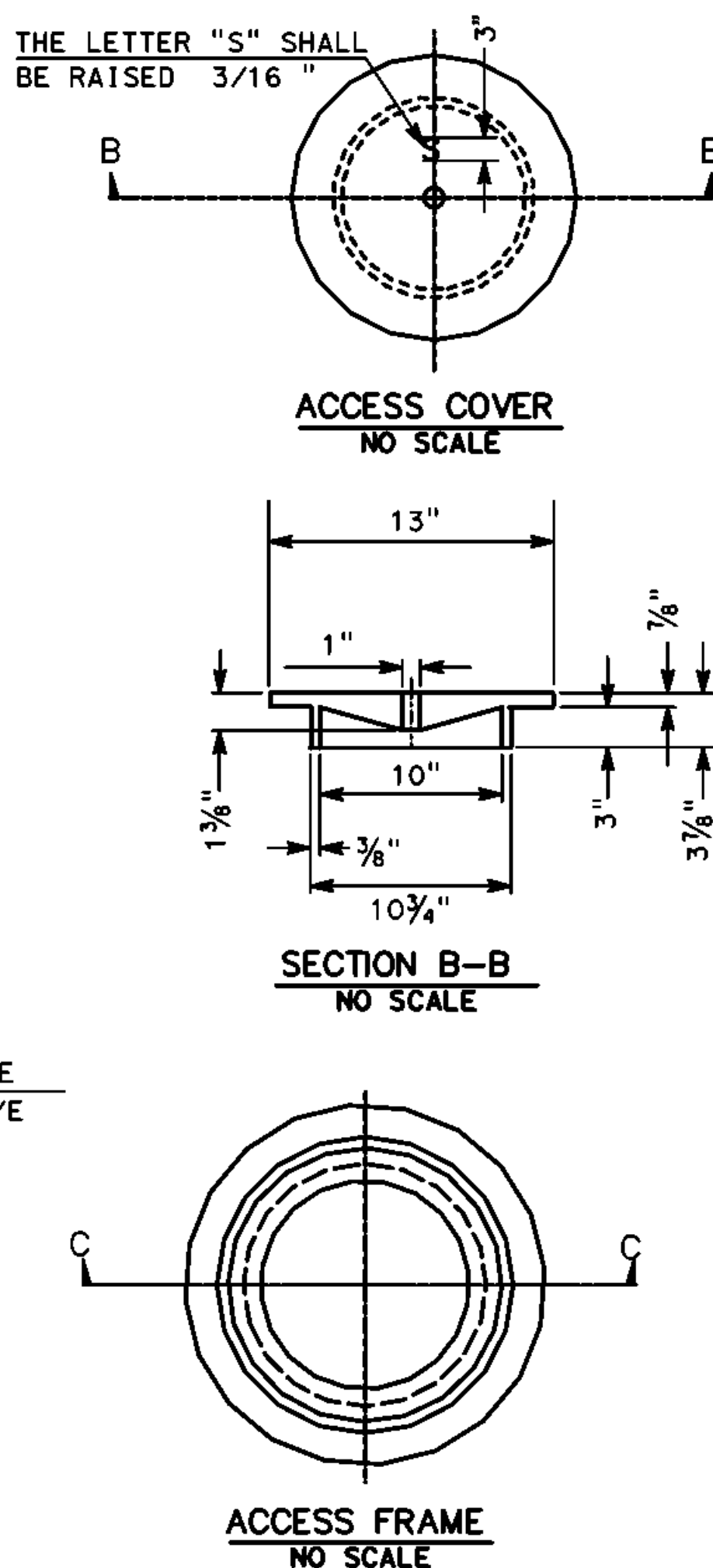
RECOMMENDED / APPROVED BY

XXXX XXXX P.E. DEPUTY DIRECTOR DATE

XXXX XXXX P.E. DIRECTOR OF PUBLIC WORKS DATE

SHADOW MOUNTAIN ROAD  
STORM DRAIN IMPROVEMENT PLAN  
PROPOSED 72" RCP EXHIBIT

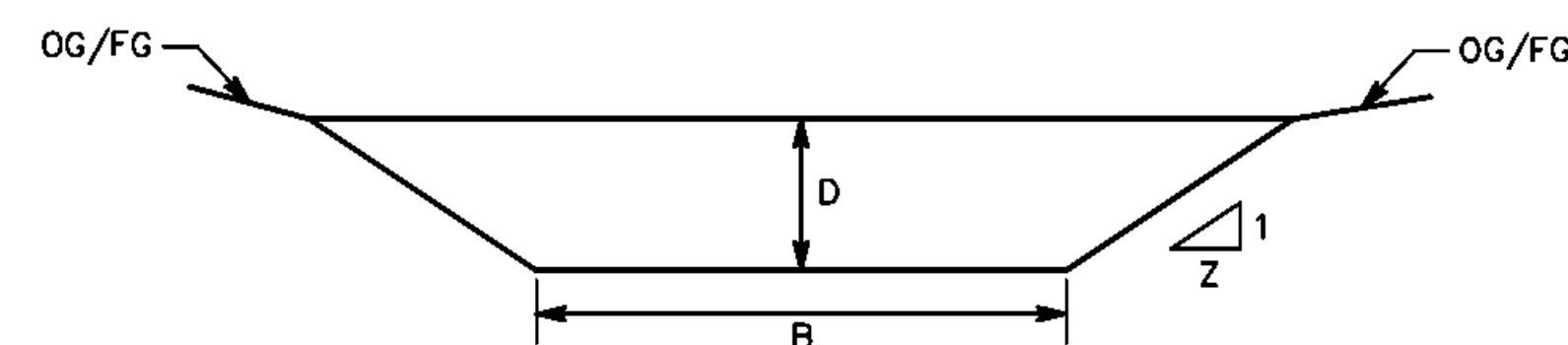
| J.L. REF. | W.O. NO.  | DRAWING NO. | SHEET NO. | TOTAL SHEETS |
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| JL XXXX   | XX XXXXXX | D-05        | XX        | X            |



**DETAIL 1**  
**CLEAN OUT**  
**NO SCALE**

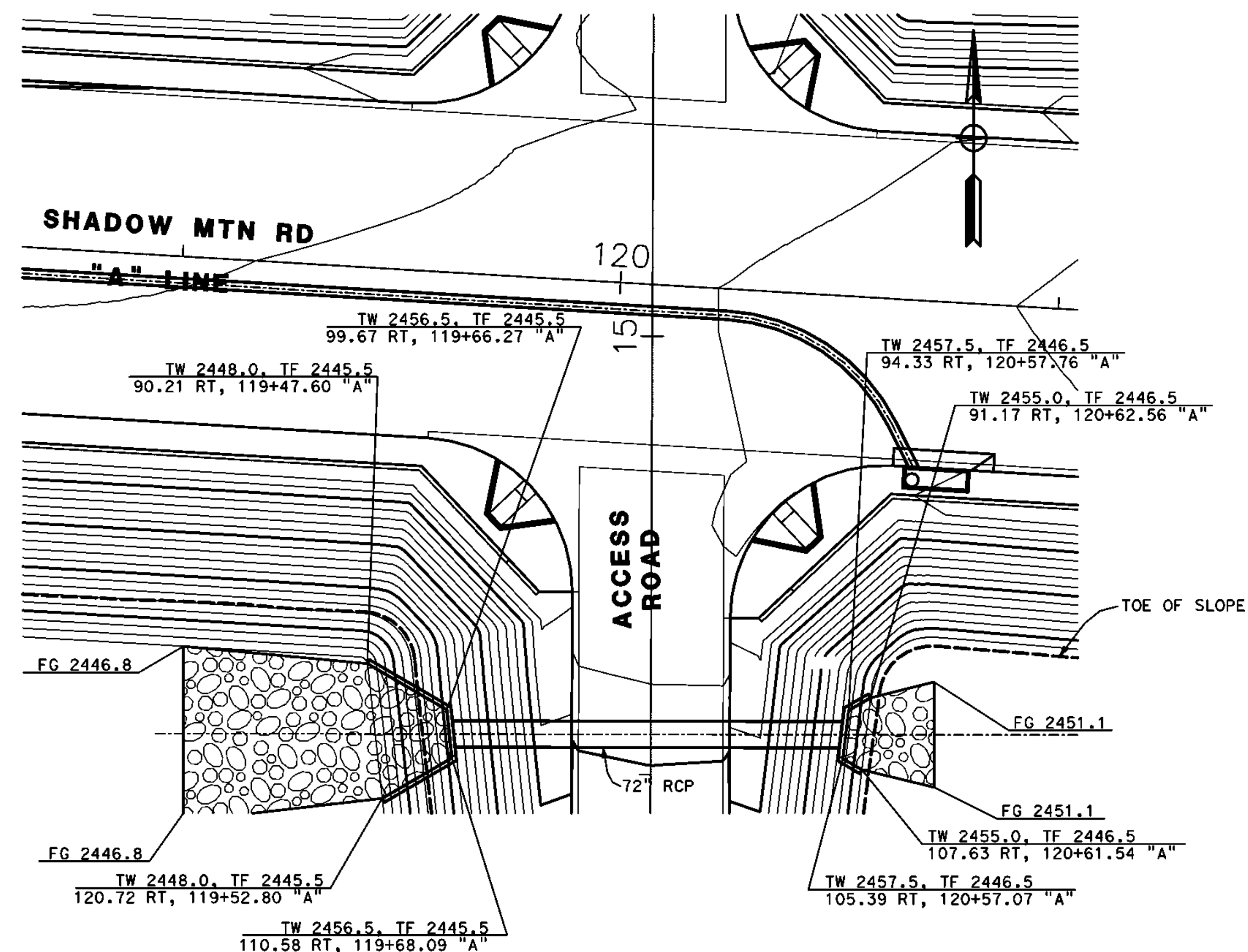
NOTES:

1. PIPES AND FITTINGS SHALL BE PROPERLY ALIGNED AND MAINTAINED WHILE CONCRETE IS BEING PLACED AND ALLOWED TO HARDEN. JOINTS FOR PIPES AND FITTINGS SHALL BE MADE PRIOR TO PLACING CONCRETE. CONCRETE FOR BEDDING, ENCASEMENT, AND WALL SUPPORT FOR PIPES AND FITTINGS SHALL BE PLACED UNIFORMLY AROUND THE PIPE AND FITTINGS AS SHOWN HEREON TO MAINTAIN PROPER ALIGNMENT
2. THE ACCESS FRAME, COVER AND CAP SHALL BE CAST IRON. THE FINGER HOLES MAY BE DRILLED OUT OR MAY BE BLOCKED OUT PRIOR TO CASTING; THEY SHALL NOT BE PUNCHED OUT
3. THE CONTRACTOR, AT HIS OPTION, MAY PLACE EITHER CIRCULAR OR SQUARE CONCRETE PIPE WALL SUPPORTS AS SHOWN HEREON



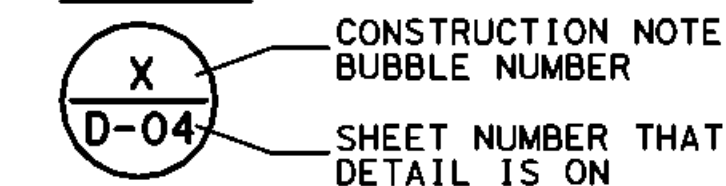
2  
D-04

**DETAIL 2**  
**BIOSWALE TYPICAL CROSS SECTION**  
NO SCALE



**DETAIL 3**  
**HEADWALL AND WINGWALL DETAIL**  
SCALE: 1" = 20'

**LEGEND:**



ALL DIMENSIONS ARE IN FEET  
UNLESS OTHERWISE SHOWN

SHADOW MOUNTAIN ROAD  
STORM DRAIN IMPROVEMENT PLAN  
DETAIL SHEET

|           |           |             |           |              |
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| J.L. REF. | W.O. NO.  | DRAWING NO. | SHEET NO. | TOTAL SHEETS |
| JL XXXX   | XX XXXXXX | D-06        | 63a       | X            |

| MARK | REVIEWS | APPR. | DATE |
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| MARK | CHANGES    |                   |      |
|      | NO CHANGES | RESIDENT ENGINEER | DATE |

FIELD CHANGES

PLANS PREPARED BY:

**AECOM**

999 W. TOWN AND COUNTRY ROAD  
ORANGE, CA 92868-4713  
(714) 567-2501

**JAMES FABER R.C.E. 45668 EXPIRES 12-31-12**

COUNTY OF SAN BERNARDINO  
DEPARTMENT OF PUBLIC WORKS

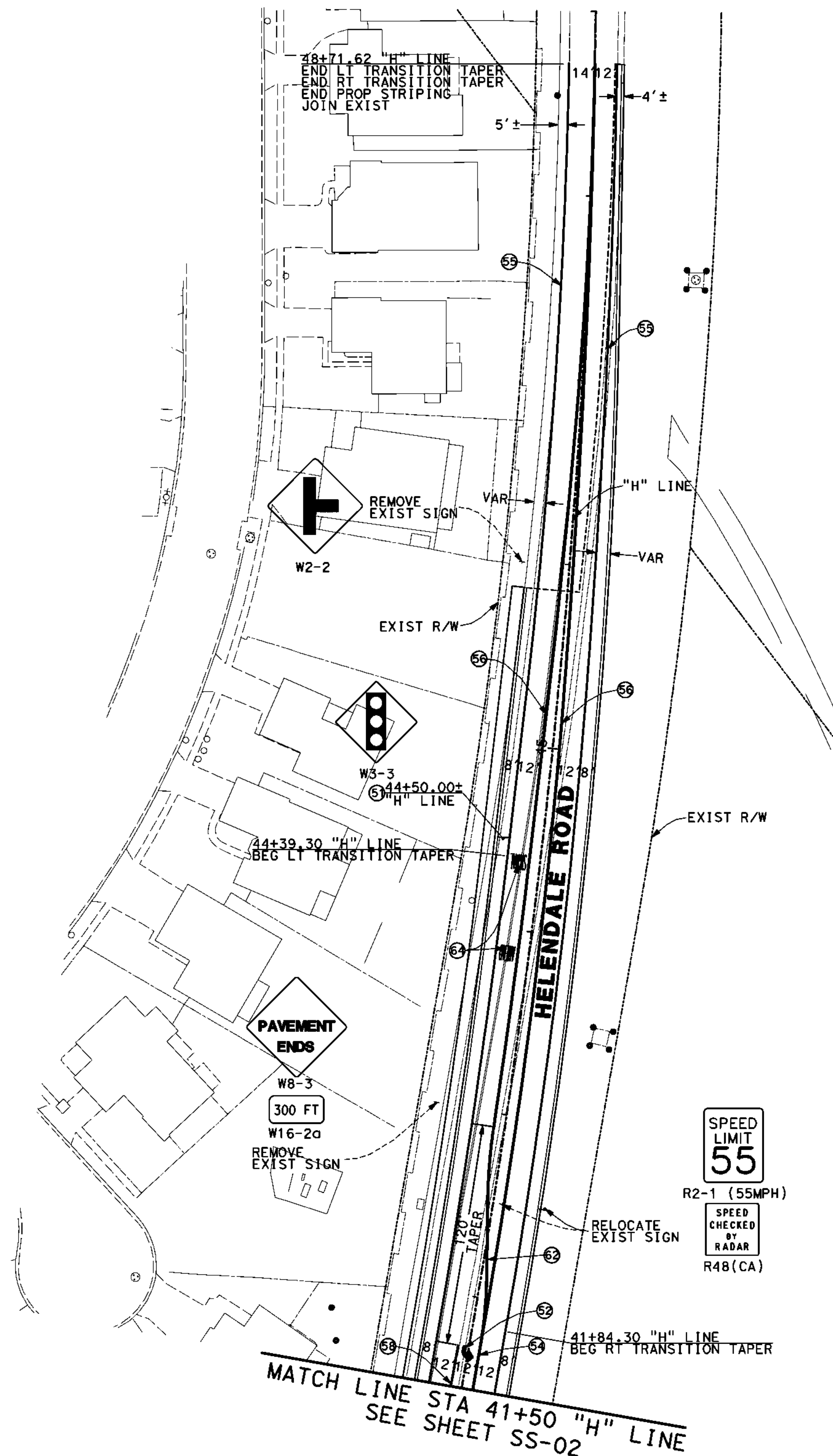
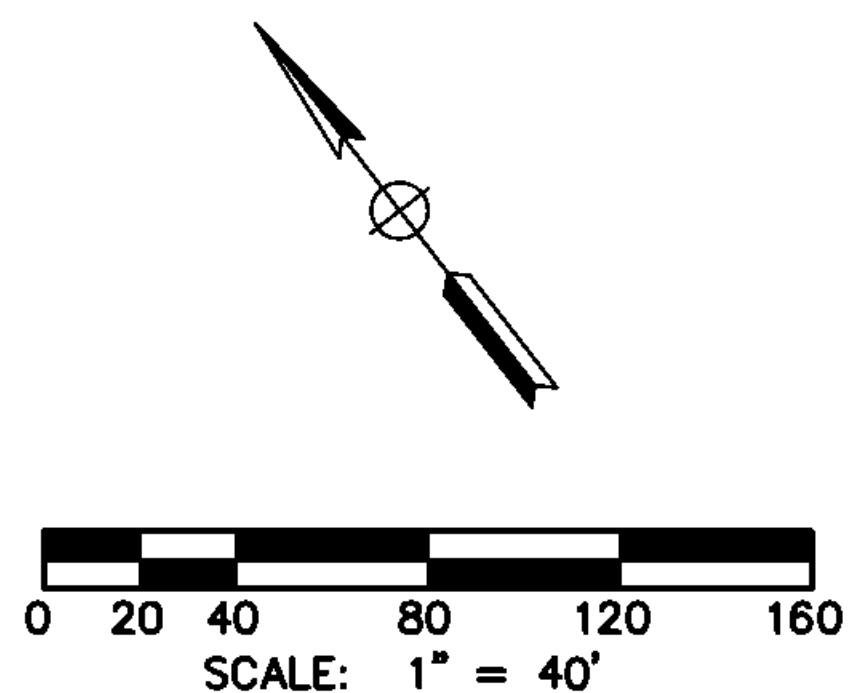
RECOMMENDED / APPROVED BY

XXXX XXXX P.E. DEPUTY DIRECTOR DATE

XXXX XXXX P.E. DIRECTOR OF PUBLIC WORKS \_\_\_\_\_ DATE \_\_\_\_\_

1. ALL SIGNING AND PAVEMENT MARKINGS SHALL BE IN CONFORMANCE WITH THE CALIFORNIA MUTCD JANUARY 21, 2010 AND STRIPING PER SAN BERNARDINO COUNTY STANDARD & SPECIFICATIONS 307 THRU 307D.
2. ALL STRIPING (LONG LINE) AND PAVEMENT MARKINGS SHALL BE RETROREFLECTIVE PAINT.
3. ALL SIGNS SHALL BE OF HIGH INTENSITY (FHWA TYPE III/IV) RETROREFLECTIVE SHEETING EXCEPT:
  - A. STOP SIGNS SHALL BE DIAMOND GRADE (FHWA TYPE VII IN RURAL SETTINGS AND TYPE IX IN URBAN SETTINGS) RETROREFLECTIVE SHEETING.
  - B. "NO PARKING" SIGNS SHALL BE OF SUPER ENGINEERING GRADE (FHWA TYPE II) RETROREFLECTIVE SHEETING.
  - C. SCHOOL SIGNS SHALL BE OF DIAMOND GRADE (FHWA TYPE IX) FLUORESCENT YELLOW-GREEN (FYG) RETROREFLECTIVE SHEETING.
  - D. STREET NAME MARKERS SHALL BE OF DIAMOND GRADE (FHWA TYPE IX) RETROREFLECTIVE SHEETING AND CONFORM TO COUNTY, STANDARD 303.
  - E. CONSTRUCTION SIGNS SHALL BE OF DIAMOND GRADE (FHWA TYPE IX) FLUORESCENT ORANGE RETROREFLECTIVE SHEETING.
4. ALL DELINEATORS, CHANNELIZERS, AND OBJECT MARKERS SHALL BE OF FHWA TYPE VII RETROREFLECTIVE SHEETING.
5. SIGNS SHALL BE MOUNTED ON METAL POSTS SIMILAR TO COUNTY STANDARDS 303(A) AND 303(B).
6. ALL CONFLICTING STRIPING AND PAVEMENT MARKINGS NOT SHOWN ON PLANS SHALL BE REMOVED BY THE CONTRACTOR. REMOVAL SHALL BE ACCOMPLISHED BY SANDBLASTING, GRINDING, OR AS DIRECTED BY COUNTY REPRESENTATIVE.
7. ALL CONFLICTING SIGNS SHALL BE REMOVED, RELOCATED, OR COVERED BY THE CONTRACTOR. RELOCATABLE SIGNS SHALL BE INSTALLED AS SPECIFIED ON THE PLANS OR AS DIRECTED BY COUNTY REPRESENTATIVE.
8. ALL UNPROTECTED LOCATIONS RESULTING IN ISOLATED ABRUPT DEPRESSIONS OR ELEVATED OBJECTS (I.E. CATCH BASINS, HEADWALLS, POWER POLES, END TREATMENT OF ASPHALT DIKES AND CONCRETE CURBS) SHALL BE PROTECTED BY DELINEATORS OR BARRIERS PER THE CALIFORNIA MUTCD JAN. 21, 2010.
9. ALL EXISTING SIGNING, STRIPING AND PAVEMENT MARKINGS (I.E. CROSS STREET STOP, STOP LIMIT LINE, AND CROSSWALK PAVEMENT MARKINGS) NOT SHOWN ON PLANS, IF REMOVED/OBLITERATED, SHALL BE REPLACED /RESTORED OF SAME KIND, AND IN CONFORMANCE WITH THE CURRENT EDITION OF THE CALIFORNIA MUTCD JAN. 21, 2010 AND THE SAN BERNARDINO COUNTY STANDARD & SPECIFICATIONS 307 THRU 307D (STRIPING).
10. THE CONTRACTOR SHALL NOTIFY COUNTY REPRESENTATIVE TO SCHEDULE A FINAL REVIEW (WALK THROUGH) WITH TRAFFIC DIVISION PERSONNEL FOR APPROVAL OF TRAFFIC CONTROL DEVICES PRIOR TO PROJECT ACCEPTANCE.

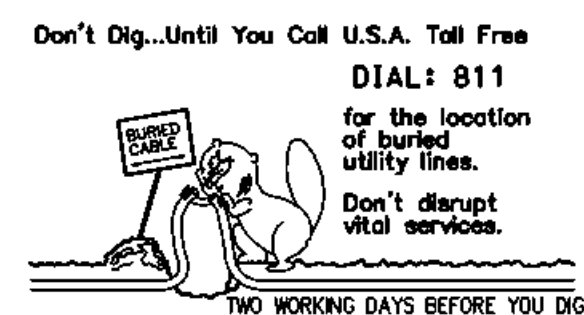
- 5) INSTALL NEW SIGN(S) AS SHOWN ON PLANS (NOTE: MAINTAIN 48" CLEAR SPACE AT SIGN POST PER ADA REQUIREMENT)
- 62) PAINT TYPE IV ARROW PER CALTRANS STD PLAN A24A
- 63) PAINT DETAIL L26 STRIPING PER COUNTY STD PLAN 307d
- 64) PAINT DETAIL 22 STRIPING PER CALTRANS STD PLAN A20A
- 65) PAINT DETAIL L27 STRIPING PER COUNTY STD PLAN 307d
- 66) PAINT DETAIL 29 STRIPING PER CALTRANS STD PLAN A20B
- 67) PAINT DETAIL 37B STRIPING PER CALTRANS STD PLAN A20C
- 68) PAINT DETAIL 38 STRIPING PER CALTRANS STD PLAN A20D
- 69) PAINT 12" SOLID WHITE CROSSWALK LINE OR STOP LINE
- 60) PAINT 12" WHITE DIAGONAL STRIPING 40' ON CENTER
- 61) PAINT 4" SOLID WHITE LINE APPROXIMATELY 100' LONG
- 62) PAINT MEDIAN TAPER PER SPPWC STD PLAN 140-3
- 63) PAINT MEDIAN FLARE PER SPPWC STD PLAN 141-2
- 64) PAINT PAVEMENT MARKING AS SHOWN ON PLANS
- 65) PAINT DETAIL 41 STRIPING PER CALTRANS STD PLAN A20D
- 66) PAINT 8" SOLID WHITE CHEVRON MARKING 10' ON CENTER
- 67) INSTALL STREET NAME MARKER PER COUNTY STD 303 SERIES



ALL DIMENSIONS ARE IN FEET  
UNLESS OTHERWISE SHOWN

| MARK | REVISIONS | APPR. | DATE |
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| MARK | REVISONS | APPR. | DATE |
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|               |            |                                    |
| MARK          | CHANGES    |                                    |
|               | NO CHANGES | RESIDENT ENGINEER _____ DATE _____ |
| FIELD CHANGES |            |                                    |

PLANS PREPARED BY:

**AECOM**

999 W. TOWN AND COUNTRY ROAD  
ORANGE, CA 92868-4713  
(714) 567-2501

**JAMES FABER R.C.E. 45668 EXPIRES 12-31-12**

COUNTY OF SAN BERNARDINO  
DEPARTMENT OF PUBLIC WORKS

RECOMMENDED / APPROVED BY

XXXX XXXX P.E. DEPUTY DIRECTOR \_\_\_\_\_ DATE \_\_\_\_\_

XXXX XXXX P.E.      DIRECTOR OF PUBLIC WORKS      DATE

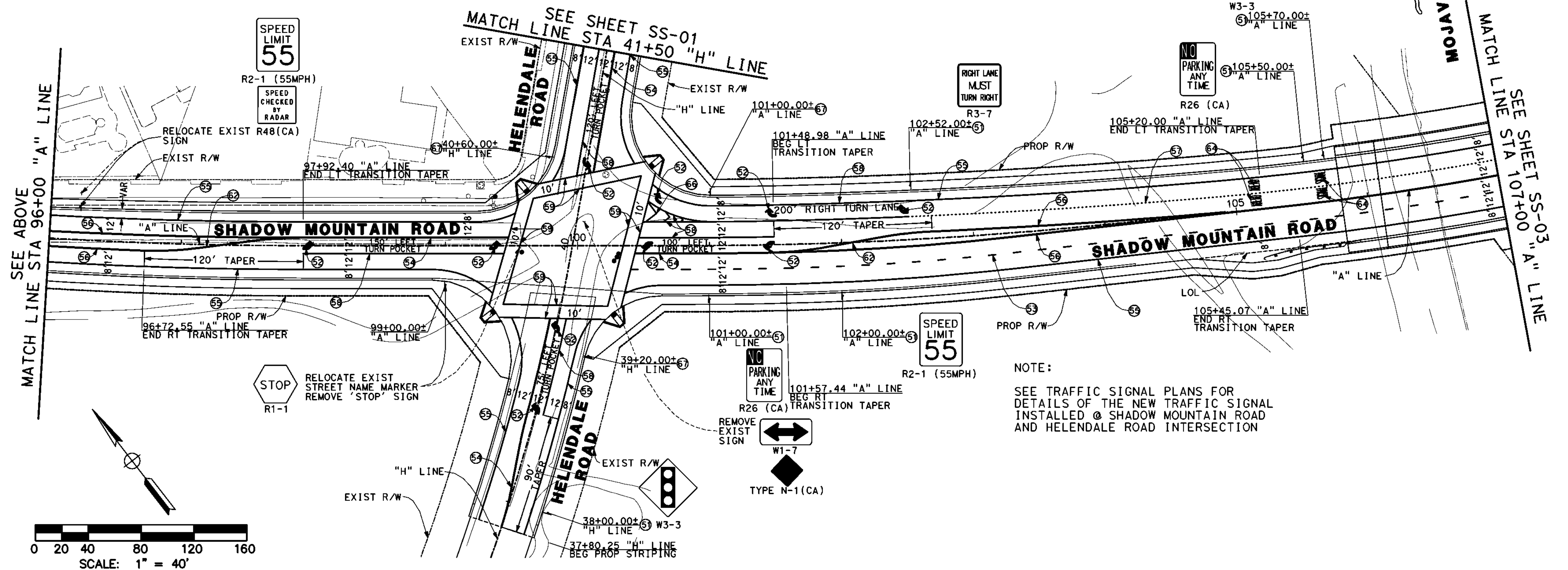
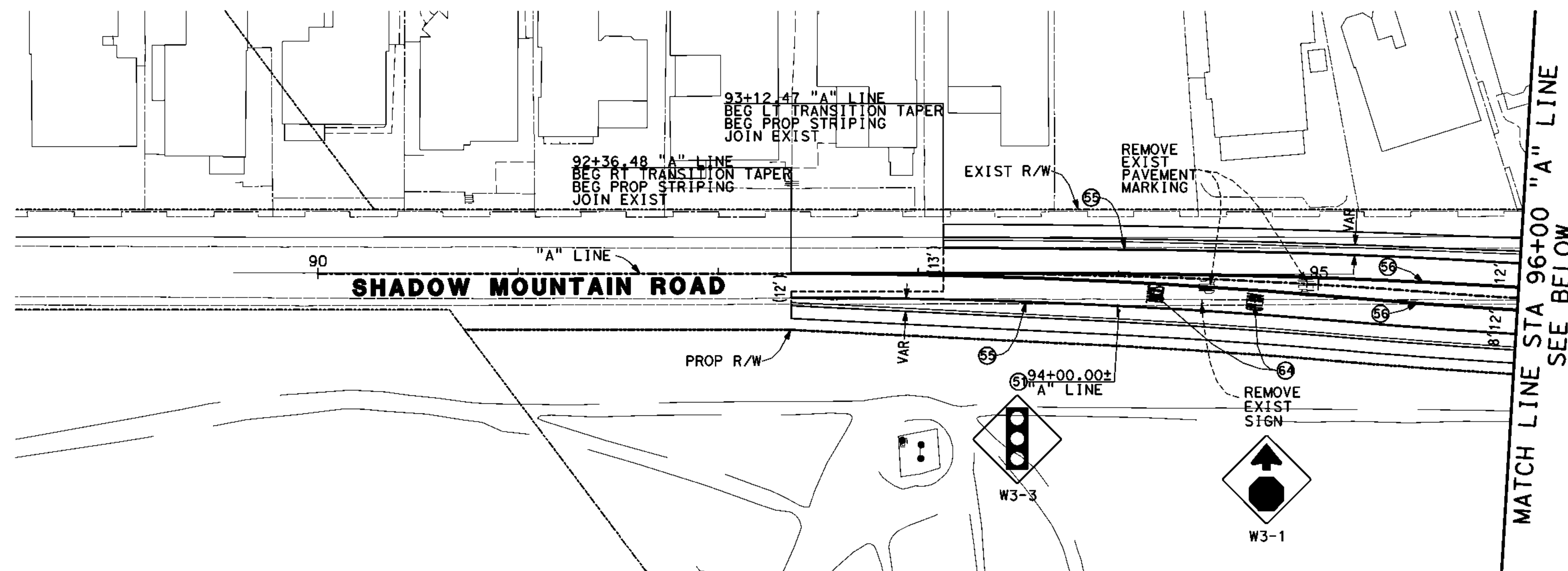
SHADOW MOUNTAIN ROAD

SIGNING & STRIPING PLAN  
STA 41+50 "H" LINE TO STA 48+80 "H" LINE

|           |           |             |           |              |
|-----------|-----------|-------------|-----------|--------------|
| J.L. REF. | W.O. NO.  | DRAWING NO. | SHEET NO. | TOTAL SHEETS |
| JL XXXX   | XX XXXXXX | SS-01       | 64        | X            |

## SIGNING AND STRIPING CONSTRUCTION NOTES:

- 51 INSTALL NEW SIGN(S) AS SHOWN ON PLANS (NOTE: MAINTAIN 48" CLEAR SPACE AT SIGN POST PER ADA REQUIREMENT)
- 52 PAINT TYPE IV ARROW PER CALTRANS STD PLAN A24A
- 53 PAINT DETAIL L26 STRIPING PER COUNTY STD PLAN 307d
- 54 PAINT DETAIL 22 STRIPING PER CALTRANS STD PLAN A20A
- 55 PAINT DETAIL L27 STRIPING PER COUNTY STD PLAN 307d
- 56 PAINT DETAIL 29 STRIPING PER CALTRANS STD PLAN A20B
- 57 PAINT DETAIL 37B STRIPING PER CALTRANS STD PLAN A20C
- 58 PAINT DETAIL 38 STRIPING PER CALTRANS STD PLAN A20D
- 59 PAINT 12" SOLID WHITE CROSSWALK LINE OR STOP LINE
- 60 PAINT 12" WHITE DIAGONAL STRIPING 40' ON CENTER
- 61 PAINT 4" SOLID WHITE LINE APPROXIMATELY 100' LONG
- 62 PAINT MEDIAN TAPER PER SPPWC STD PLAN 140-3
- 63 PAINT MEDIAN FLARE PER SPPWC STD PLAN 141-2
- 64 PAINT PAVEMENT MARKING AS SHOWN ON PLANS
- 65 PAINT DETAIL 41 STRIPING PER CALTRANS STD PLAN A20D
- 66 PAINT 8" SOLID WHITE CHEVRON MARKING 10' ON CENTER
- 67 INSTALL STREET NAME MARKER PER COUNTY STD 303 SERIES



NOTE:

SEE TRAFFIC SIGNAL PLANS FOR  
DETAILS OF THE NEW TRAFFIC SIGNAL  
INSTALLED @ SHADOW MOUNTAIN ROAD  
AND HELENDALE ROAD INTERSECTION

ALL DIMENSIONS ARE IN FEET  
UNLESS OTHERWISE SHOWN



| MARK       | CHANGES | RESIDENT ENGINEER | DATE |
|------------|---------|-------------------|------|
| NO CHANGES |         |                   |      |

FIELD CHANGES

PLANS PREPARED BY:

**AECOM**

999 W. TOWN AND COUNTRY ROAD  
ORANGE, CA 92668-4713  
(714) 567-2501

JAMES FABER R.C.E. 45668 EXPIRES 12-31-12

X

DATE

COUNTY OF SAN BERNARDINO  
DEPARTMENT OF PUBLIC WORKS

RECOMMENDED / APPROVED BY

XXXX XXXX P.E. DEPUTY DIRECTOR DATE

XXXX XXXX P.E. DIRECTOR OF PUBLIC WORKS DATE

SHADOW MOUNTAIN ROAD

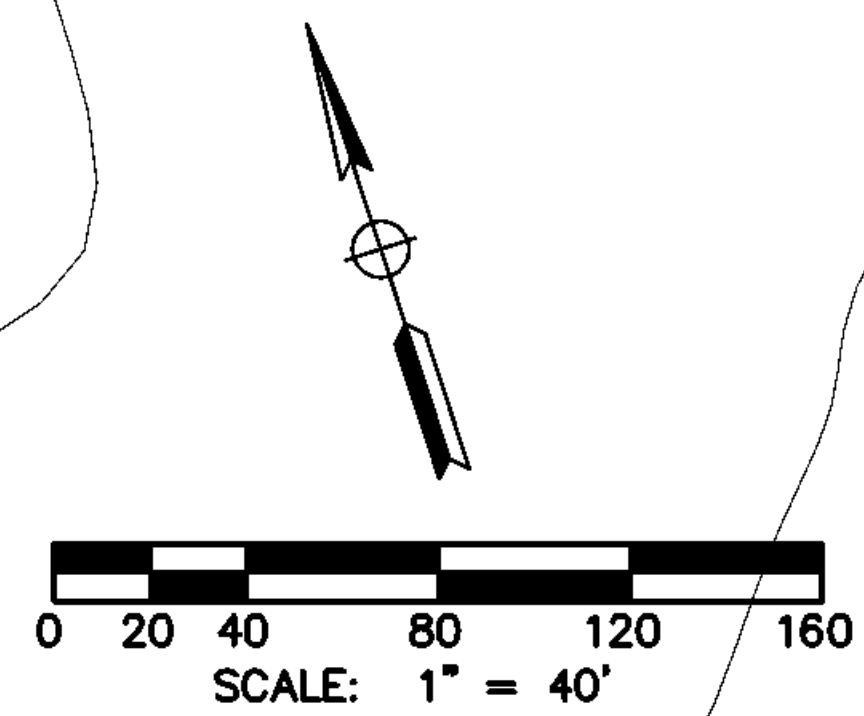
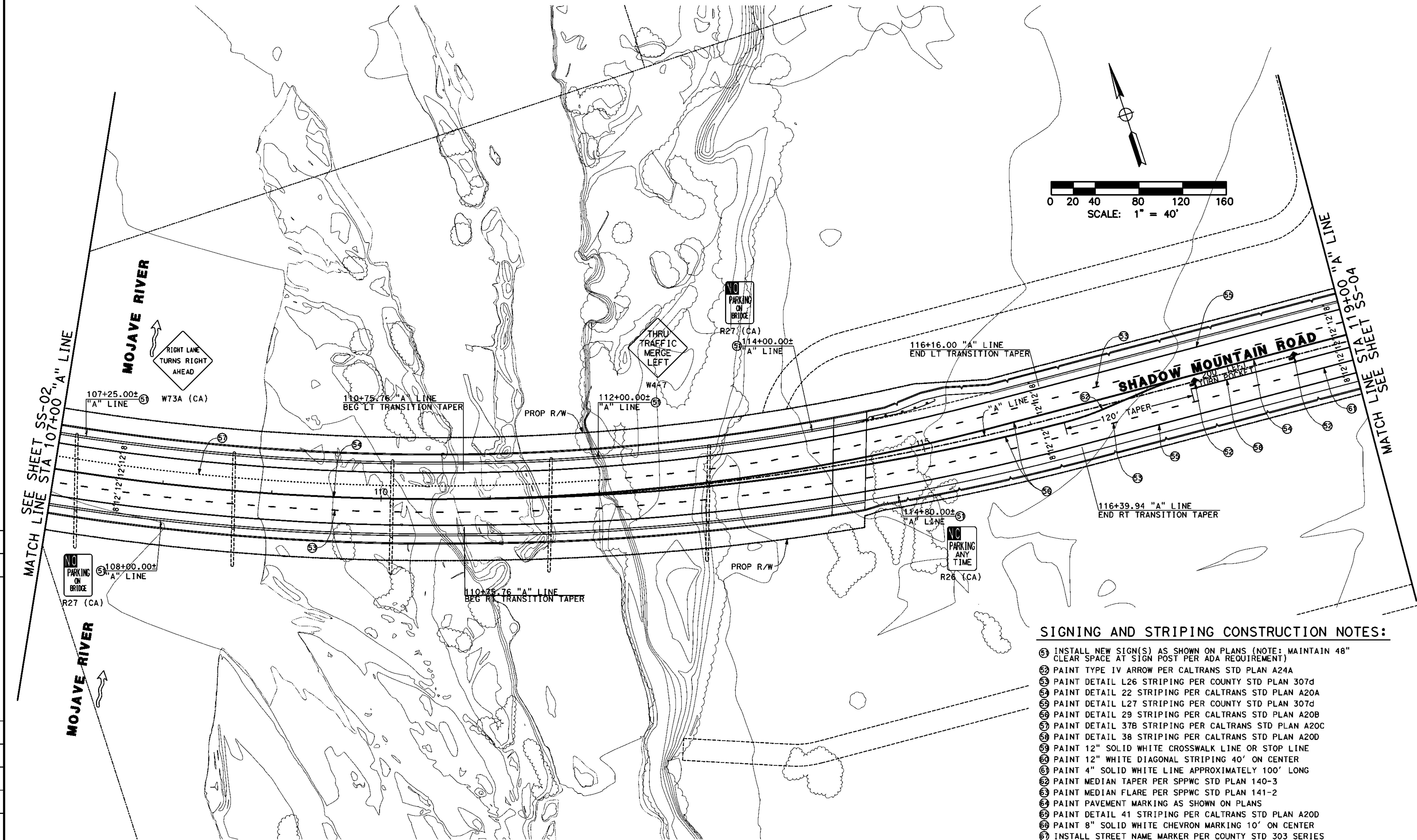
SIGNING &amp; STRIPING PLAN

STA 92+00 "A" LINE TO 107+00 "A" LINE  
STA 37+80 "H" LINE TO STA 41+50 "H" LINE

| J.L. REF. | W.O. NO.  | DRAWING NO. | SHEET NO. | TOTAL SHEETS |
|-----------|-----------|-------------|-----------|--------------|
| JL XXXX   | XX XXXXXX | SS-02       | 65        | X            |

| MARK | REVISIONS | APPR. | DATE |
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| MARK | REVISIONS | APPR. | DATE |
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**SIGNING AND STRIPING CONSTRUCTION NOTES:**

- ⑤ INSTALL NEW SIGN(S) AS SHOWN ON PLANS (NOTE: MAINTAIN 48" CLEAR SPACE AT SIGN POST PER ADA REQUIREMENT)
- ⑤ PAINT TYPE IV ARROW PER CALTRANS STD PLAN A24A
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- ⑤ PAINT MEDIAN TAPER PER SPPWC STD PLAN 140-3
- ⑤ PAINT MEDIAN FLARE PER SPPWC STD PLAN 141-2
- ⑤ PAINT PAVEMENT MARKING AS SHOWN ON PLANS
- ⑤ PAINT DETAIL 41 STRIPING PER CALTRANS STD PLAN A20D
- ⑤ PAINT 8" SOLID WHITE CHEVRON MARKING 10' ON CENTER
- ⑤ INSTALL STREET NAME MARKER PER COUNTY STD 303 SERIES

ALL DIMENSIONS ARE IN FEET  
UNLESS OTHERWISE SHOWN



| MARK | CHANGES    | RESIDENT ENGINEER | DATE |
|------|------------|-------------------|------|
|      | NO CHANGES |                   |      |

**FIELD CHANGES**

PLANS PREPARED BY:  
**AECOM**  
999 W. TOWN AND COUNTRY ROAD  
ORANGE, CA 92668-4713  
(714) 567-2501

JAMES FABER R.C.E. 45668 EXPIRES 12-31-12

**COUNTY OF SAN BERNARDINO  
DEPARTMENT OF PUBLIC WORKS**

RECOMMENDED / APPROVED BY

|                |                          |      |
|----------------|--------------------------|------|
| XXXX XXXX P.E. | DEPUTY DIRECTOR          | DATE |
| XXXX XXXX P.E. | DIRECTOR OF PUBLIC WORKS | DATE |

**SHADOW MOUNTAIN ROAD**

**SIGNING & STRIPING PLAN**  
STA 107+00 "A" LINE TO 119+00 "A" LINE

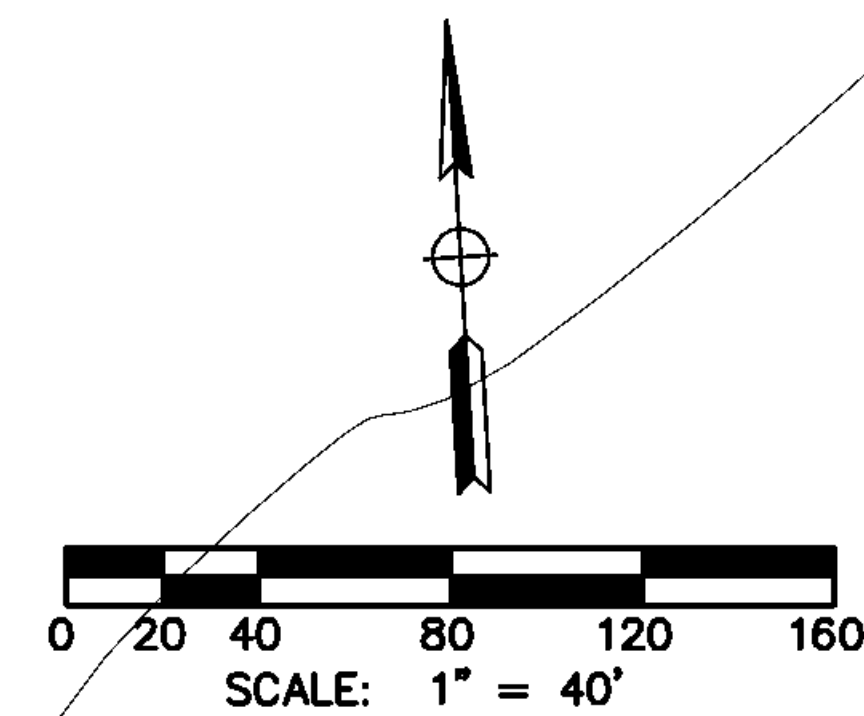
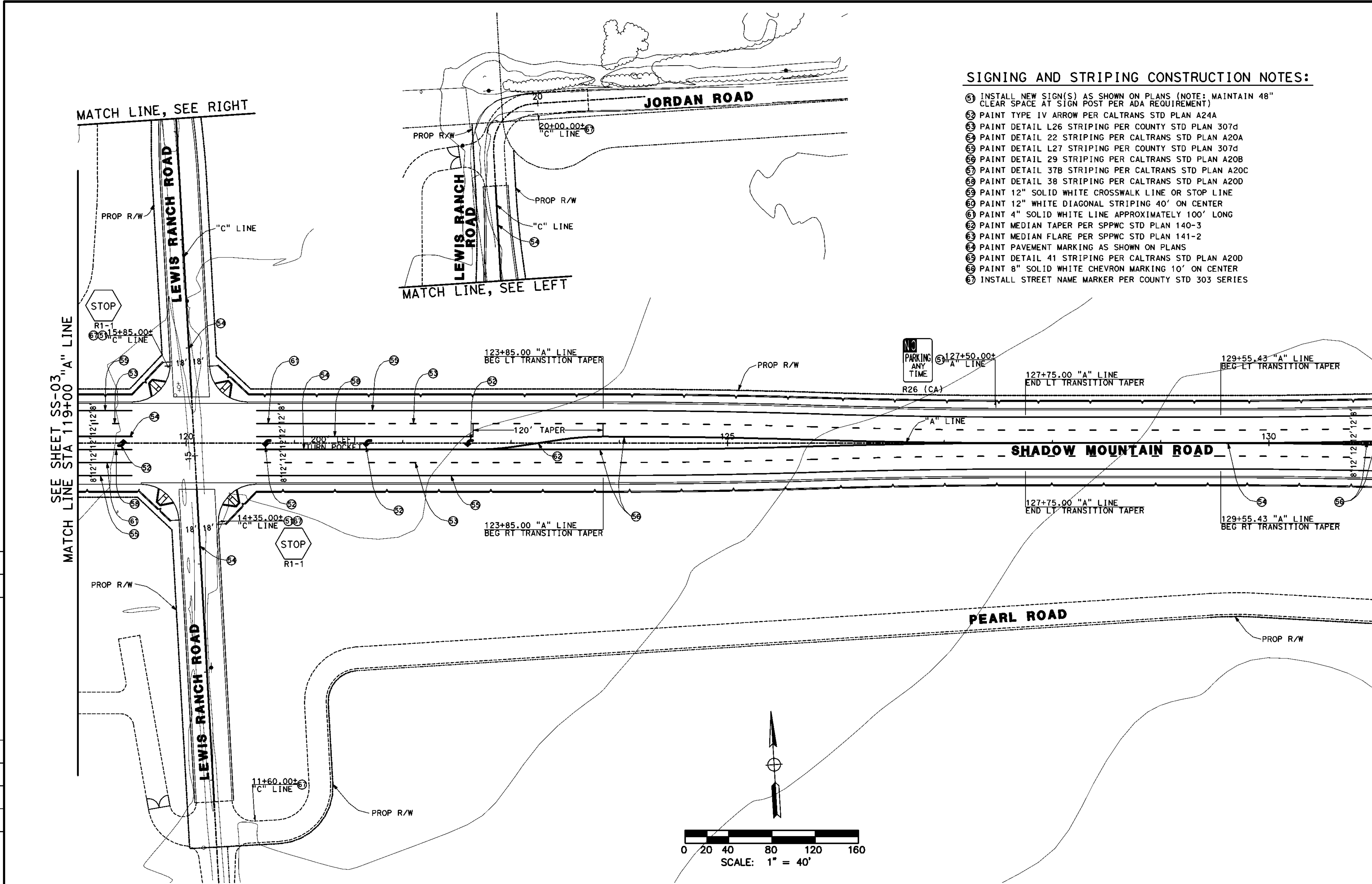
| J.L. REF. | W.O. NO.  | DRAWING NO. | SHEET NO. | TOTAL SHEETS |
|-----------|-----------|-------------|-----------|--------------|
| JL XXXX   | XX XXXXXX | SS-03       | 66        | X            |

SIGNING AND STRIPING CONSTRUCTION NOTES:

- 51 INSTALL NEW SIGN(S) AS SHOWN ON PLANS (NOTE: MAINTAIN 48" CLEAR SPACE AT SIGN POST PER ADA REQUIREMENT)
- 52 PAINT TYPE IV ARROW PER CALTRANS STD PLAN A24A
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- 67 INSTALL STREET NAME MARKER PER COUNTY STD 303 SERIES

| MARK | REVISIONS | APPR. | DATE |
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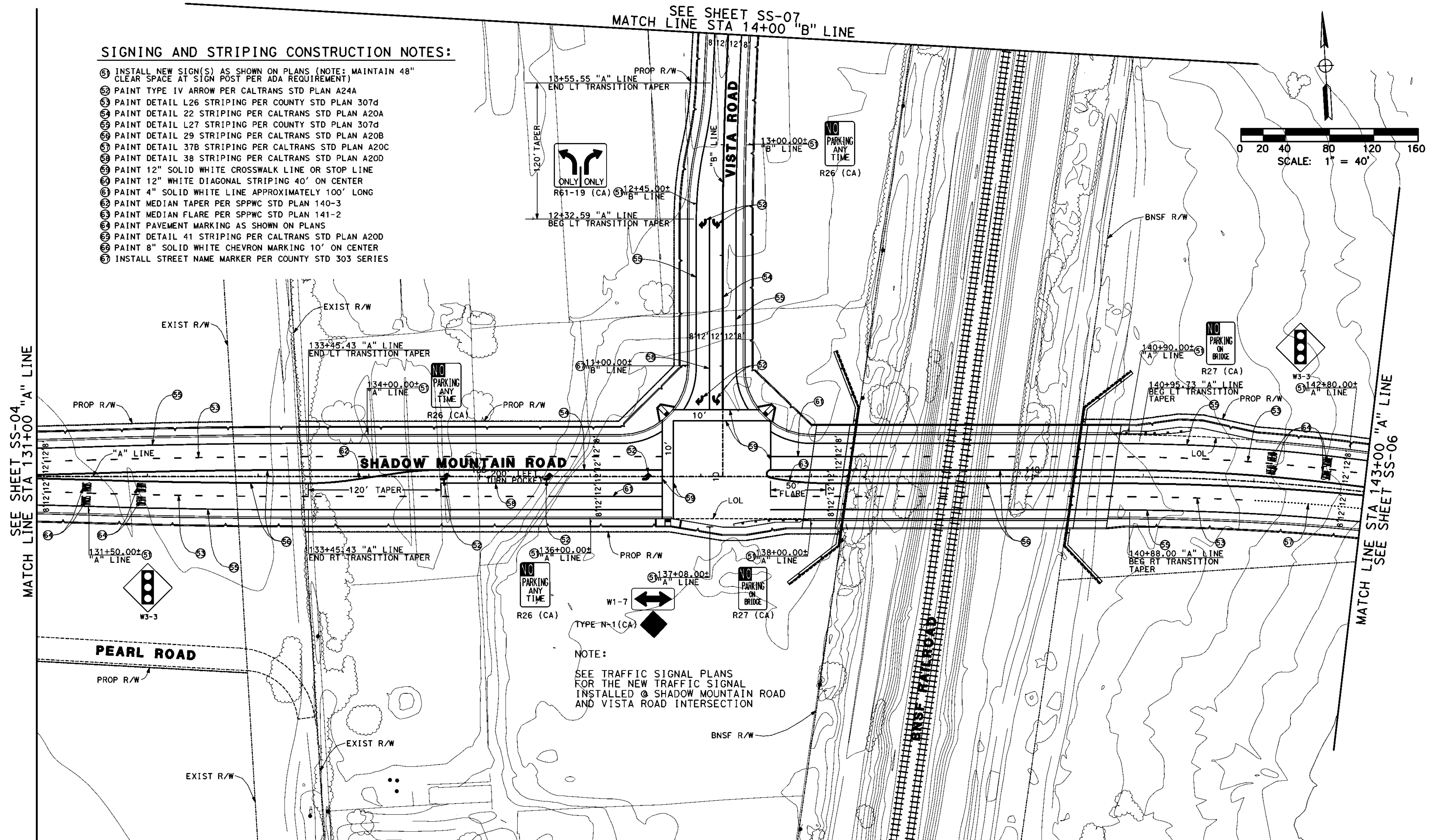
ALL DIMENSIONS ARE IN FEET  
UNLESS OTHERWISE SHOWN

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|                                                                                                               | MARK          |  | CHANGES                                                                                                                                                          | RESIDENT ENGINEER | DATE |
|                                                                                                               | NO CHANGES    |  |                                                                                                                                                                  |                   |      |
|                                                                                                               | FIELD CHANGES |  |                                                                                                                                                                  |                   |      |
| PLANS PREPARED BY:<br><b>AECOM</b><br>999 W. TOWN AND COUNTRY ROAD<br>ORANGE, CA 92668-4713<br>(714) 567-2501 |               |  | COUNTY OF SAN BERNARDINO<br>DEPARTMENT OF PUBLIC WORKS<br>RECOMMENDED / APPROVED BY<br>XXXX XXXX P.E. DEPUTY DIRECTOR<br>XXXX XXXX P.E. DIRECTOR OF PUBLIC WORKS |                   |      |
| JAMES FABER R.C.E. 45668 EXPIRES 12-31-12                                                                     |               |  | J.L. REF. JL XXXX W.O. NO. XX XXXXXX DRAWING NO. SS-04 SHEET NO. 67 TOTAL SHEETS X                                                                               |                   |      |

80% DRAFT SUBMITTAL - NOT FOR CONSTRUCTION

- 51 INSTALL NEW SIGN(S) AS SHOWN ON PLANS (NOTE: MAINTAIN 48" CLEAR SPACE AT SIGN POST PER ADA REQUIREMENT)
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- 58 PAINT DETAIL 38 STRIPING PER CALTRANS STD PLAN A20D
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- 64 PAINT PAVEMENT MARKING AS SHOWN ON PLANS
- 65 PAINT DETAIL 41 STRIPING PER CALTRANS STD PLAN A20D
- 66 PAINT 8" SOLID WHITE CHEVRON MARKING 10' ON CENTER
- 67 INSTALL STREET NAME MARKER PER COUNTY STD 303 SERIES

SEE SHEET SS-07  
MATCH LINE STA 14+00 "B" LINE



ALL DIMENSIONS ARE IN FEET  
UNLESS OTHERWISE SHOWN

| MARK | REVISIONS | APPR. | DATE |
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| MARK | REVISIONS | APPR. | DATE |
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|      |           |       |      |

Don't Dig...Until You Call U.S.A. Toll Free  
DIAL: 811  
for the location  
of buried  
utility lines.  
Don't disrupt  
vital services.



TWO WORKING DAYS BEFORE YOU DIG

|      |            |                   |      |
|------|------------|-------------------|------|
| MARK | CHANGES    |                   |      |
|      | NO CHANGES | RESIDENT ENGINEER | DATE |

FIELD CHANGES

PLANS PREPARED BY:

**AECOM**

999 W. TOWN AND COUNTRY ROAD  
ORANGE, CA 92868-4713  
(714) 567-2501

**JAMES FABER R.C.E. 45668 EXPIRES 12-31-12**

**X**

**DAT**

COUNTY OF SAN BERNARDINO  
DEPARTMENT OF PUBLIC WORKS

RECOMMENDED / APPROVED BY

XXXX XXXX P.E. DEPUTY DIRECTOR

XXXX XXXX P.E.     DIRECTOR OF PUBLIC WORKS

COUNTY OF SAN BERNARDINO

COUNTY OF SAN BERNARDINO  
DEPARTMENT OF PUBLIC WORKS

XXXX XXXX P.E. DEPUTY DIRECTOR

XXXX XXXX P.E.     DIRECTOR OF PUBLIC WORKS

SHADOW MOUNTAIN ROAD

SIGNING & STRIPING PLAN  
STA 131+00 "A" LINE" TO 143+00 "A" LINE  
STA 10+00 "B" LINE TO 14+00 "B" LINE

J.L. REF.  
JL XXXX

W.O. NO.  
XX XXXXX

DRAWING NO.  
SS-05

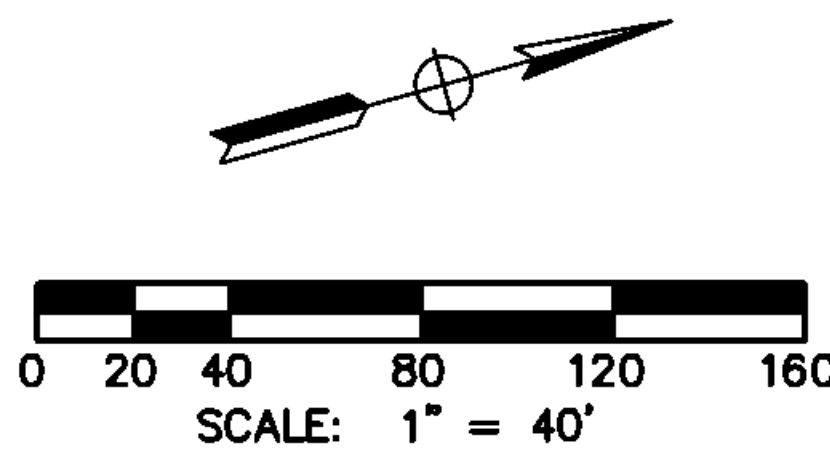
**SHEET NO.**  
**68**

|              |  |
|--------------|--|
| TOTAL SHEETS |  |
| X            |  |

SEE SHEET SS-05  
MATCH LINE STA 143+00 "A" LINE

SIGNING AND STRIPING CONSTRUCTION NOTES:

- 1. INSTALL NEW SIGN(S) AS SHOWN ON PLANS (NOTE: MAINTAIN 48" CLEAR SPACE AT SIGN POST PER ADA REQUIREMENT)
- 2. PAINT TYPE IV ARROW PER CALTRANS STD PLAN A24A
- 3. PAINT DETAIL L26 STRIPING PER COUNTY STD PLAN 307d
- 4. PAINT DETAIL 22 STRIPING PER CALTRANS STD PLAN A20A
- 5. PAINT DETAIL L27 STRIPING PER COUNTY STD PLAN 307d
- 6. PAINT DETAIL 29 STRIPING PER CALTRANS STD PLAN A20B
- 7. PAINT DETAIL 37B STRIPING PER CALTRANS STD PLAN A20C
- 8. PAINT DETAIL 38 STRIPING PER CALTRANS STD PLAN A20D
- 9. PAINT 12" SOLID WHITE CROSSWALK LINE OR STOP LINE
- 10. PAINT 12" WHITE DIAGONAL STRIPING 40' ON CENTER
- 11. PAINT 4" SOLID WHITE LINE APPROXIMATELY 100' LONG
- 12. PAINT MEDIAN TAPER PER SPPWC STD PLAN 140-3
- 13. PAINT MEDIAN FLARE PER SPPWC STD PLAN 141-2
- 14. PAINT PAVEMENT MARKING AS SHOWN ON PLANS
- 15. PAINT DETAIL 41 STRIPING PER CALTRANS STD PLAN A20D
- 16. PAINT 8" SOLID WHITE CHEVRON MARKING 10' ON CENTER
- 17. INSTALL STREET NAME MARKER PER COUNTY STD 303 SERIES



NOTE:  
SEE TRAFFIC SIGNAL PLANS  
FOR THE NEW TRAFFIC SIGNAL  
INSTALLED @ SHADOW MOUNTAIN  
ROAD AND NATIONAL TRAILS  
HIGHWAY INTERSECTION

NOTE:  
'SIGNAL AHEAD' WARNING SIGN ON NATIONAL  
TRAILS HIGHWAY TO BE INSTALLED WITH  
FLASHING BEACON PER CALTRANS STD ES-7J, TYPE 15-FB2

NOTE:  
'SIGNAL AHEAD' WARNING SIGN ON NATIONAL  
TRAILS HIGHWAY TO BE INSTALLED WITH  
FLASHING BEACON PER CALTRANS STD ES-7J,  
TYPE 15-FB2

ALL DIMENSIONS ARE IN FEET  
UNLESS OTHERWISE SHOWN

| REVISIONS | DATE | MARK |
|-----------|------|------|
|           |      |      |
|           |      |      |

| REVISIONS | DATE | MARK |
|-----------|------|------|
|           |      |      |
|           |      |      |



| MARK | CHANGES    | RESIDENT ENGINEER | DATE |
|------|------------|-------------------|------|
|      | NO CHANGES |                   |      |

FIELD CHANGES

PLANS PREPARED BY:  
**AECOM**  
995 W. TOWN AND COUNTRY ROAD  
ORANGE, CA 92668-4713  
(714) 567-2501

JAMES FABER R.C.E. 45668 EXPIRES 12-31-12

COUNTY OF SAN BERNARDINO  
DEPARTMENT OF PUBLIC WORKS

RECOMMENDED / APPROVED BY

|                |                          |      |
|----------------|--------------------------|------|
| XXXX XXXX P.E. | DEPUTY DIRECTOR          | DATE |
| XXXX XXXX P.E. | DIRECTOR OF PUBLIC WORKS | DATE |

SHADOW MOUNTAIN ROAD  
SIGNING & STRIPING PLAN  
STA 143+00 "A" LINE" TO 148+30 "A" LINE  
STA 187+74 "N" LINE TO 209+17 "N" LINE

| J.L. REF. | W.O. NO.  | DRAWING NO. | SHEET NO. | TOTAL SHEETS |
|-----------|-----------|-------------|-----------|--------------|
| JL XXXX   | XX XXXXXX | SS-06       | 69        | X            |

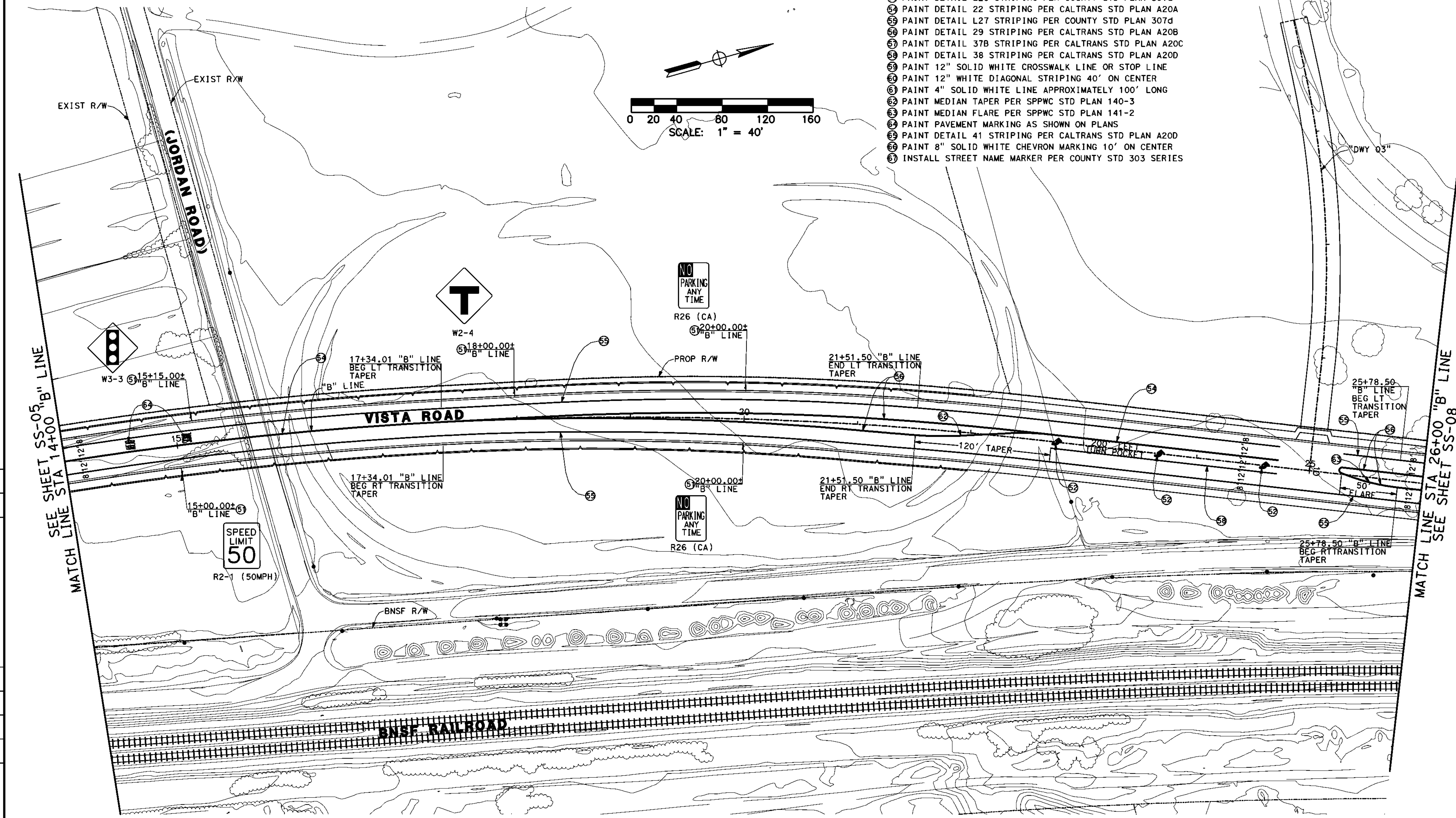
80% DRAFT SUBMITTAL - NOT FOR CONSTRUCTION

SIGNING AND STRIPING CONSTRUCTION NOTES:

- 51 INSTALL NEW SIGN(S) AS SHOWN ON PLANS (NOTE: MAINTAIN 48" CLEAR SPACE AT SIGN POST PER ADA REQUIREMENT)  
52 PAINT TYPE IV ARROW PER CALTRANS STD PLAN A24A  
53 PAINT DETAIL L26 STRIPING PER COUNTY STD PLAN 307d  
54 PAINT DETAIL 22 STRIPING PER CALTRANS STD PLAN A20A  
55 PAINT DETAIL L27 STRIPING PER COUNTY STD PLAN 307d  
56 PAINT DETAIL 29 STRIPING PER CALTRANS STD PLAN A20B  
57 PAINT DETAIL 37B STRIPING PER CALTRANS STD PLAN A20C  
58 PAINT DETAIL 38 STRIPING PER CALTRANS STD PLAN A20D  
59 PAINT 12" SOLID WHITE CROSSWALK LINE OR STOP LINE  
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61 PAINT 4" SOLID WHITE LINE APPROXIMATELY 100' LONG  
62 PAINT MEDIAN TAPER PER SPPWC STD PLAN 140-3  
63 PAINT MEDIAN FLARE PER SPPWC STD PLAN 141-2  
64 PAINT PAVEMENT MARKING AS SHOWN ON PLANS  
65 PAINT DETAIL 41 STRIPING PER CALTRANS STD PLAN A20D  
66 PAINT 8" SOLID WHITE CHEVRON MARKING 10' ON CENTER  
67 INSTALL STREET NAME MARKER PER COUNTY STD 303 SERIES

| MARK | REVISIONS | DATE |
|------|-----------|------|
|      |           |      |
|      |           |      |
|      |           |      |

| MARK | REVISIONS | DATE |
|------|-----------|------|
|      |           |      |
|      |           |      |
|      |           |      |



ALL DIMENSIONS ARE IN FEET  
UNLESS OTHERWISE SHOWN



| MARK | CHANGES    | RESIDENT ENGINEER | DATE |
|------|------------|-------------------|------|
|      | NO CHANGES |                   |      |

FIELD CHANGES

PLANS PREPARED BY:  
**AECOM**  
999 W. TOWN AND COUNTRY ROAD  
ORANGE, CA 92668-4713  
(714) 567-2501

JAMES FABER R.C.E. 45668 EXPIRES 12-31-12

X  
DATE

COUNTY OF SAN BERNARDINO  
DEPARTMENT OF PUBLIC WORKS

RECOMMENDED / APPROVED BY

XXXX XXXX P.E. DEPUTY DIRECTOR DATE

XXXX XXXX P.E. DIRECTOR OF PUBLIC WORKS DATE

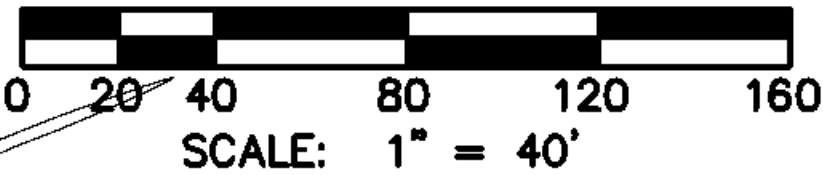
SHADOW MOUNTAIN ROAD

SIGNING & STRIPING PLAN  
STA 14+00 "B" LINE TO 26+00 "B" LINE

| J.L. REF. | W.O. NO.  | DRAWING NO. | SHEET NO. | TOTAL SHEETS |
|-----------|-----------|-------------|-----------|--------------|
| JL XXXX   | XX XXXXXX | SS-07       | 70        | X            |

SIGNING AND STRIPING CONSTRUCTION NOTES:

- 1. INSTALL NEW SIGN(S) AS SHOWN ON PLANS (NOTE: MAINTAIN 48" CLEAR SPACE AT SIGN POST PER ADA REQUIREMENT)
- 2. PAINT TYPE IV ARROW PER CALTRANS STD PLAN A24A
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- 13. PAINT MEDIAN FLARE PER SPPWC STD PLAN 141-2
- 14. PAINT PAVEMENT MARKING AS SHOWN ON PLANS
- 15. PAINT DETAIL 41 STRIPING PER CALTRANS STD PLAN A20D
- 16. PAINT 8" SOLID WHITE CHEVRON MARKING 10' ON CENTER
- 17. INSTALL STREET NAME MARKER PER COUNTY STD 303-SERIES

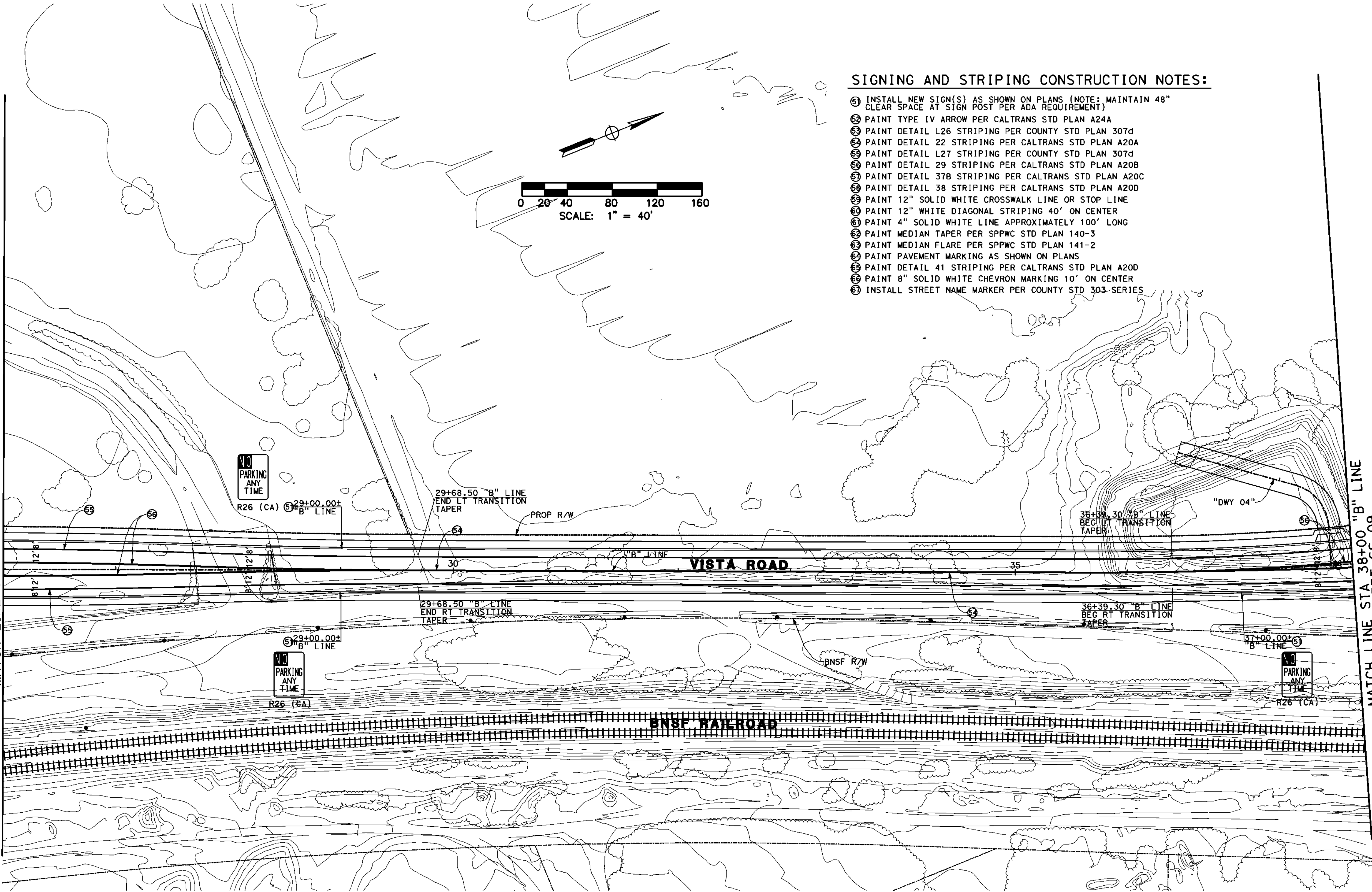


SEE SHEET SS-07  
MATCH LINE STA 26+00 "B" LINE

MATCH LINE STA 38+00 "B" LINE  
SEE SHEET SS-09

| MARK | REVISIONS | APPR. | DATE |
|------|-----------|-------|------|
|      |           |       |      |
|      |           |       |      |

| MARK | REVISIONS | APPR. | DATE |
|------|-----------|-------|------|
|      |           |       |      |
|      |           |       |      |



ALL DIMENSIONS ARE IN FEET  
UNLESS OTHERWISE SHOWN



| MARK | CHANGES    | RESIDENT ENGINEER | DATE |
|------|------------|-------------------|------|
|      | NO CHANGES |                   |      |

FIELD CHANGES

PLANS PREPARED BY:  
**AECOM**  
999 W. TOWN AND COUNTRY ROAD  
ORANGE, CA 92668-4713  
(714) 567-2501

JAMES FABER R.C.E. 45668 EXPIRES 12-31-12

COUNTY OF SAN BERNARDINO  
DEPARTMENT OF PUBLIC WORKS

RECOMMENDED / APPROVED BY

XXXX XXXX P.E. DEPUTY DIRECTOR DATE

XXXX XXXX P.E. DIRECTOR OF PUBLIC WORKS DATE

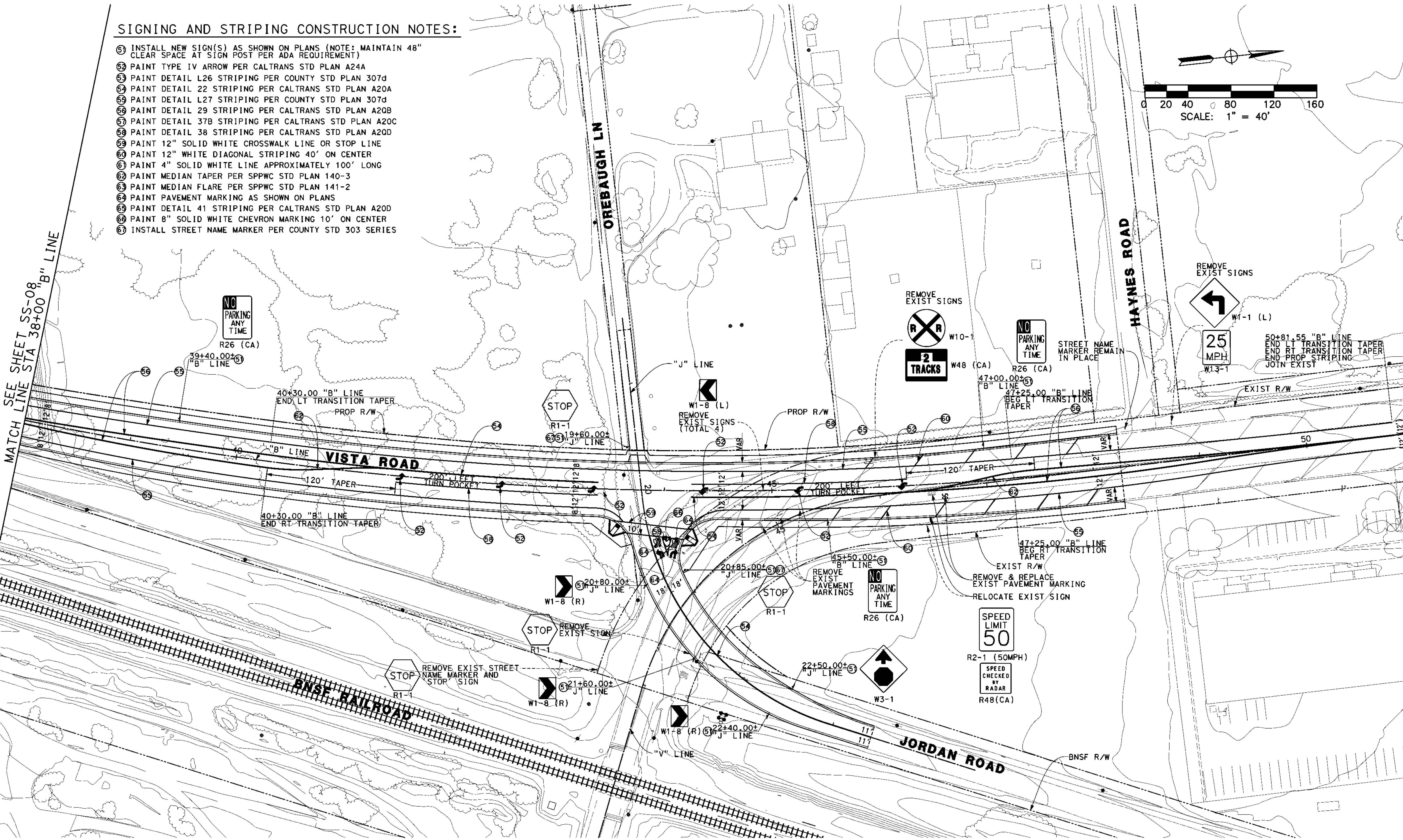
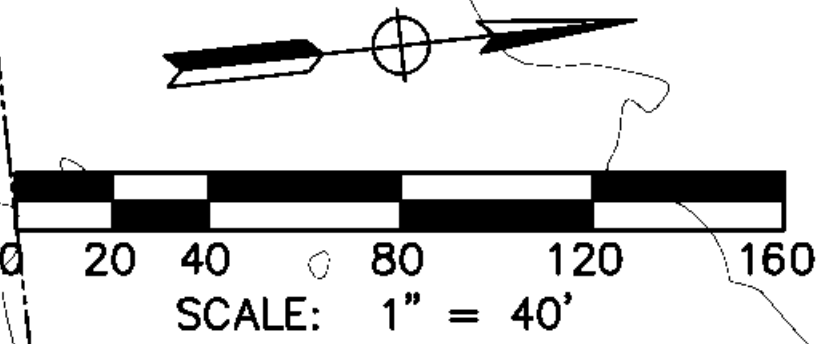
SHADOW MOUNTAIN ROAD

SIGNING & STRIPING PLAN  
STA 26+00 "B" LINE TO 38+00 "B" LINE

| J.L. REF. | W.O. NO.  | DRAWING NO. | SHEET NO. | TOTAL SHEETS |
|-----------|-----------|-------------|-----------|--------------|
| JL XXXX   | XX XXXXXX | SS-08       | 71        | X            |

SIGNING AND STRIPING CONSTRUCTION NOTES:

- 51 INSTALL NEW SIGN(S) AS SHOWN ON PLANS (NOTE: MAINTAIN 48" CLEAR SPACE AT SIGN POST PER ADA REQUIREMENT)
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ALL DIMENSIONS ARE IN FEET  
UNLESS OTHERWISE SHOWN

| REVISIONS | DATE |
|-----------|------|
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|           |      |
|           |      |

| REVISIONS | DATE |
|-----------|------|
|           |      |
|           |      |
|           |      |



| MARK | CHANGES | DATE |
|------|---------|------|
|      |         |      |
|      |         |      |

FIELD CHANGES

PLANS PREPARED BY:  
**AECOM**  
999 W. TOWN AND COUNTRY ROAD  
ORANGE, CA 92668-4713  
(714) 567-2501

JAMES FABER R.C.E. 45668 EXPIRES 12-31-12

X  
DATE

COUNTY OF SAN BERNARDINO  
DEPARTMENT OF PUBLIC WORKS

RECOMMENDED / APPROVED BY

XXXX XXXX P.E. DEPUTY DIRECTOR DATE

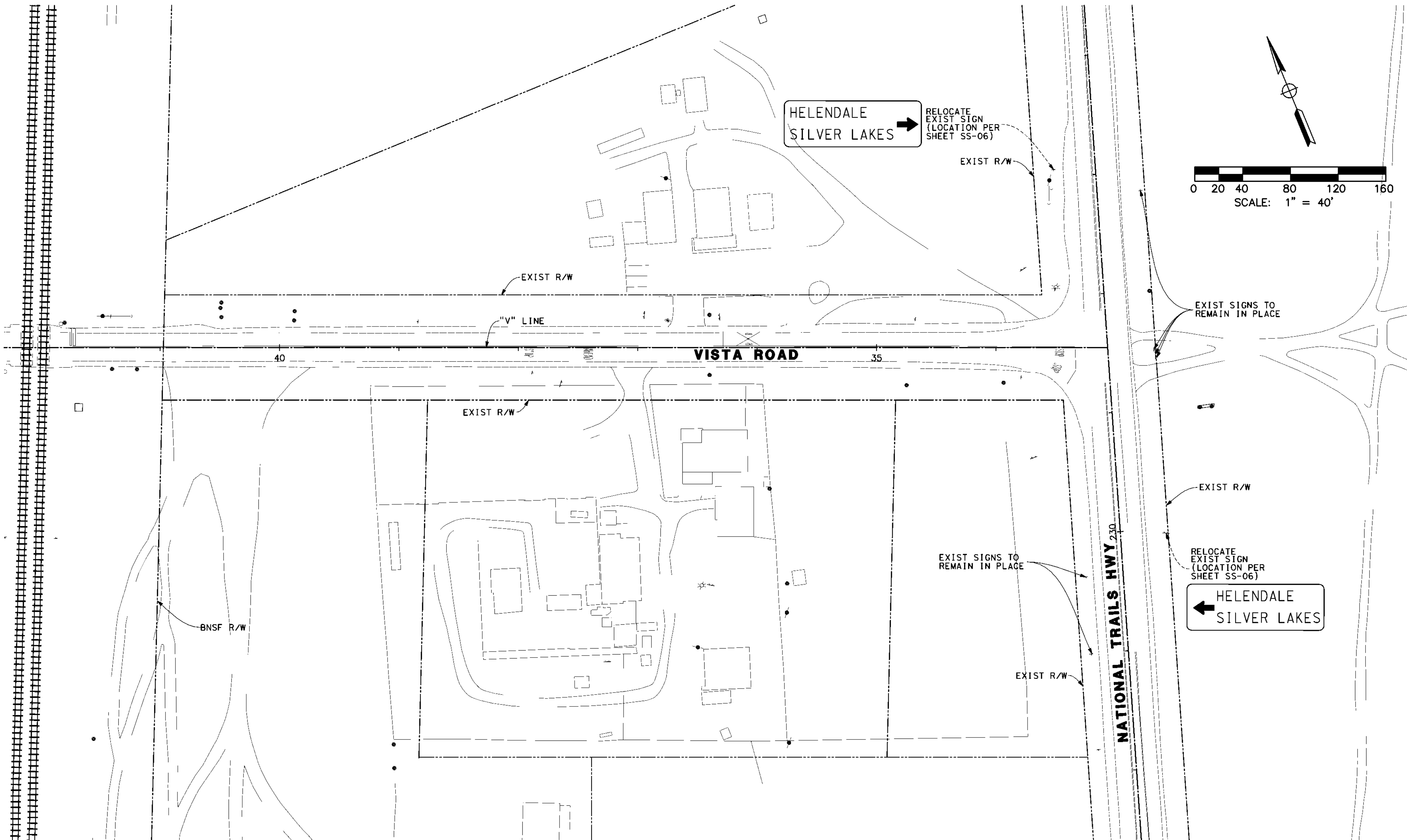
XXXX XXXX P.E. DIRECTOR OF PUBLIC WORKS DATE

SHADOW MOUNTAIN ROAD  
SIGNING & STRIPING PLAN  
STA 38+00 "B" LINE TO 50+90 "B" LINE

| J.L. REF. | W.O. NO.  | DRAWING NO. | SHEET NO. | TOTAL SHEETS |
|-----------|-----------|-------------|-----------|--------------|
| JL XXXX   | XX XXXXXX | SS-09       | 72        | X            |

| MARK | REVISIONS | APPR. | DATE |
|------|-----------|-------|------|
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|      |           |       |      |

| MARK | REVISIONS | APPR. | DATE |
|------|-----------|-------|------|
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|      |           |       |      |



ALL DIMENSIONS ARE IN FEET  
UNLESS OTHERWISE SHOWN



| MARK | CHANGES | RESIDENT ENGINEER | DATE |
|------|---------|-------------------|------|
|      |         |                   |      |
|      |         |                   |      |

FIELD CHANGES

PLANS PREPARED BY:  
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999 W. TOWN AND COUNTRY ROAD  
ORANGE, CA 92668-4713  
(714) 567-2501

JAMES FABER R.C.E. 45668 EXPIRES 12-31-12

X  
DATE

COUNTY OF SAN BERNARDINO  
DEPARTMENT OF PUBLIC WORKS

RECOMMENDED / APPROVED BY

XXXX XXXX P.E. DEPUTY DIRECTOR

XXXX XXXX P.E. DIRECTOR OF PUBLIC WORKS

SHADOW MOUNTAIN ROAD

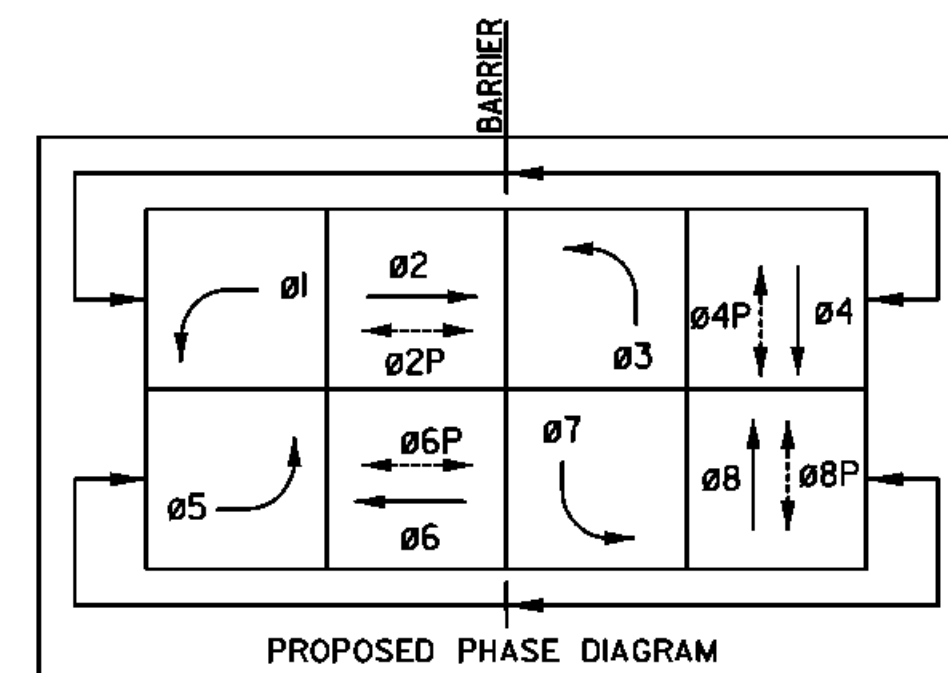
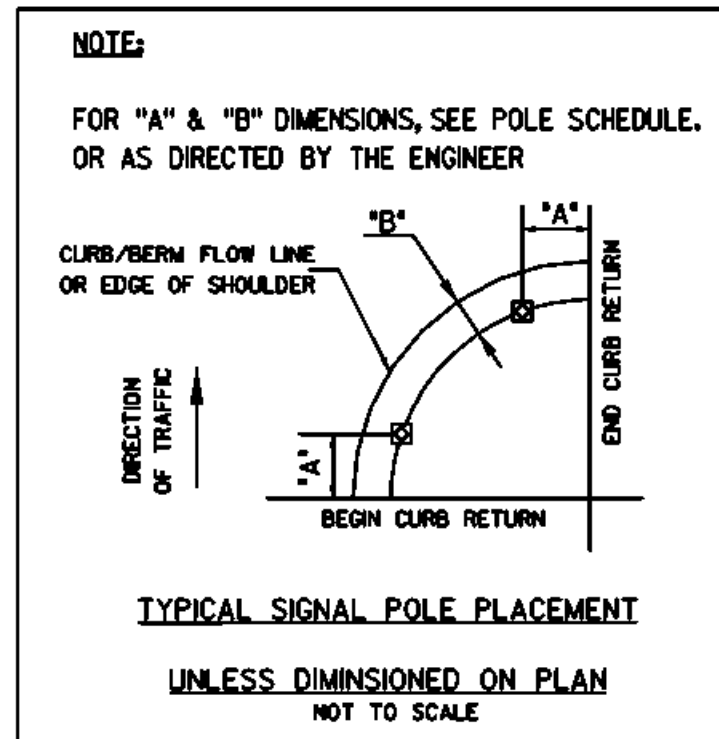
SIGNING & STRIPING PLAN  
STA 33+00 "V" LINE" TO 41+00 "V" LINE  
STA 228+00 "N" LINE TO 234+00 "N" LINE

| J.L. REF. | W.O. NO.  | DRAWING NO. | SHEET NO. | TOTAL SHEETS |
|-----------|-----------|-------------|-----------|--------------|
| JL XXXX   | XX XXXXXX | SS-10       | 73        | X            |

1 FURNISH AND INSTALL TYPE 170E CONTROLLER ASSEMBLY, INCLUDING TYPE 333JP CABINET, VIDEO DETECTION SYSTEM, GPS TIME SOURCE MODULE UNIT, BATTERY BACK-UP SYSTEM, EMERGENCY VEHICLE DETECTOR SYSTEM AND APPURTENANT EQUIPMENT. CONTROLLER CABINET AND FOUNDATION SHALL BE INSTALLED PER CALTRANS STANDARD PLANS ES-3C. CONTRACTOR SHALL FURNISH AND INSTALL ANY ADDITIONAL ELECTRONIC EQUIPMENT REQUIRED TO PROVIDE THE DESIRED SIGNAL OPERATION AS SHOWN ON THE PLAN. THE CONTROLLER ASSEMBLY AND BATTERY BACK-UP SYSTEM SHALL BE TESTED BY REPUBLIC ITS. THE COST FOR TESTING THE CONTROLLER ASSEMBLY AND BBS SYSTEM SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.

- 
- A square sign with a black border. Inside, there is a black arrow pointing left, curved at the top. Below the arrow, the text "10 L TURN" is written in black. The sign is labeled with dimensions: 36" on the left and 36" on the top.

- 1- ALL VEHICLE SIGNAL INDICATIONS SHALL BE 12" AND SHALL BE INSTALLED WITH "LED" SIGNAL MODULES.
- 2- ALL PEDESTRIAN SIGNAL INDICATIONS SHALL BE INSTALLED WITH "LED" PEDESTRIAN MODULES AND COUNTDOWN TIMERS.
- 3- SIGNAL POLE LOCATIONS ARE APPROXIMATE.
- 4- ALL BACK PLATES SHALL BE LOUVERED.
- 5- ALL BACK PLATES AND VISORS SHALL BE METAL, NO PLASTIC PARTS ARE ALLOWED.
- 6- UNLESS OTHERWISE NOTED, ALL PULL BOXES SHALL BE #5.
- 7- PULL BOXES LOCATED IN THE ROADWAY OR SHOULDER AREAS SUBJECT TO TRAFFIC, SHALL BE TRAFFIC TYPE PER CALTRANS STANDARD PLAN ES-8.
- 8- PULL BOXES SHALL BE INSTALLED PER CALTRANS STANDARD PLANS ES-8, AND SHALL NOT BE INSTALLED IN OR WITHIN A CURB ACCESS RAMP.
- 9- SLEEVE NUTS SHALL BE USED FOR ALL TYPE (I-A) POLES PER CALTRANS STANDARD PLAN ES-7B.
- 10- PEDESTRIAN PUSH BUTTON SHALL BE PER CALTRANS STANDARD PLANS ES-5C (TYPE B) AND ES-7A.
- 11- TRAFFIC SIGNAL AND LIGHTING SHALL CONFORM TO THE STATE OF CALIFORNIA STANDARD SPECIFICATIONS SECTION 86 AND STANDARD PLANS (DATED 2010).
- 12- ALL UNUSED TENONS SHALL BE CAPPED.
- 13- THE CONTRACTOR SHALL NOTIFY COUNTY REPRESENTATIVE TO SCHEDULE A FIELD REVIEW WITH TRAFFIC DIVISION TO DETERMINE THE EXACT LOCATIONS FOR SIGNAL POLES, CONTROLLER CABINET, AND SERVICE EQUIPMENT ENCLOSURE.



| POLE AND EQUIPMENT SCHEDULE |                 |        |                 |               |                    |               |     |                  |          |                   |          |                  |       |      |                             |
|-----------------------------|-----------------|--------|-----------------|---------------|--------------------|---------------|-----|------------------|----------|-------------------|----------|------------------|-------|------|-----------------------------|
| POLE NO.                    | SIGNAL STANDARD |        |                 |               |                    | POLE LOCATION |     | VEHICLE MOUNTING |          | PEDESTRIAN SIGNAL |          | PED PUSH BUTTONS |       | HPSV | REFLECTIVE STREET NAME SIGN |
|                             | TYPE            | HEIGHT | SIGNAL MAST ARM | "T" * SPACING | LUMINAIRE MAST ARM | "A"           | "B" | MAST             | MOUNTING | Ø                 | MOUNTING | Ø                | ARROW |      |                             |
| (A)                         | 27-4-100        | 30'    | 45'             | 15'           | 15'                | 37'           | 5'  | MAS-2            | SV-I-T   | Ø8                | SP-I-T   | Ø8               | ←     | 200W | DETAIL "A"                  |
| (B)                         | I-A             | 10'    | -               | -             | -                  | 37'           | 5'  | -                | TV-2-T   | Ø8                | SP-I-T   | Ø8               | →     | -    | -                           |
| (C)                         | 27-4-100        | 30'    | 45'             | 15'           | 15'                | 15'           | 5'  | MAS-2            | SV-I-T   | Ø2                | SP-I-T   | -                | -     | 200W | DETAIL "B"                  |
| (D)                         | PPB-POST        | 3'-10" | -               | -             | -                  | 27'           | 5'  | -                | -        | -                 | -        | Ø8               | ←     | -    | -                           |
| (E)                         | I-A             | 10'    | -               | -             | -                  | 27'           | 5'  | -                | TV-2-T   | Ø8                | SP-I-T   | Ø2               | →     | -    | -                           |
| (F)                         | 27-4-100        | 30'    | 40'             | 15'           | 15'                | 3'            | 5'  | MAS-2            | SV-I-T   | Ø4                | SP-I-T   | -                | -     | 200W | DETAIL "A"                  |
| (G)                         | PPB-POST        | 3'-10" | -               | -             | -                  | 38'           | 5'  | -                | -        | -                 | -        | Ø2               | ←     | -    | -                           |
| (H)                         | I-A             | 10'    | -               | -             | -                  | 38'           | 5'  | -                | TV-2-T   | Ø2                | SP-I-T   | Ø4               | →     | -    | -                           |
| (I)                         | 24-4-100        | 30'    | 35'             | 14'           | 15'                | 21'           | 5'  | MAS-2            | SV-I-T   | Ø6                | SP-I-T   | -                | -     | 200W | DETAIL "B"                  |
| (J)                         | PPB-POST        | 3'-10" | -               | -             | -                  | 28'           | 5'  | -                | -        | -                 | -        | Ø4               | ←     | -    | -                           |
| (K)                         | I-A             | 10'    | -               | -             | -                  | 27'           | 5'  | -                | TV-2-T   | Ø4                | SP-I-T   | Ø6               | →     | -    | -                           |

| CONDUCTOR AND CONDUIT TABLE                          |                  |                      |      |     |     |     |     |     |     |     |     |     |     |
|------------------------------------------------------|------------------|----------------------|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| A.W.G. SIZE<br>OR<br>CABLE SIZE                      | P<br>O<br>L<br>E | PHASE                | RUNS |     |     |     |     |     |     |     |     |     |     |
|                                                      |                  |                      | 1    | 2   | 3   | 4   | 5   | 6   | 7   | 8   | 9   | 10  | 11  |
| <b>I2CSC</b><br><br><b>C<br/>A<br/>B<br/>L<br/>E</b> | (A)              | #3, #8, #8P<br>#6PPB | 1/1  |     |     |     |     |     |     |     |     | 1/1 |     |
|                                                      | (B)              | #5, #6, #6P<br>#8PPB | 1/1  | 1/1 |     |     |     |     |     |     |     | 1/1 |     |
|                                                      | (C)              | #2, #5, #5P          | 1/0  | 1/0 | 1/0 |     |     |     |     |     |     | 1/0 |     |
|                                                      | (D)              | #8PPB                | 0/1  | 0/1 | 0/1 |     |     |     |     |     |     | 0/1 |     |
|                                                      | (E)              | #7, #8, #8P<br>#2PPB | 1/1  | 1/1 | 1/1 | 1/1 |     |     |     |     |     | 1/1 |     |
|                                                      | (F)              | #4, #7, #4P          |      |     |     |     | 1/0 | 1/0 | 1/0 | 1/0 | 1/0 |     |     |
|                                                      | (G)              | #2PPB                |      |     |     |     | 0/1 | 0/1 | 0/1 | 0/1 | 0/1 |     |     |
|                                                      | (H)              | #1, #2, #2P<br>#4PPB |      |     |     |     |     | 1/1 | 1/1 | 1/1 | 1/1 |     |     |
|                                                      | (I)              | #1, #5, #5P          |      |     |     |     |     |     | 1/0 | 1/0 | 1/0 |     |     |
|                                                      | (J)              | #4PPB                |      |     |     |     |     |     | 0/1 | 0/1 | 0/1 |     |     |
| <b>3CSC</b><br><br><b>C<br/>A<br/>B<br/>L<br/>E</b>  | (K)              | #3, #4, #4P<br>#6PPB |      |     |     |     |     |     |     | 1/1 | 1/1 |     |     |
|                                                      | TOTAL            |                      | 4/4  | 3/3 | 2/2 | 1/1 | 1/1 | 2/2 | 3/3 | 4/4 | 4/4 | 4/4 | 0/0 |

|                            |               |     |    |    |    |    |    |    |     |    |    |    |
|----------------------------|---------------|-----|----|----|----|----|----|----|-----|----|----|----|
| * IO                       | LUMINAIRE     | 2   | 2  | 2  | -  | 2  | 2  | 2  | 2   | -  | -  | -  |
| VIDEO<br>DETECTION         | VIDEO CABLE   | 2   | 1  | 1  | -  | 1  | 1  | 2  | 2   | -  | -  | 4  |
|                            | VIDEO SERVICE | 2   | 1  | 1  | -  | 1  | 1  | 2  | 2   | -  | -  | 4  |
| EMERGENCY PREEMPTION CABLE |               | 2   | 1  | 1  | -  | 1  | 1  | 2  | 2   | -  | -  | 4  |
| CONDUIT SIZE               |               | 4½" | 4" | 3" | 3" | 3" | 3" | 4" | 4½" | 4" | 4" | 4" |
| PERCENTAGE FILL            |               | 23  | 20 | 26 | 10 | 17 | 26 | 24 | 23  | 20 | 20 | 17 |

ALL DIMENSIONS ARE IN FEET  
UNLESS OTHERWISE SHOWN



|      |            |                   |      |
|------|------------|-------------------|------|
| MARK | CHANGES    |                   |      |
|      | NO CHANGES | RESIDENT ENGINEER | DATE |

PLANS PREPARED BY:

**AECOM**

999 W. TOWN AND COUNTRY ROAD  
ORANGE, CA 92868-4713  
(714) 567-2501

**JAMES FABER R.C.E. 45668 EXPIRES 12-31-12**

RECOMMENDED / APPROVED BY

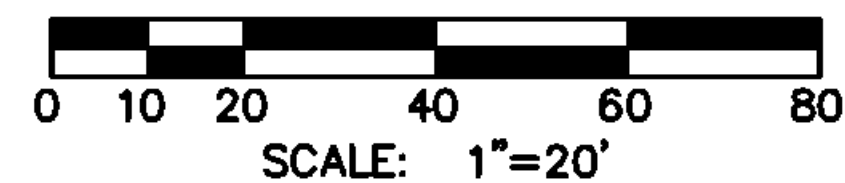
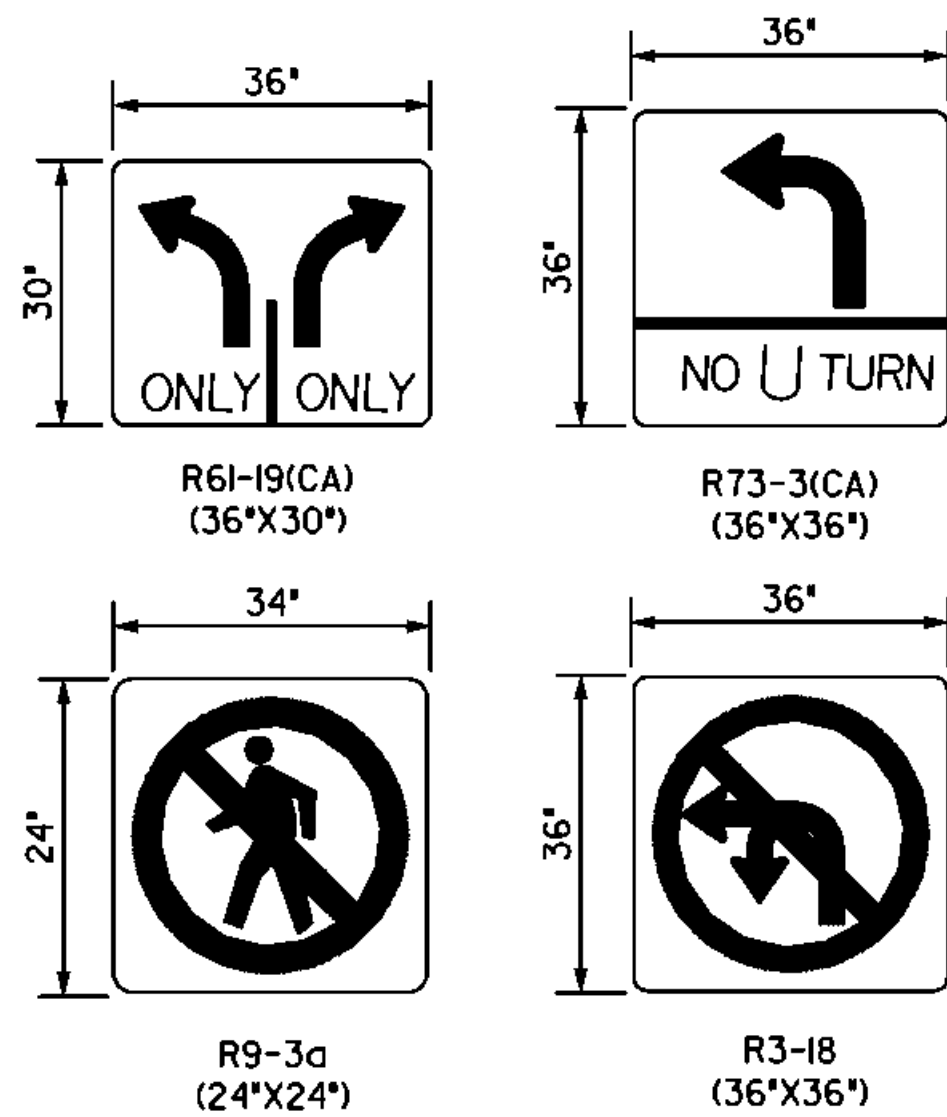
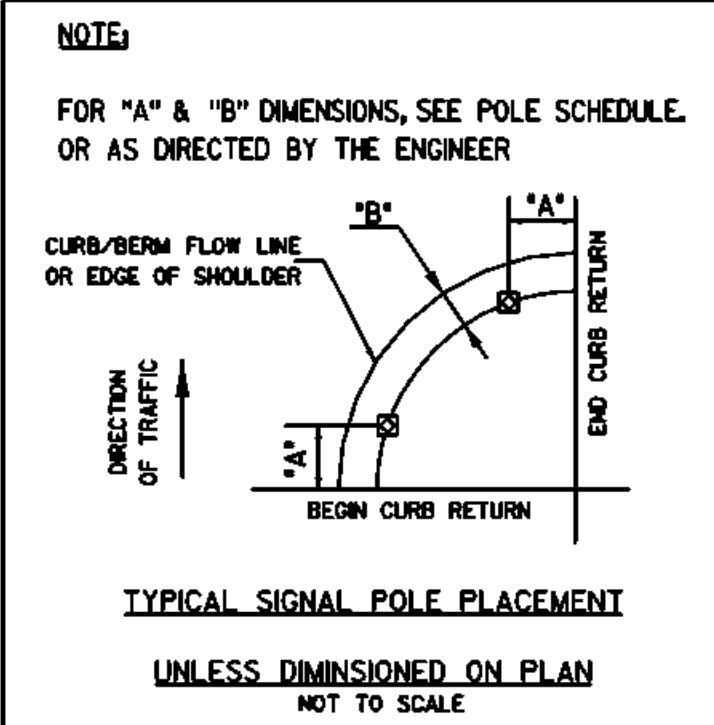
XXXX XXXX P.E. DEPUTY DIRECTOR

XXXX XXXX P.E.     DIRECTOR OF PUBLIC WORKS

|           |           |             |           |              |
|-----------|-----------|-------------|-----------|--------------|
| J.L. REF. | W.O. NO.  | DRAWING NO. | SHEET NO. | TOTAL SHEETS |
| JL XXXX   | XX XXXXXX | TS-01       | 74        | X            |

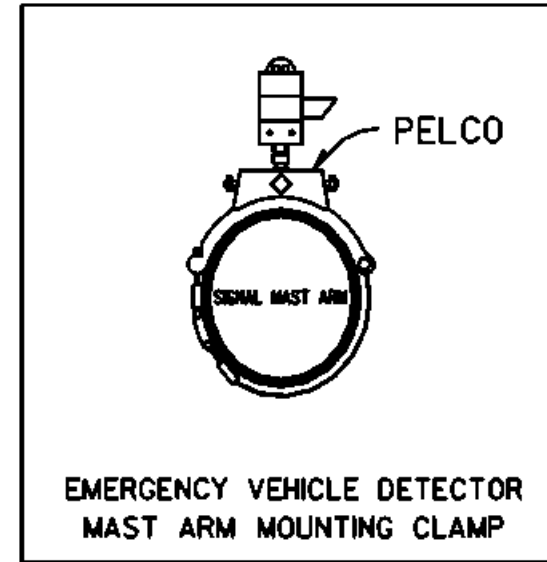
# TRAFFIC SIGNAL CONSTRUCTION NOTE

- FURNISH AND INSTALL TYPE 170E CONTROLLER ASSEMBLY, INCLUDING TYPE 333JP CABINET, VIDEO DETECTION SYSTEM, GPS TIME SOURCE MODULE UNIT, BATTERY BACK-UP SYSTEM, EMERGENCY VEHICLE DETECTOR SYSTEM AND APPURTENANT EQUIPMENT. CONTROLLER CABINET AND FOUNDATION SHALL BE INSTALLED PER CALTRANS STANDARD PLANS ES-3C. CONTRACTOR SHALL FURNISH AND INSTALL ANY ADDITIONAL ELECTRONIC EQUIPMENT REQUIRED TO PROVIDE THE DESIRED SIGNAL OPERATION AS SHOWN ON THE PLAN. THE CONTROLLER ASSEMBLY AND BATTERY BACK-UP SYSTEM SHALL BE TESTED BY REPUBLIC ITS. THE COST FOR TESTING THE CONTROLLER ASSEMBLY AND BBS SYSTEM SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
- FURNISH AND INSTALL 120/240V TYPE III-BF SERVICE EQUIPMENT ENCLOSURE CABINET. USE 50 AMP SIGNAL BREAKER, 30 AMP LIGHTING BREAKER. SIGNAL CIRCUIT SHALL BE 120V METERED AND LIGHTING SHALL BE 120V UNMETERED. PROVISIONS SHALL BE MADE FOR MOUNTING THE TYPE "V" PHOTOELECTRIC UNIT IN THE SERVICE EQUIPMENT ENCLOSURE. THE CONTRACTOR SHALL FURNISH AND INSTALL A TIME DELAY PHOTO CELL FOR THE LUMINAIRES.
- FURNISH AND INSTALL TYPE "V" PEC (LIGHTING TYPE) IN THE SERVICE EQUIPMENT ENCLOSURE.
- FURNISH AND INSTALL 3" PVC SCHEDULE 40 WITH PULL-ROPE FROM P.P. \*\*\*\*\* TO THE SERVICE CABINET PER S.C.E. APPROVED DRAWINGS. AT LEAST 2 WEEKS ADVANCE NOTICE SHALL BE GIVEN TO THE SOUTHERN CALIFORNIA EDISON COMPANY BY CONTACTING THE CUSTOMER SERVICE PLANNER, GONZALO HEREDIA AT (760) 951-3126. EXACT LOCATIONS SHALL BE DETERMINED BY S.C.E. IN THE FIELD.
- FURNISH AND INSTALL VIDEO VEHICLE DETECTION SYSTEM. CAMERA SHALL BE INSTALLED ON THE LUMINAIRE MAST ARM PER THE MANUFACTURER'S SPECIFICATIONS.
- FURNISH AND INSTALL EMERGENCY VEHICLE DETECTOR SYSTEM. THE SYSTEM SHALL BE INSTALLED PER THE MANUFACTURER'S SPECIFICATIONS AND DETAIL D SHOWN ON THE PLAN.
- FURNISH AND INSTALL DOUBLE SIDED REFLECTIVE STREET NAME SIGN (RSNS) ON THE SIGNAL MAST ARM (SMA) PER CALTRANS STANDARD PLAN ES-70 AND DETAILS "A" OR "B" SHOWN ON THE PLAN. SIGN SHALL BE ALUMINUM BASE METAL SURFACED WITH REFLECTIVE SHEETING DIAMOND GRADE "VIP". THE CONTRACTOR SHALL FURNISH A SAFETY CABLE TO INSTALL THE RSNS ON THE SMA PER DETAIL E SHOWN ON THE PLAN.
- FURNISH AND INSTALL R9-3a SIGN ON THE SIGNAL POLE PER CALTRANS STANDARD PLAN RS4. THE BOTTOM OF THE SIGN SHALL BE A MINIMUM OF 7' ABOVE THE SURROUNDING SURFACE.
- FURNISH AND INSTALL SIGN ON THE SIGNAL MAST ARM PER CALTRANS STANDARD PLAN ES-7N, DETAIL U.

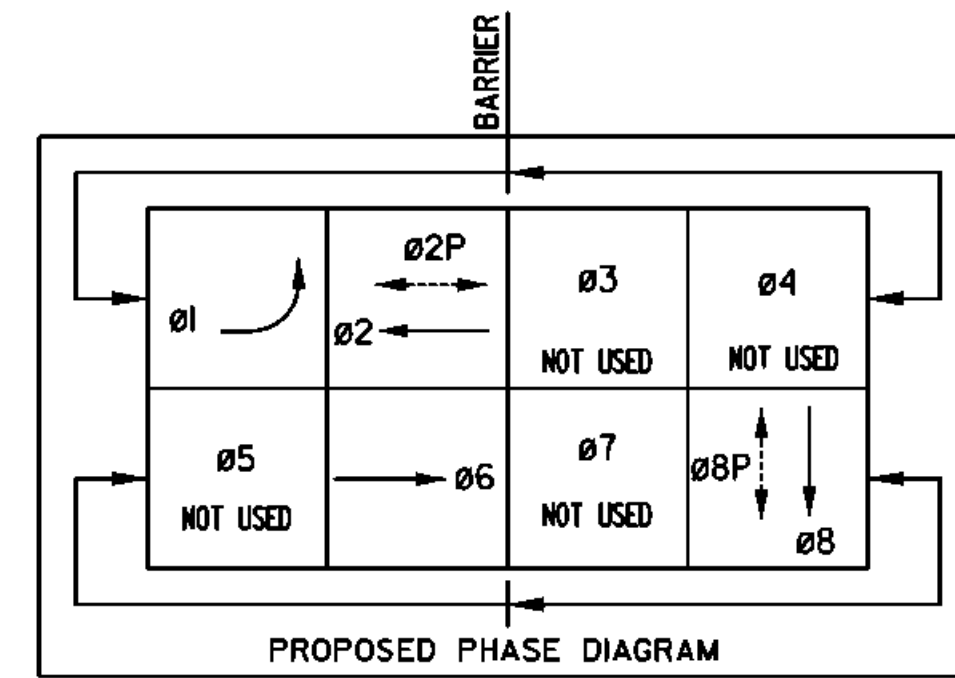
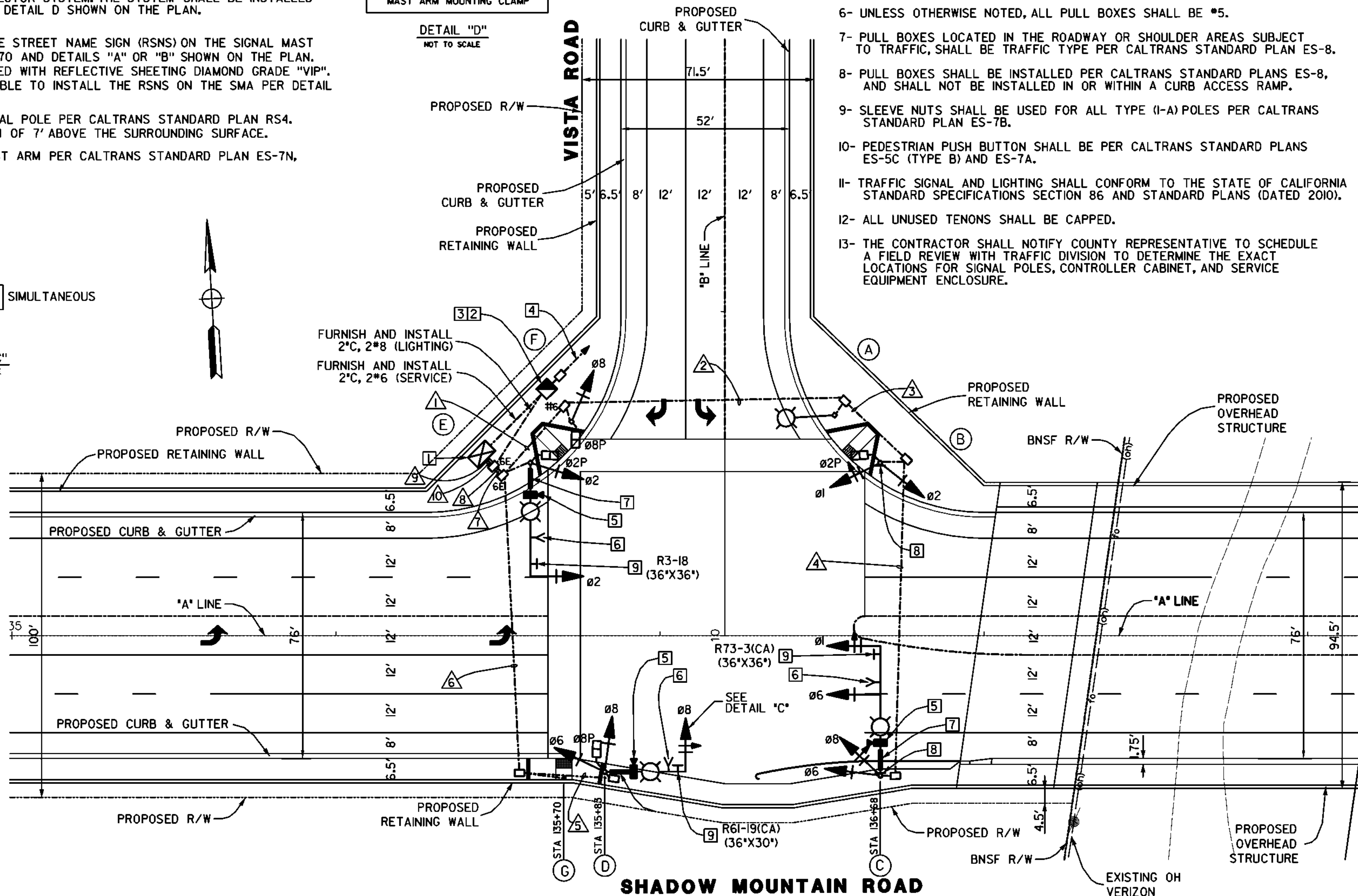


| POLE AND EQUIPMENT SCHEDULE |                 |        |                 |             |                    |     |                         |        |                   |    |                   |    |                                                                                     |                             |            |
|-----------------------------|-----------------|--------|-----------------|-------------|--------------------|-----|-------------------------|--------|-------------------|----|-------------------|----|-------------------------------------------------------------------------------------|-----------------------------|------------|
| POLE NO.                    | SIGNAL STANDARD |        |                 |             | POLE LOCATION      |     | VEHICLE SIGNAL MOUNTING |        | PEDESTRIAN SIGNAL |    | PED. PUSH BUTTONS |    | HPSV LUMINAIRE                                                                      | REFLECTIVE STREET NAME SIGN |            |
|                             | TYPE            | HEIGHT | SIGNAL MAST ARM | "F" SPACING | LUMINAIRE MAST ARM | "A" | "B"                     | MAST   | MOUNTING          | Ø  | MOUNTING          | Ø  |                                                                                     |                             | ARROW      |
| (A)                         | 15TS            | 30'    | -               | -           | 15'                | 30' | 5.0'                    | -      | -                 | -  | -                 | Ø6 |  | 200W                        | -          |
| (B)                         | 1-A             | 10'    | -               | -           | -                  | 32' | 5.0'                    | -      | TV-2-T            | Ø6 | SP-I-T            | -  | -                                                                                   | -                           | -          |
| (C)                         | 27-4-100        | 30'    | 40'             | 15'         | 15'                | **  | 2.5'                    | MAS-2  | SV-2-T            | -  | -                 | -  | -                                                                                   | 200W                        | DETAIL "B" |
| (D)                         | 19-4-100        | 30'    | 25'             | -           | 15'                | **  | 2.5'                    | MAS-4B | SV-2-T            | Ø4 | SP-I-T            | -  | -                                                                                   | 200W                        | DETAIL "A" |
| (E)                         | 24-4-100        | 30'    | 35'             | -           | 15'                | 32' | 5.0'                    | MAS    | SV-I-T            | Ø6 | SP-I-T            | Ø4 |  | 200W                        | DETAIL "B" |
| (F)                         | 1-A             | 10'    | -               | -           | -                  | 32' | 5.0'                    | -      | TV-I-T            | Ø4 | SP-I-T            | Ø6 |  | -                           | -          |
| (G)                         | PPB-POST        | 3'-10" | -               | -           | -                  | **  | 6.0'                    | -      | -                 | -  | -                 | Ø4 |  | -                           | -          |

ALL EQUIPMENT SHOWN IS NEW UNLESS OTHERWISE NOTED.  
\*\* = AS SHOWN PER PLAN



DETAIL "D"  
NOT TO SCALE

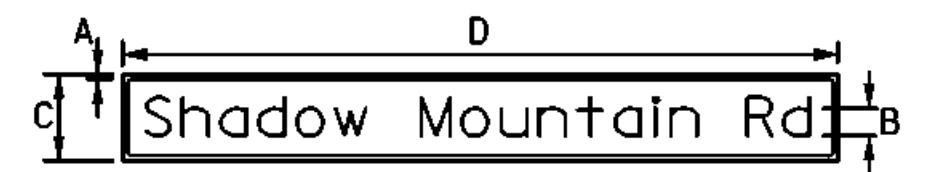


## TRAFFIC SIGNAL GENERAL NOTES

- ALL VEHICLE SIGNAL INDICATIONS SHALL BE 12" AND SHALL BE INSTALLED WITH "LED" SIGNAL MODULES.
- ALL PEDESTRIAN SIGNAL INDICATIONS SHALL BE INSTALLED WITH "LED" PEDESTRIAN MODULES AND COUNTDOWN TIMERS.
- SIGNAL POLE LOCATIONS ARE APPROXIMATE.
- ALL BACK PLATES SHALL BE LOUVERED.
- ALL BACK PLATES AND VISORS SHALL BE METAL, NO PLASTIC PARTS ARE ALLOWED.
- UNLESS OTHERWISE NOTED, ALL PULL BOXES SHALL BE #5.
- PULL BOXES LOCATED IN THE ROADWAY OR SHOULDER AREAS SUBJECT TO TRAFFIC, SHALL BE TRAFFIC TYPE PER CALTRANS STANDARD PLAN ES-8.
- PULL BOXES SHALL BE INSTALLED PER CALTRANS STANDARD PLANS ES-8, AND SHALL NOT BE INSTALLED IN OR WITHIN A CURB ACCESS RAMP.
- SLEEVE NUTS SHALL BE USED FOR ALL TYPE (1-A) POLES PER CALTRANS STANDARD PLAN ES-7B.
- PEDESTRIAN PUSH BUTTON SHALL BE PER CALTRANS STANDARD PLANS ES-5C (TYPE B) AND ES-7A.
- TRAFFIC SIGNAL AND LIGHTING SHALL CONFORM TO THE STATE OF CALIFORNIA STANDARD SPECIFICATIONS SECTION 86 AND STANDARD PLANS (DATED 2010).
- ALL UNUSED TENONS SHALL BE CAPPED.
- THE CONTRACTOR SHALL NOTIFY COUNTY REPRESENTATIVE TO SCHEDULE A FIELD REVIEW WITH TRAFFIC DIVISION TO DETERMINE THE EXACT LOCATIONS FOR SIGNAL POLES, CONTROLLER CABINET, AND SERVICE EQUIPMENT ENCLOSURE.

| CONDUCTOR AND CONDUIT TABLE |       |      |     |     |     |     |     |     |     |     |     |     |
|-----------------------------|-------|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| A.W.G. SIZE OR CABLE SIZE   | PHASE | RUNS |     |     |     |     |     |     |     |     |     |     |
| 12CSC                       | A     | 0/1  | 0/1 |     |     |     |     |     |     | 0/1 | 0/1 |     |
|                             | B     | 1/0  | 1/0 | 1/0 |     |     |     |     |     | 1/0 | 1/0 |     |
|                             | C     | 1/0  | 1/0 | 1/0 | 1/0 |     |     |     |     | 1/0 | 1/0 |     |
|                             | D     |      |     |     |     | 1/0 | 1/0 | 1/0 |     |     |     | 1/0 |
|                             | E     |      |     |     |     |     |     |     | 1/1 |     | 1/1 |     |
| 3CSC                        | F     | 1/1  |     |     |     |     |     |     |     | 1/1 |     | 1/1 |
|                             | G     |      |     |     |     |     |     |     |     |     |     |     |
|                             | H     |      |     |     |     | 0/1 | 0/1 | 0/1 | 0/1 | 0/1 | 0/1 |     |
|                             | I     |      |     |     |     |     |     |     |     |     |     |     |
|                             | J     |      |     |     |     |     |     |     |     |     |     |     |
| TOTAL                       |       | 3/2  | 2/1 | 2/0 | 1/0 | 0/1 | 1/1 | 3/3 | 2/2 | 5/4 | 0/0 |     |

ALL CONDUIT AND CONDUCTORS ARE NEW UNLESS OTHERWISE NOTED.  
ALL CONDUIT SHALL BE GALVANIZED RIGID STEEL.



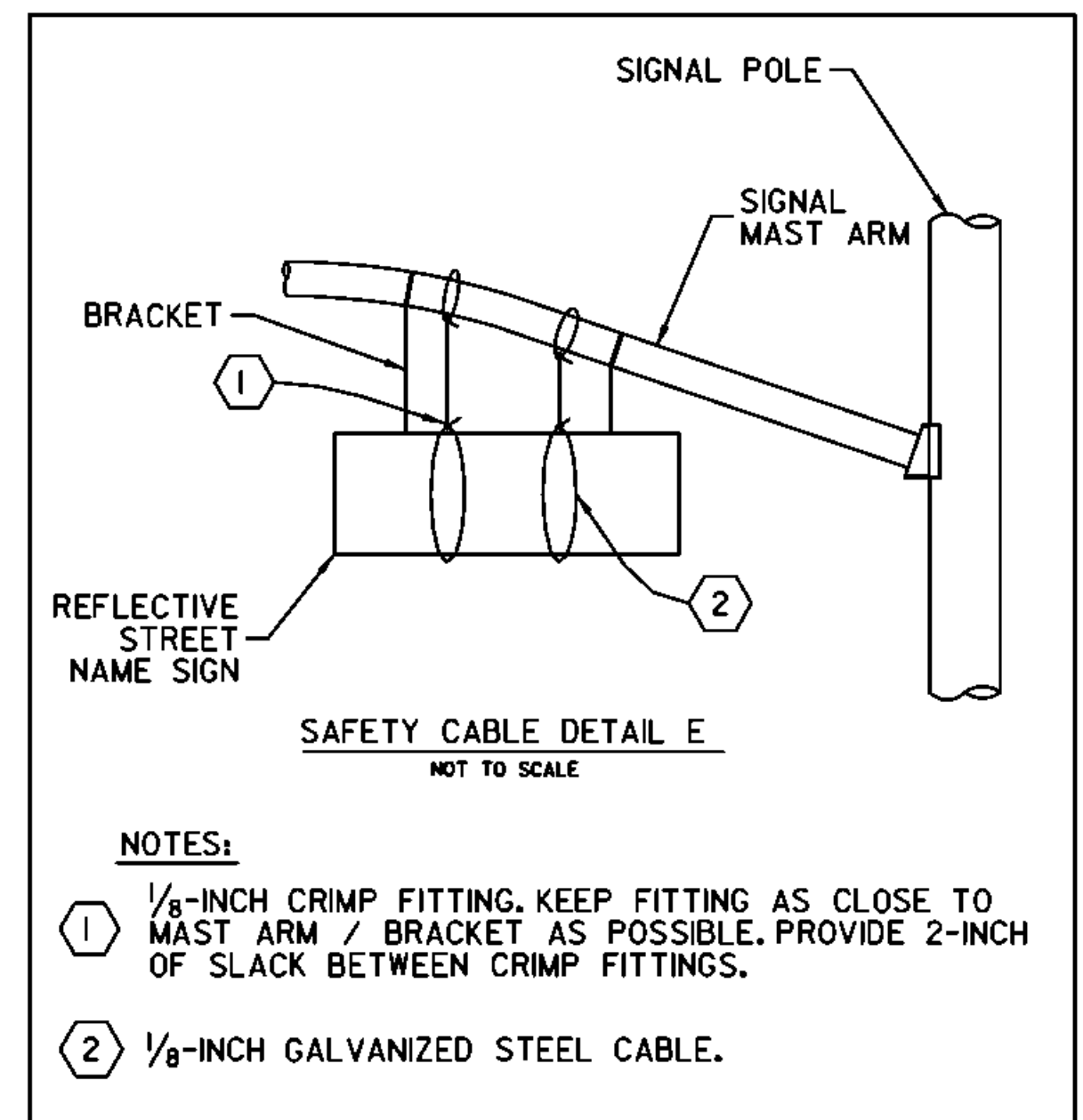
DETAIL "A"  
NOT TO SCALE



DETAIL "B"  
NOT TO SCALE

- LEGEND:**
- A 1" WHITE REFLECTIVE BORDER
  - B 12" U.C. AND 9" L.C. LETTERS
  - C 18"
  - D SIGN LENGTH SHALL BE 6' OR 8' DEPENDING ON LEGEND

**NOTE:**  
BACKGROUND COLOR = GREEN  
BORDER & LETTER COLOR = WHITE



ALL DIMENSIONS ARE IN FEET  
UNLESS OTHERWISE SHOWN



| MARK | CHANGES           | DATE |
|------|-------------------|------|
|      | NO CHANGES        |      |
|      | RESIDENT ENGINEER |      |

## FIELD CHANGES

PLANS PREPARED BY:  
**AECOM**  
999 W. TOWN AND COUNTRY ROAD  
ORANGE, CA 92668-4713  
(714) 567-2501

JAMES FABER R.C.E. 45668 EXPIRES 12-31-12

COUNTY OF SAN BERNARDINO  
DEPARTMENT OF PUBLIC WORKS

RECOMMENDED / APPROVED BY

XXXX XXXX P.E. DEPUTY DIRECTOR DATE

XXXX XXXX P.E. DIRECTOR OF PUBLIC WORKS DATE

**SHADOW MOUNTAIN ROAD  
AT VISTA ROAD  
TRAFFIC SIGNAL AND LIGHTING PLAN  
HELENDALE AREA**

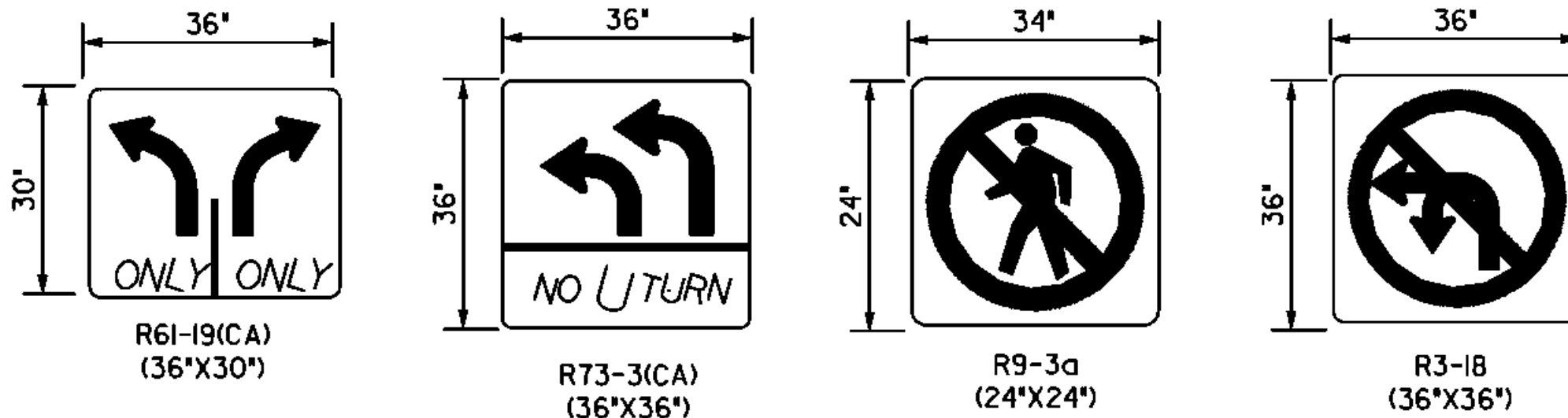
| J.L. REF. | W.O. NO.  | DRAWING NO. | SHEET NO. | TOTAL SHEETS |
|-----------|-----------|-------------|-----------|--------------|
| JL XXXX   | XX XXXXXX | TS-02       | 75        | X            |

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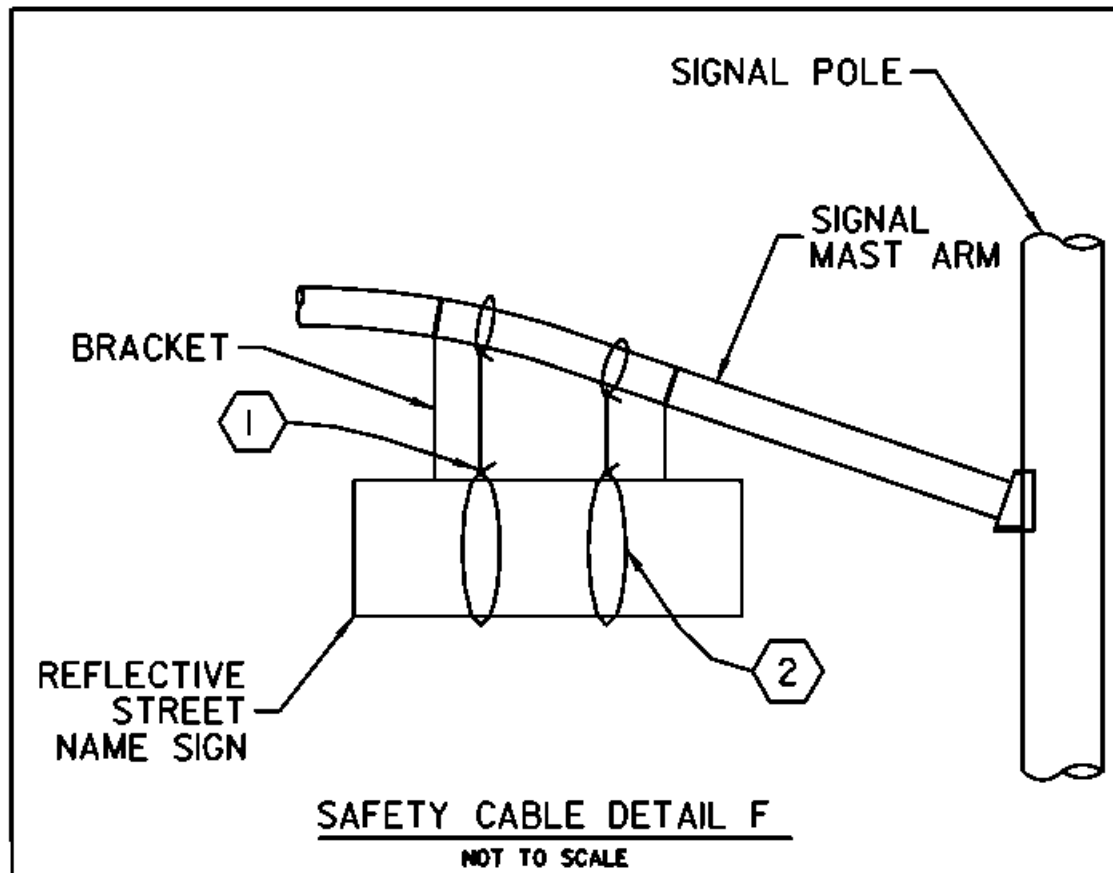
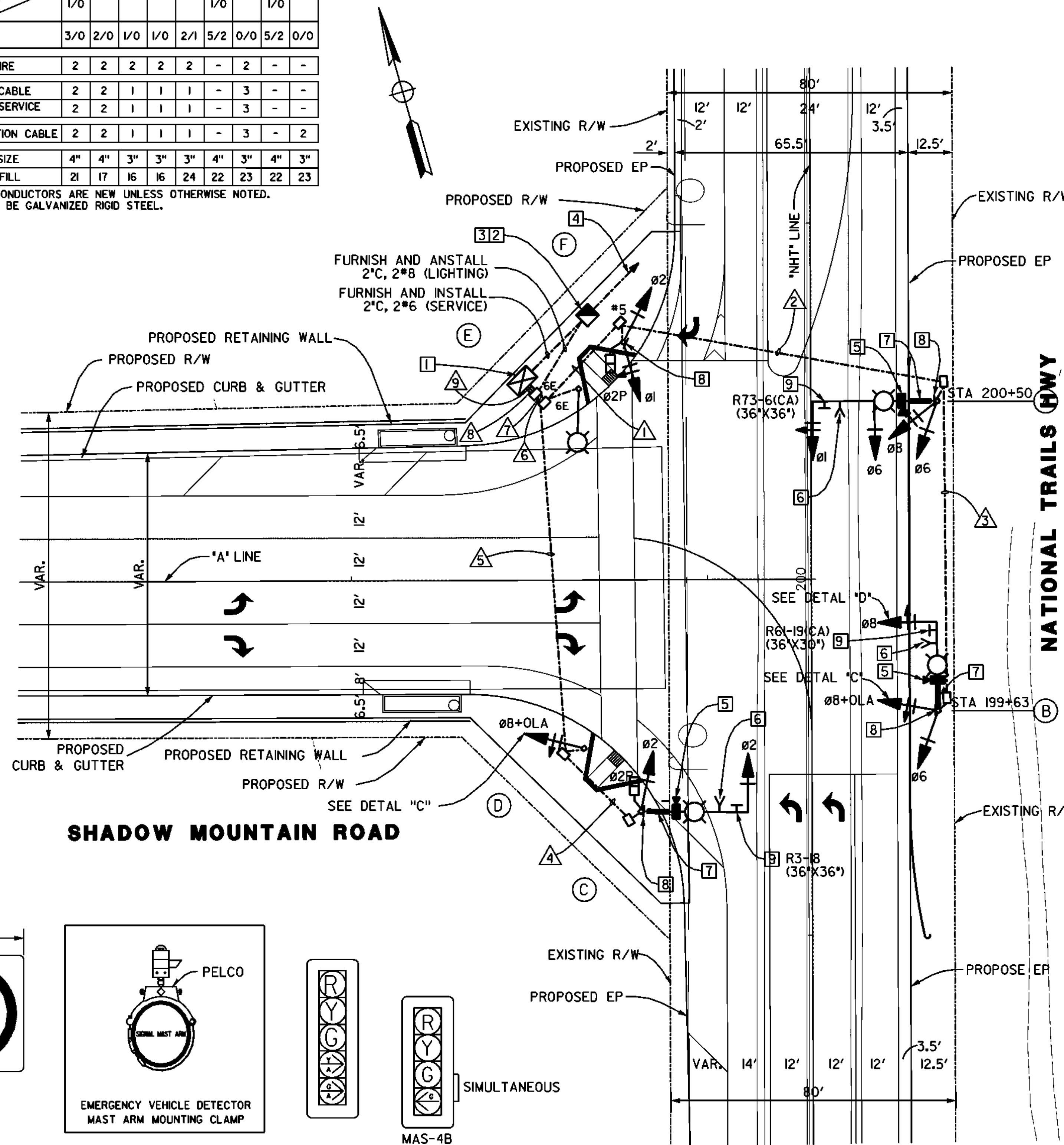
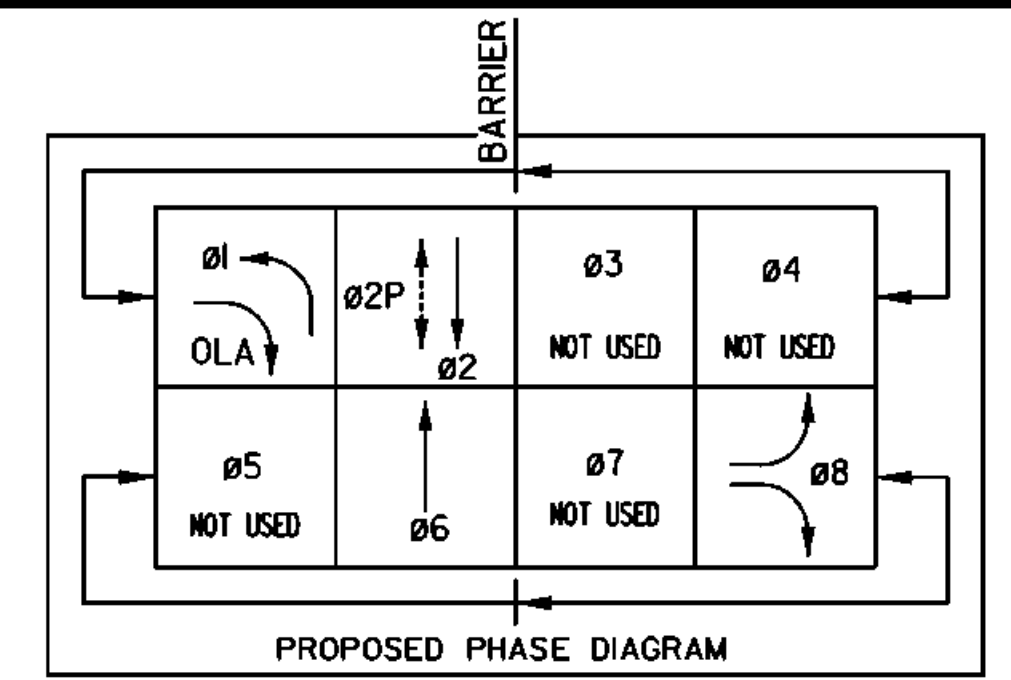
SCALE: 1"=20'

| CONDUCTOR AND CONDUIT TABLE |                            |            |     |     |     |     |     |     |     |     |
|-----------------------------|----------------------------|------------|-----|-----|-----|-----|-----|-----|-----|-----|
| A.W.G. SIZE OR CABLE SIZE   | POLE                       | PHASE      | 1   | 2   | 3   | 4   | 5   | 6   | 7   | 8   |
| 12CSC                       | (A)                        | Ø1, Ø6, Ø8 | 1/0 | 1/0 |     |     |     | 1/0 | 1/0 |     |
|                             | (B)                        | Ø6, Ø8     | 1/0 | 1/0 | 1/0 |     |     | 1/0 | 1/0 |     |
|                             | (C)                        | Ø2, Ø2P    |     |     |     | 1/0 | 1/0 | 1/0 | 1/0 |     |
|                             | (D)                        | Ø8         |     |     |     |     | 1/1 | 1/1 | 1/1 |     |
|                             | (E)                        | Ø2PPB      |     |     |     |     |     | 0/1 | 0/1 |     |
|                             | (F)                        | Ø1+Ø2, Ø2P | 1/0 |     |     |     |     | 1/0 | 1/0 |     |
|                             | TOTAL                      |            | 3/0 | 2/0 | 1/0 | 1/0 | 2/1 | 5/2 | 0/0 | 5/2 |
| #10                         | LUMINAIRE                  |            | 2   | 2   | 2   | 2   | 2   | -   | 2   | -   |
| VIDEO DETECTION             | VIDEO CABLE                |            | 2   | 2   | 1   | 1   | 1   | -   | 3   | -   |
|                             | VIDEO SERVICE              |            | 2   | 2   | 1   | 1   | 1   | -   | 3   | -   |
|                             | EMERGENCY PREEMPTION CABLE |            | 2   | 2   | 1   | 1   | 1   | -   | 3   | -   |
|                             | CONDUIT SIZE               |            | 4"  | 4"  | 3"  | 3"  | 3"  | 4"  | 3"  | 3"  |
|                             | PERCENT FILL               |            | 21  | 17  | 16  | 16  | 24  | 22  | 23  | 22  |

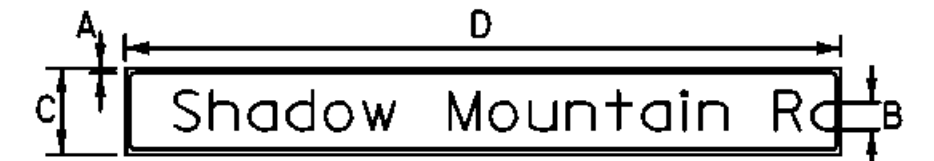
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| POLE AND EQUIPMENT SCHEDULE |                 |        |                 |             |                    |     |                         |        |                   |    |                  |    |                                                                                     |                             |            |
|-----------------------------|-----------------|--------|-----------------|-------------|--------------------|-----|-------------------------|--------|-------------------|----|------------------|----|-------------------------------------------------------------------------------------|-----------------------------|------------|
| POLE NO.                    | SIGNAL STANDARD |        |                 |             | POLE LOCATION      |     | VEHICLE SIGNAL MOUNTING |        | PEDESTRIAN SIGNAL |    | PED PUSH BUTTONS |    | HPSV LUMINAIRE                                                                      | REFLECTIVE STREET NAME SIGN |            |
|                             | TYPE            | HEIGHT | SIGNAL MAST ARM | "F" SPACING | LUMINAIRE MAST ARM | "A" | "B"                     | MAST   | MOUNTING          | Ø  | MOUNTING         | Ø  |                                                                                     |                             | ARROW      |
| (A)                         | 24-4-100        | 30'    | 35'             | 17'         | 15'                | **  | 8.0'                    | MAS-2  | SV-2-T            | -  | -                | -  | -                                                                                   | 200W                        | DETAIL "A" |
| (B)                         | 19-4-100        | 30'    | 25'             | -           | 15'                | **  | 8.0'                    | MAS-4B | SV-2-T            | -  | -                | -  | -                                                                                   | 200W                        | DETAIL "B" |
| (C)                         | 19-3-100        | 30'    | 30'             | -           | 15'                | 26' | 5.0'                    | MAS    | SV-1-T            | Ø2 | SP-1-T           | -  | -                                                                                   | 200W                        | DETAIL "A" |
| (D)                         | I-A             | 10'    | -               | -           | -                  | 32' | 5.0'                    | -      | TV-1-T            | -  | -                | Ø2 |  | -                           | -          |
| (E)                         | I5TS            | 30'    | -               | -           | 15'                | 32' | 5.0'                    | -      | -                 | -  | -                | Ø2 |  | 200W                        | -          |
| (F)                         | I-A             | 10'    | -               | -           | -                  | 31' | 5.0'                    | -      | TV-2-T            | Ø2 | SP-1-T           | -  | -                                                                                   | -                           | -          |

ALL EQUIPMENT SHOWN IS NEW UNLESS OTHERWISE NOTED.  
\*\* = AS SHOWN PER PLAN



- NOTES:
- 1/8-INCH CRIMP FITTING, KEEP FITTING AS CLOSE TO MAST ARM / BRACKET AS POSSIBLE. PROVIDE 2-INCH OF SLACK BETWEEN CRIMP FITTINGS.
  - 1/8-INCH GALVANIZED STEEL CABLE.



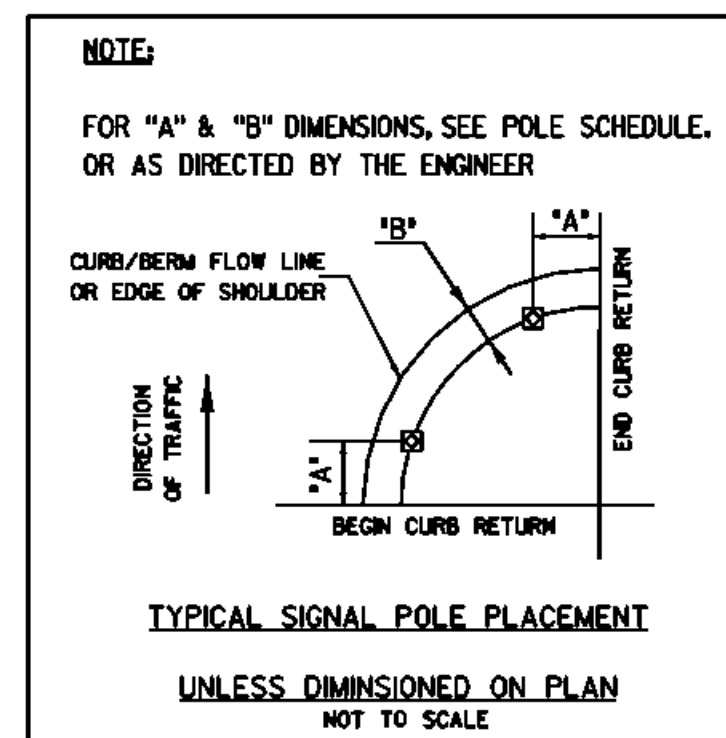
DETAIL "A"  
NOT TO SCALE

National Trails Hwy

DETAIL "B"  
NOT TO SCALE

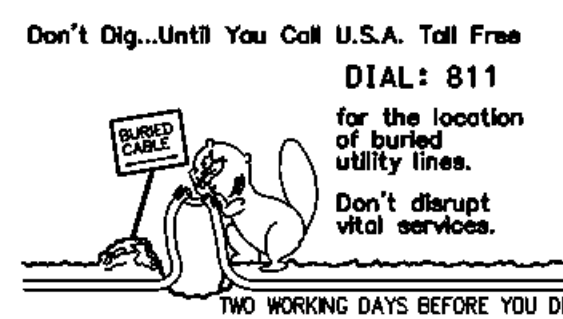
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  - C 18"
  - D SIGN LENGTH SHALL BE 6' OR 8' DEPENDING ON LEGEND

NOTE:  
BACKGROUND COLOR = GREEN  
BORDER & LETTER COLOR = WHITE



TYPICAL SIGNAL POLE PLACEMENT  
UNLESS DIMENSIONED ON PLAN  
NOT TO SCALE

ALL DIMENSIONS ARE IN FEET  
UNLESS OTHERWISE SHOWN



| MARK | CHANGES           | DATE |
|------|-------------------|------|
|      | NO CHANGES        |      |
|      | RESIDENT ENGINEER |      |

FIELD CHANGES

PLANS PREPARED BY:  
**AECOM**  
999 W. TOWN AND COUNTRY ROAD  
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JAMES FABER R.C.E. 45668 EXPIRES 12-31-12

COUNTY OF SAN BERNARDINO  
DEPARTMENT OF PUBLIC WORKS

RECOMMENDED / APPROVED BY

XXXX XXXX P.E. DEPUTY DIRECTOR DATE  
XXXX XXXX P.E. DIRECTOR OF PUBLIC WORKS DATE

SHADOW MOUNTAIN ROAD  
AT NATIONAL TRAILS HWY  
TRAFFIC SIGNAL AND LIGHTING PLAN  
HELENDALE AREA

| J.L. REF. | W.O. NO.  | DRAWING NO. | SHEET NO. | TOTAL SHEETS |
|-----------|-----------|-------------|-----------|--------------|
| JL XXXX   | XX XXXXXX | TS-03       | 76        | X            |

STREET LIGHTING CONSTRUCTION NOTES:

1. INSTALL BARRIER MOUNTED LIGHT STANDARD PER SAN BERNARDINO COUNTY STREET LIGHTING REQUIREMENTS WITH 8' LUMINAIRE ARM (200 WATT)
2. INSTALL LIGHT STANDARD PER SAN BERNARDINO COUNTY STREET LIGHTING REQUIREMENTS WITH 8' LUMINAIRE ARM (200 WATT)
3. INSTALL LIGHT STANDARD PER SAN BERNARDINO COUNTY STREET LIGHTING REQUIREMENTS WITH 8' LUMINAIRE ARM (150 WATT)
4. INSTALL NO. 3 1/2 PULLBOX PER SAN BERNARDINO COUNTY REQUIREMENTS
5. INSTALL 1 1/2" CONDUIT WITH 2#8 CONDUCTORS
6. INSTALL NO. 3 1/2 PULLBOX FOR TYPE 26 BARRIER MOUNTED LIGHT PER CALTRANS STD PLAN ES-9D
7. INSTALL SERVICE EQUIPMENT ENCLOSURE STANDARD PER SAN BERNARDINO COUNTY REQUIREMENTS
8. INSTALL 2" CONDUIT WITH 2#8 CONDUCTORS
9. INSTALL 3" SERVICE CONDUIT PER SCE REQUIREMENTS
10. INSTALL 1 1/2" CONDUIT WITH PULL ROPE
11. INSTALL NO. 5 PULLBOX PER SAN BERNARDINO COUNTY REQUIREMENTS
12. INSTALL CONDUIT EXPANSION FITTING OR EXPANSION-DEFLECTION FITTING PER STD PLAN ES-9B

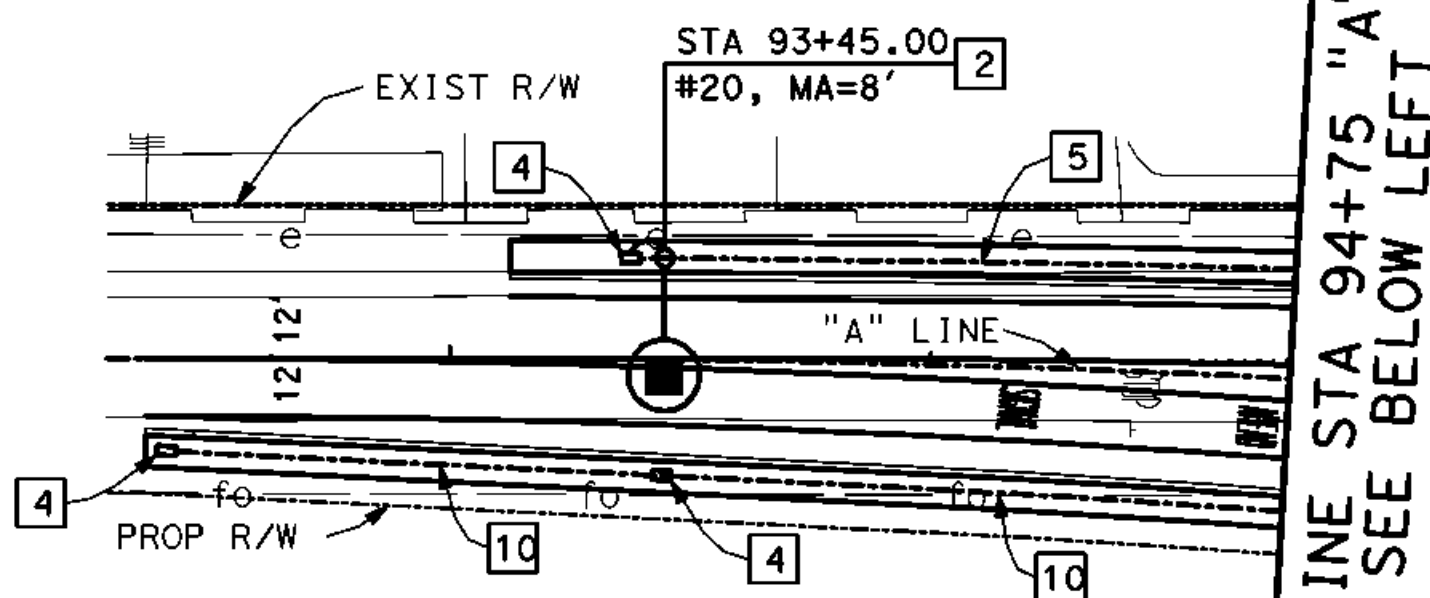
LEGEND:

- PROPOSED STREET LIGHT LOCATION (22000 LUMEN HPSV, 200 WATT, #20).
- PROPOSED BARRIER MOUNTED STREET LIGHT LOCATION (22000 LUMEN HPSV, 200 WATT, #20).
- PROPOSED STREET LIGHT LOCATION (18000 LUMEN HPSV, 150 WATT, #15).
- INDICATES SAFETY LIGHT LOCATION (27500 LUMEN HPSV, 250 WATT, #25) SEE TRAFFIC SIGNAL PLANS SHEET 69, 70 AND 71.
- ELECTRIC SERVICE ENCLOSURE
- STREET LIGHT PULLBOX.

| MARK | REVISIONS | DATE |
|------|-----------|------|
|      |           |      |
|      |           |      |
|      |           |      |

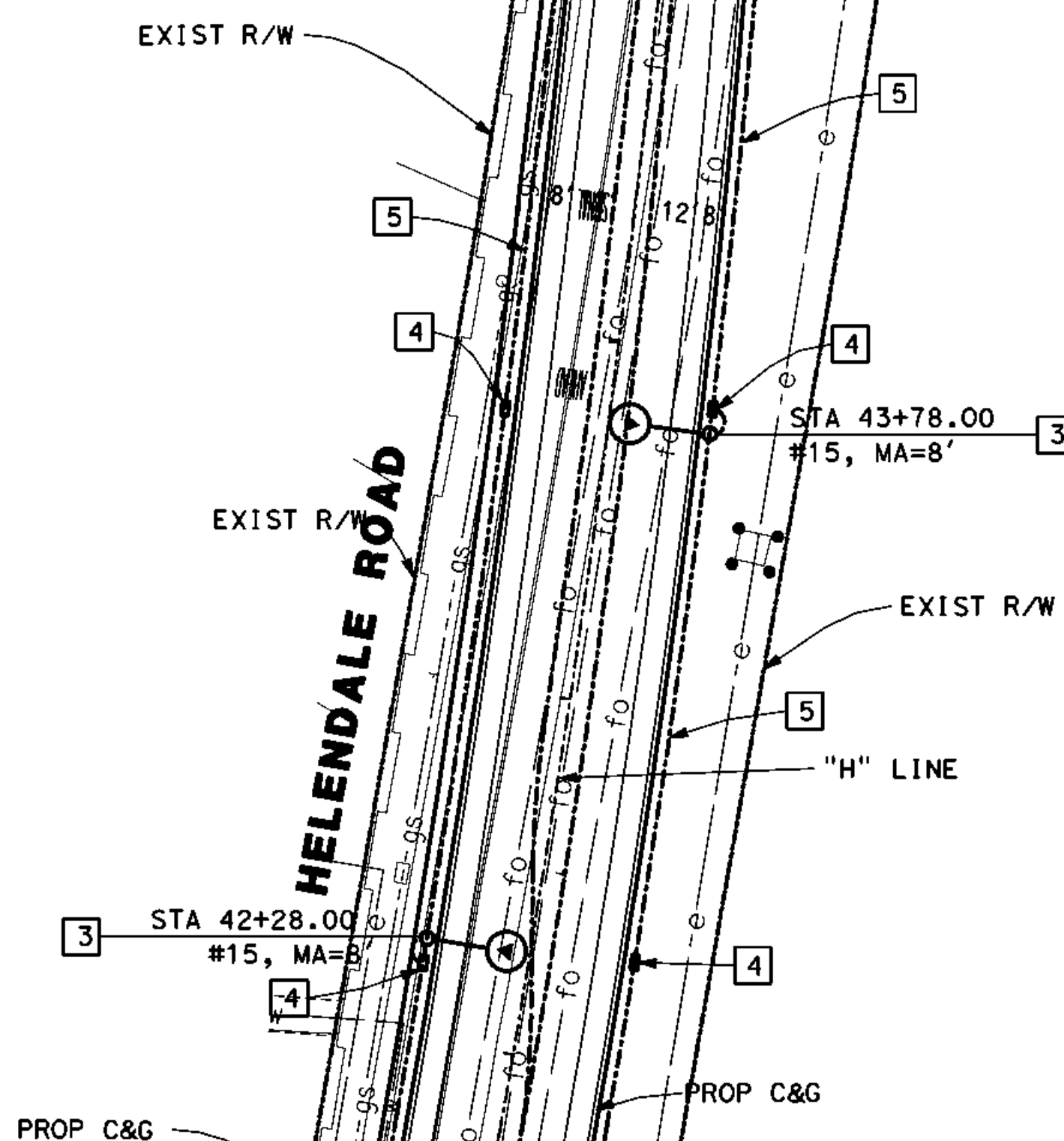
| MARK | REVISIONS | DATE |
|------|-----------|------|
|      |           |      |
|      |           |      |
|      |           |      |

SEE ABOVE RIGHT  
MATCH LINE STA 94+75 "A" LINE



SHADOW MOUNTAIN ROAD

SEE BELOW RIGHT  
MATCH LINE STA 45+15 "H" LINE



HELENDALE ROAD

MATCH LINE STA 45+15 "H" LINE  
SEE ABOVE LEFT

TYPE 26 Mod BARRIER

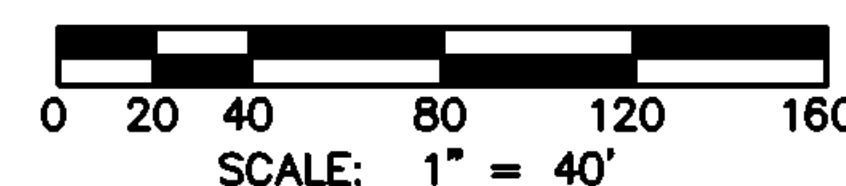
MOJAVE RIVER

MATCH LINE  
SEE SHEET SL-02  
STA 107+00 "A" LINE

SHADOW MOUNTAIN ROAD

STREET LIGHTING - GENERAL NOTES:

1. ORNAMENTAL STREET LIGHT POLES SHALL BE MARBLELITE OR APPROVED EQUAL.
2. THE LUMINAIRE SHALL CONSIST OF COBRA HEAD CUT-OFF LENS ON A 6 FT OR 8 FT MAST ARM. 15 FT MAST ARM REQUIRED FOR STREET LIGHTS ON TRAFFIC SIGNAL POLE INSTALLATIONS.
3. ANY CHANGE IN LOCATION OF STREET LIGHTS FROM THE APPROVED PLANS IS SUBJECT TO APPROVAL BY THE COUNTY ENGINEER.
4. SIDEWALK WIDTHS TO BE PER APPROVED STREET IMPROVEMENT PLANS. A MINIMUM OF 4 FEET UNOBSTRUCTED SIDEWALK CLEARANCE REQUIRED BEHIND STREET LIGHT POLE.



ALL DIMENSIONS ARE IN FEET  
UNLESS OTHERWISE SHOWN



| MARK | CHANGES    | RESIDENT ENGINEER | DATE |
|------|------------|-------------------|------|
|      | NO CHANGES |                   |      |

FIELD CHANGES

PLANS PREPARED BY:  
**AECOM**  
999 W. TOWN AND COUNTRY ROAD  
ORANGE, CA 92668-4713  
(714) 567-2501

JAMES FABER R.C.E. 45668 EXPIRES 12-31-12

COUNTY OF SAN BERNARDINO  
DEPARTMENT OF PUBLIC WORKS  
RECOMMENDED / APPROVED BY  
XXXX XXXX P.E. DEPUTY DIRECTOR  
XXXX XXXX P.E. DIRECTOR OF PUBLIC WORKS

SHADOW MOUNTAIN ROAD

STREET LIGHTING PLAN  
STA 93+00 "A" LINE TO 107+00 "A" LINE  
STA 37+75 "H" LINE TO 48+75 "H" LINE

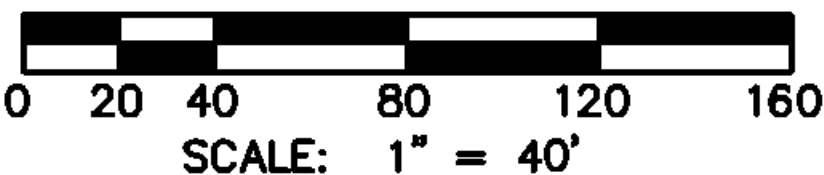
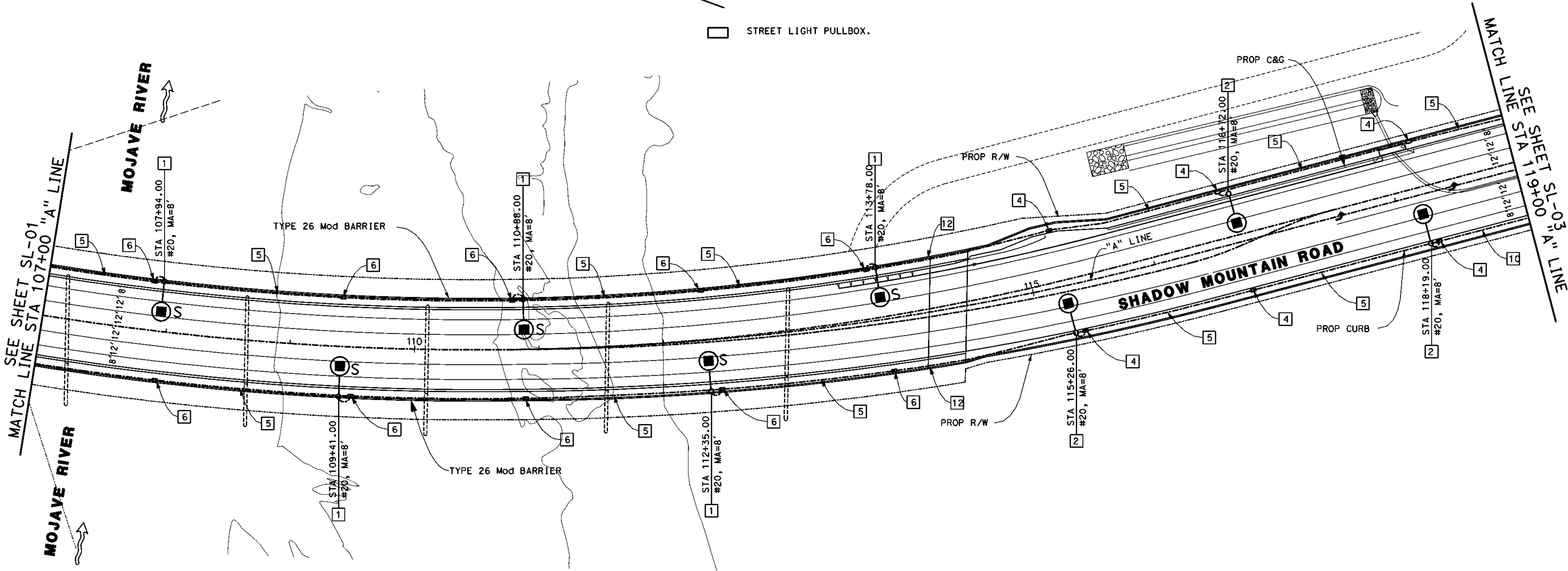
| J.L. REF. | W.O. NO.  | DRAWING NO. | SHEET NO. | TOTAL SHEETS |
|-----------|-----------|-------------|-----------|--------------|
| JL XXXX   | XX XXXXXX | SL-01       | 77        | X            |

STREET LIGHTING CONSTRUCTION NOTES:

1. INSTALL BARRIER MOUNTED LIGHT STANDARD PER SAN BERNARDINO COUNTY STREET LIGHTING REQUIREMENTS WITH 8' LUMINAIRE ARM (200 WATT)
2. INSTALL LIGHT STANDARD PER SAN BERNARDINO COUNTY STREET LIGHTING REQUIREMENTS WITH 8' LUMINAIRE ARM (200 WATT)
4. INSTALL NO. 3 1/2 PULLBOX PER SAN BERNARDINO COUNTY REQUIREMENTS
5. INSTALL 1 1/2" CONDUIT WITH 2#8 CONDUCTORS
6. INSTALL NO. 3 1/2 PULLBOX FOR TYPE 26 BARRIER MOUNTED LIGHT PER CALTRANS STD PLAN ES-9D
10. INSTALL 1 1/2" CONDUIT WITH PULL ROPE
12. INSTALL CONDUIT EXPANSION FITTING OR EXPANSION-DEFLECTION FITTING PER STD PLAN ES-9B

LEGEND:

- PROPOSED STREET LIGHT LOCATION (22000 LUMEN HPSV, 200 WATT, #20).
- PROPOSED BARRIER MOUNTED STREET LIGHT LOCATION (22000 LUMEN HPSV, 200 WATT, #20).
- PROPOSED STREET LIGHT LOCATION (18000 LUMEN HPSV, 150 WATT, #15).
- INDICATES SAFETY LIGHT LOCATION (27500 LUMEN HPSV, 250 WATT, #25) SEE TRAFFIC SIGNAL PLANS SHEET 69, 70 AND 71.
- ELECTRIC SERVICE ENCLOSURE
- STREET LIGHT PULLBOX.



ALL DIMENSIONS ARE IN FEET  
UNLESS OTHERWISE SHOWN

| MARK | REVISIONS | APPR. | DATE |
|------|-----------|-------|------|
|      |           |       |      |
|      |           |       |      |
|      |           |       |      |

| MARK | REVISIONS | APPR. | DATE |
|------|-----------|-------|------|
|      |           |       |      |
|      |           |       |      |
|      |           |       |      |



| MARK | CHANGES | RESIDENT ENGINEER | DATE |
|------|---------|-------------------|------|
|      |         |                   |      |
|      |         |                   |      |

FIELD CHANGES

PLANS PREPARED BY:  
**AECOM**  
999 W. TOWN AND COUNTRY ROAD  
ORANGE, CA 92668-4713  
(714) 567-2501

JAMES FABER R.C.E. 45668 EXPIRES 12-31-12

X  
DATE

COUNTY OF SAN BERNARDINO  
DEPARTMENT OF PUBLIC WORKS

RECOMMENDED / APPROVED BY

XXXX XXXX P.E. DEPUTY DIRECTOR DATE

XXXX XXXX P.E. DIRECTOR OF PUBLIC WORKS DATE

SHADOW MOUNTAIN ROAD

STREET LIGHTING PLAN

STA 107+00 "A" LINE TO 119+00 "A" LINE

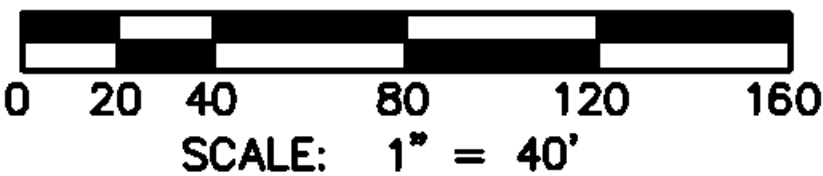
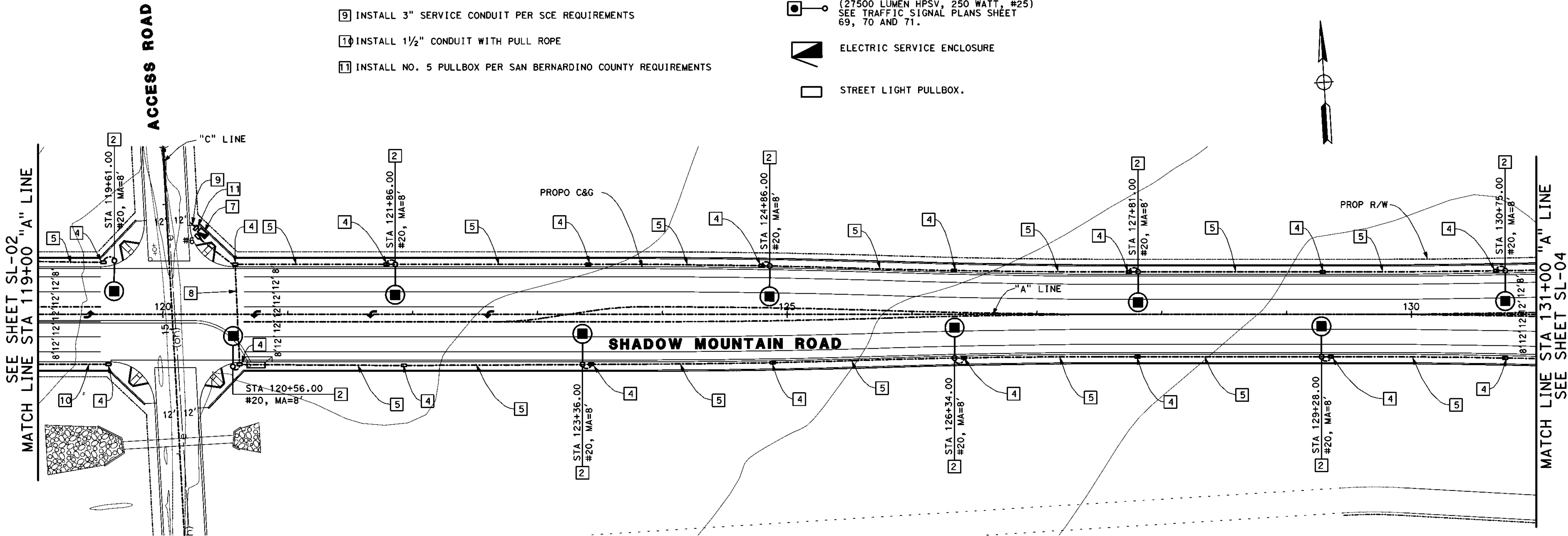
| J.L. REF. | W.O. NO.  | DRAWING NO. | SHEET NO. | TOTAL SHEETS |
|-----------|-----------|-------------|-----------|--------------|
| JL XXXX   | XX XXXXXX | SL-02       | 78        | X            |

STREET LIGHTING CONSTRUCTION NOTES:

- [2] INSTALL LIGHT STANDARD PER SAN BERNARDINO COUNTY STREET LIGHTING REQUIREMENTS WITH 8' LUMINAIRE ARM (200 WATT)
- [4] INSTALL NO. 3½ PULLBOX PER SAN BERNARDINO COUNTY REQUIREMENTS
- [5] INSTALL 1½" CONDUIT WITH 2#8 CONDUCTORS
- [7] INSTALL SERVICE EQUIPMENT ENCLOSURE STANDARD PER SAN BERNARDINO COUNTY REQUIREMENTS
- [8] INSTALL 2" CONDUIT WITH 2#8 CONDUCTORS
- [9] INSTALL 3" SERVICE CONDUIT PER SCE REQUIREMENTS
- [10] INSTALL 1½" CONDUIT WITH PULL ROPE
- [11] INSTALL NO. 5 PULLBOX PER SAN BERNARDINO COUNTY REQUIREMENTS

LEGEND:

- PROPOSED STREET LIGHT LOCATION (22000 LUMEN HPSV, 200 WATT, #20).
- S PROPOSED BARRIER MOUNTED STREET LIGHT LOCATION (22000 LUMEN HPSV, 200 WATT, #20).
- PROPOSED STREET LIGHT LOCATION (18000 LUMEN HPSV, 150 WATT, #15).
- INDICATES SAFETY LIGHT LOCATION (27500 LUMEN HPSV, 250 WATT, #25) SEE TRAFFIC SIGNAL PLANS SHEET 69, 70 AND 71.
- ELECTRIC SERVICE ENCLOSURE
- STREET LIGHT PULLBOX.



| MARK | REVISIONS | APPR. | DATE |
|------|-----------|-------|------|
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| MARK | REVISIONS | APPR. | DATE |
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|      |           |       |      |
|      |           |       |      |



| MARK | CHANGES | RESIDENT ENGINEER | DATE |
|------|---------|-------------------|------|
|      |         |                   |      |
|      |         |                   |      |

FIELD CHANGES

PLANS PREPARED BY:  
**AECOM**  
999 W. TOWN AND COUNTRY ROAD  
ORANGE, CA 92668-4713  
(714) 567-2501

JAMES FABER R.C.E. 45668 EXPIRES 12-31-12

X

DATE

COUNTY OF SAN BERNARDINO  
DEPARTMENT OF PUBLIC WORKS

RECOMMENDED / APPROVED BY

XXXX XXXX P.E. DEPUTY DIRECTOR DATE

XXXX XXXX P.E. DIRECTOR OF PUBLIC WORKS DATE

ALL DIMENSIONS ARE IN FEET  
UNLESS OTHERWISE SHOWN

SHADOW MOUNTAIN ROAD  
STREET LIGHTING PLAN  
STA 119+00 "A" LINE TO 131+00 "A" LINE

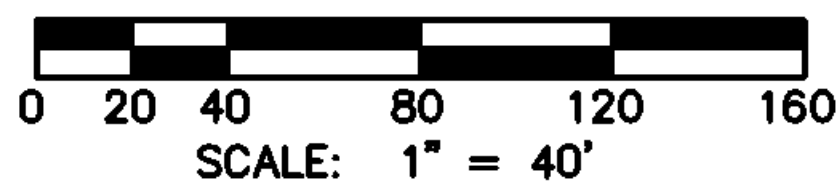
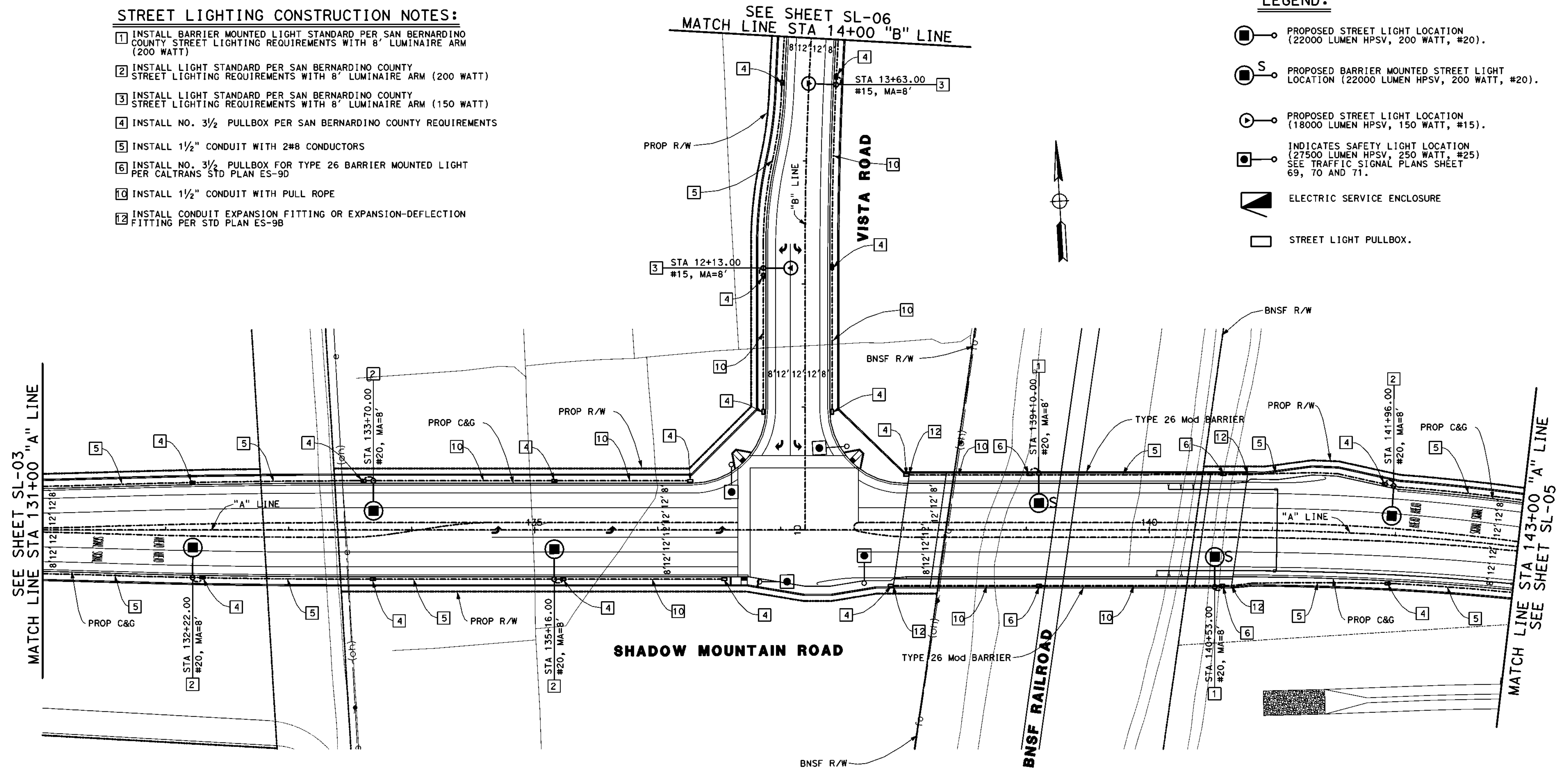
| J.L. REF. | W.O. NO.  | DRAWING NO. | SHEET NO. | TOTAL SHEETS |
|-----------|-----------|-------------|-----------|--------------|
| JL XXXX   | XX XXXXXX | SL-03       | 79        | X            |

# STREET LIGHTING CONSTRUCTION NOTES:

1. INSTALL BARRIER MOUNTED LIGHT STANDARD PER SAN BERNARDINO COUNTY STREET LIGHTING REQUIREMENTS WITH 8' LUMINAIRE ARM (200 WATT)
2. INSTALL LIGHT STANDARD PER SAN BERNARDINO COUNTY STREET LIGHTING REQUIREMENTS WITH 8' LUMINAIRE ARM (200 WATT)
3. INSTALL LIGHT STANDARD PER SAN BERNARDINO COUNTY STREET LIGHTING REQUIREMENTS WITH 8' LUMINAIRE ARM (150 WATT)
4. INSTALL NO. 3½ PULLBOX PER SAN BERNARDINO COUNTY REQUIREMENTS
5. INSTALL 1½" CONDUIT WITH 2#8 CONDUCTORS
6. INSTALL NO. 3½ PULLBOX FOR TYPE 26 BARRIER MOUNTED LIGHT PER CALTRANS STD PLAN ES-9D
7. INSTALL 1½" CONDUIT WITH PULL ROPE
8. INSTALL CONDUIT EXPANSION FITTING OR EXPANSION-DEFLECTION FITTING PER STD PLAN ES-9B

## LEGEND:

- PROPOSED STREET LIGHT LOCATION (22000 LUMEN HPSV, 200 WATT, #20).
- PROPOSED BARRIER MOUNTED STREET LIGHT LOCATION (22000 LUMEN HPSV, 200 WATT, #20).
- PROPOSED STREET LIGHT LOCATION (18000 LUMEN HPSV, 150 WATT, #15).
- INDICATES SAFETY LIGHT LOCATION (27500 LUMEN HPSV, 250 WATT, #25) SEE TRAFFIC SIGNAL PLANS SHEET 69, 70 AND 71.
- ELECTRIC SERVICE ENCLOSURE
- STREET LIGHT PULLBOX.



ALL DIMENSIONS ARE IN FEET  
UNLESS OTHERWISE SHOWN



| MARK | CHANGES    | RESIDENT ENGINEER | DATE |
|------|------------|-------------------|------|
|      | NO CHANGES |                   |      |

FIELD CHANGES

PLANS PREPARED BY:  
**AECOM**  
999 W. TOWN AND COUNTRY ROAD  
ORANGE, CA 92668-4713  
(714) 567-2501

JAMES FABER R.C.E. 45668 EXPIRES 12-31-12

COUNTY OF SAN BERNARDINO  
DEPARTMENT OF PUBLIC WORKS

RECOMMENDED / APPROVED BY

XXXX XXXX P.E. DEPUTY DIRECTOR DATE

XXXX XXXX P.E. DIRECTOR OF PUBLIC WORKS DATE

SHADOW MOUNTAIN ROAD  
STREET LIGHTING PLAN  
STA 131+00 "A" LINE TO 143+00 "A" LINE  
STA 10+00 "B" LINE TO 14+00 "B" LINE

| J.L. REF. | W.O. NO.  | DRAWING NO. | SHEET NO. | TOTAL SHEETS |
|-----------|-----------|-------------|-----------|--------------|
| JL XXXX   | XX XXXXXX | SL-04       | 80        | X            |

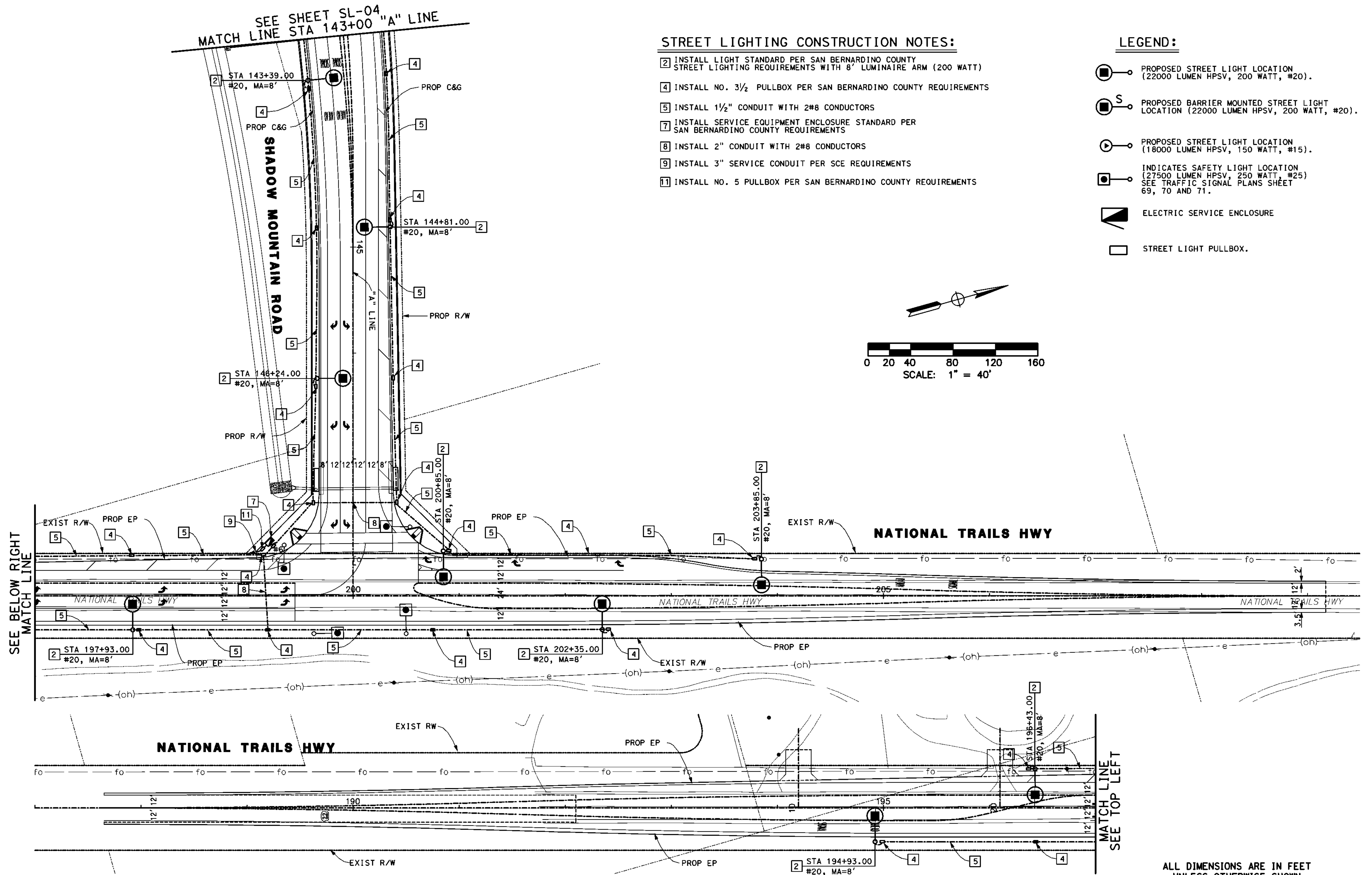
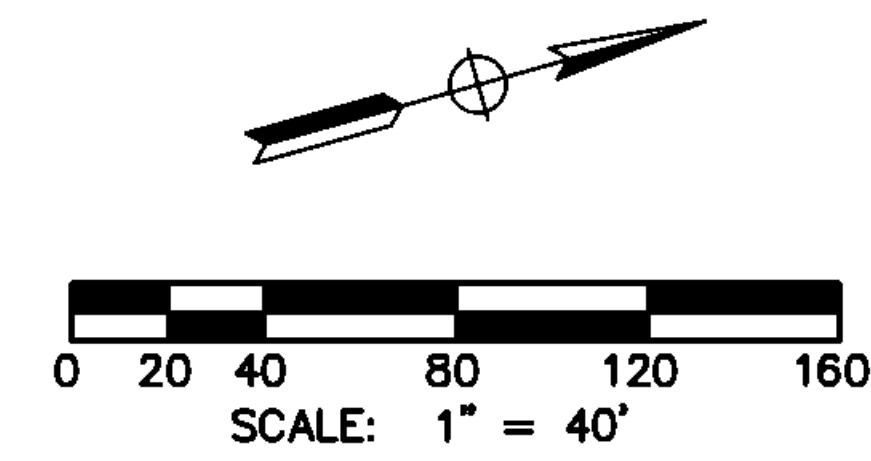
SEE SHEET SL-04  
MATCH LINE STA 143+00 "A" LINE

### STREET LIGHTING CONSTRUCTION NOTES:

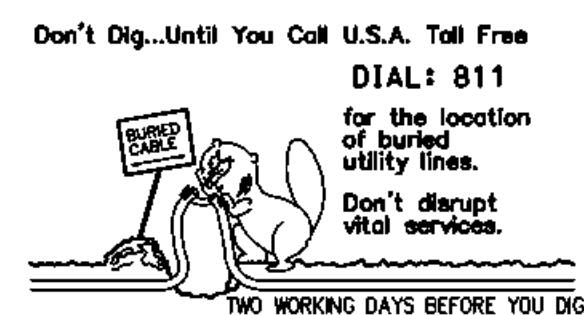
- 2 INSTALL LIGHT STANDARD PER SAN BERNARDINO COUNTY STREET LIGHTING REQUIREMENTS WITH 8' LUMINAIRE ARM (200 WATT)
- 4 INSTALL NO. 3½ PULLBOX PER SAN BERNARDINO COUNTY REQUIREMENTS
- 5 INSTALL 1½" CONDUIT WITH 2#8 CONDUCTORS
- 7 INSTALL SERVICE EQUIPMENT ENCLOSURE STANDARD PER SAN BERNARDINO COUNTY REQUIREMENTS
- 8 INSTALL 2" CONDUIT WITH 2#8 CONDUCTORS
- 9 INSTALL 3" SERVICE CONDUIT PER SCE REQUIREMENTS
- 11 INSTALL NO. 5 PULLBOX PER SAN BERNARDINO COUNTY REQUIREMENTS

### LEGEND:

-  PROPOSED STREET LIGHT LOCATION (22000 LUMEN HPSV, 200 WATT, #20).
-  PROPOSED BARRIER MOUNTED STREET LIGHT LOCATION (22000 LUMEN HPSV, 200 WATT, #20).
-  PROPOSED STREET LIGHT LOCATION (18000 LUMEN HPSV, 150 WATT, #15).
-  INDICATES SAFETY LIGHT LOCATION (27500 LUMEN HPSV, 250 WATT, #25) SEE TRAFFIC SIGNAL PLANS SHEET 69, 70 AND 71.
-  ELECTRIC SERVICE ENCLOSURE
-  STREET LIGHT PULLBOX.



ALL DIMENSIONS ARE IN FEET  
UNLESS OTHERWISE SHOWN



| MARK | CHANGES           | DATE |
|------|-------------------|------|
|      | NO CHANGES        |      |
|      | RESIDENT ENGINEER |      |

### FIELD CHANGES

PLANS PREPARED BY:  
**AECOM**  
999 W. TOWN AND COUNTRY ROAD  
ORANGE, CA 92668-4713  
(714) 567-2501

JAMES FABER R.C.E. 45668 EXPIRES 12-31-12

COUNTY OF SAN BERNARDINO  
DEPARTMENT OF PUBLIC WORKS

RECOMMENDED / APPROVED BY

XXXX XXXX P.E. DEPUTY DIRECTOR DATE

XXXX XXXX P.E. DIRECTOR OF PUBLIC WORKS DATE

SHADOW MOUNTAIN ROAD  
STREET LIGHTING PLAN  
STA 143+00 "A" LINE TO 148+30 "A" LINE  
STA 187+74 "N" LINE TO 209+17 "N" LINE

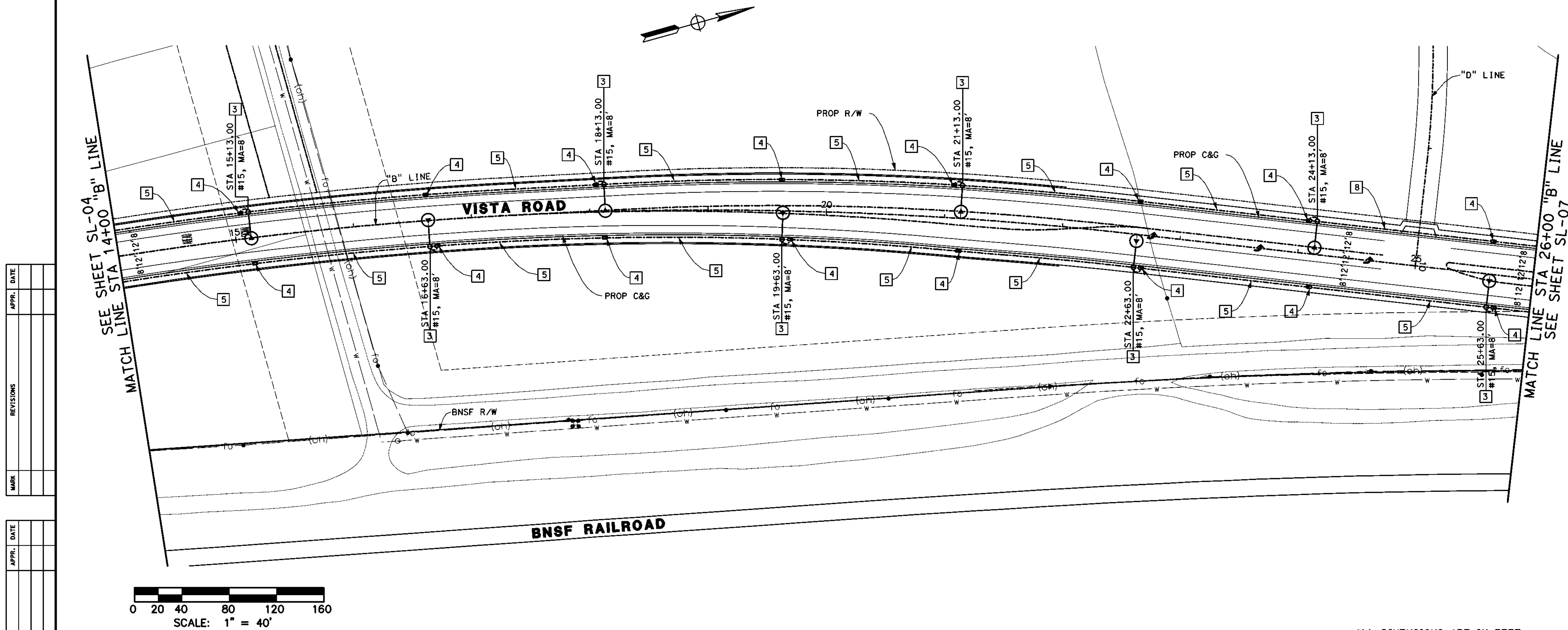
| J.L. REF. | W.O. NO.  | DRAWING NO. | SHEET NO. | TOTAL SHEETS |
|-----------|-----------|-------------|-----------|--------------|
| JL XXXX   | XX XXXXXX | SL-05       | 81        | X            |

STREET LIGHTING CONSTRUCTION NOTES:

- [3] INSTALL LIGHT STANDARD PER SAN BERNARDINO COUNTY STREET LIGHTING REQUIREMENTS WITH 8' LUMINAIRE ARM (150 WATT)
- [4] INSTALL NO. 3½ PULLBOX PER SAN BERNARDINO COUNTY REQUIREMENTS
- [5] INSTALL 1½" CONDUIT WITH 2#8 CONDUCTORS
- [8] INSTALL 2" CONDUIT WITH 2#8 CONDUCTORS

LEGEND:

- PROPOSED STREET LIGHT LOCATION (22000 LUMEN HPSV, 200 WATT, #20).
- S PROPOSED BARRIER MOUNTED STREET LIGHT LOCATION (22000 LUMEN HPSV, 200 WATT, #20).
- PROPOSED STREET LIGHT LOCATION (18000 LUMEN HPSV, 150 WATT, #15).
- INDICATES SAFETY LIGHT LOCATION (27500 LUMEN HPSV, 250 WATT, #25) SEE TRAFFIC SIGNAL PLANS SHEET 69, 70 AND 71.
- ◻ ELECTRIC SERVICE ENCLOSURE
- ◻ STREET LIGHT PULLBOX.



| MARK | REVISIONS | APPR. | DATE |
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|      |           |       |      |

| MARK | REVISIONS | APPR. | DATE |
|------|-----------|-------|------|
|      |           |       |      |
|      |           |       |      |



| MARK | CHANGES | RESIDENT ENGINEER | DATE |
|------|---------|-------------------|------|
|      |         |                   |      |

FIELD CHANGES

PLANS PREPARED BY:  
**AECOM**  
999 W. TOWN AND COUNTRY ROAD  
ORANGE, CA 92668-4713  
(714) 567-2501

JAMES FABER R.C.E. 45668 EXPIRES 12-31-12

X  
DATE

COUNTY OF SAN BERNARDINO  
DEPARTMENT OF PUBLIC WORKS

RECOMMENDED / APPROVED BY

XXXX XXXX P.E. DEPUTY DIRECTOR DATE

XXXX XXXX P.E. DIRECTOR OF PUBLIC WORKS DATE

ALL DIMENSIONS ARE IN FEET  
UNLESS OTHERWISE SHOWN

SHADOW MOUNTAIN ROAD

STREET LIGHTING PLAN  
STA 14+00 "B" LINE TO 26+00 "B" LINE

| J.L. REF. | W.O. NO.  | DRAWING NO. | SHEET NO. | TOTAL SHEETS |
|-----------|-----------|-------------|-----------|--------------|
| JL XXXX   | XX XXXXXX | SL-06       | 82        | X            |

- 3] INSTALL LIGHT STANDARD PER SAN BERNARDINO COUNTY STREET LIGHTING REQUIREMENTS WITH 8" LUMINAIRE ARM (150 WATT)
- 4] INSTALL NO. 3/2 PULLBOX PER SAN BERNARDINO COUNTY REQUIREMENTS
- 5] INSTALL 1 1/2" CONDUIT WITH 2#8 CONDUCTORS
- 8] INSTALL 2 " CONDUIT WITH 2#8 CONDUCTORS

 PROPOSED STREET LIGHT LOCATION  
(22000 LUMEN HPSV, 200 WATT, #20).

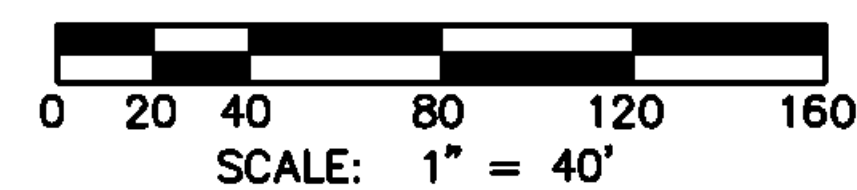
 PROPOSED BARRIER MOUNTED STREET LIGHT  
LOCATION (22000 LUMEN HPSV, 200 WATT, #20).

 PROPOSED STREET LIGHT LOCATION  
(18000 LUMEN HPSV, 150 WATT, #15).

 INDICATES SAFETY LIGHT LOCATION  
(27500 LUMEN HPSV, 250 WATT, #25)  
SEE TRAFFIC SIGNAL PLANS SHEET  
69, 70 AND 71.

 ELECTRIC SERVICE ENCLOSURE

 STREET LIGHT PULLBOX.



STREET LIGHTING PLAN  
STA 26+00 "B" LINE TO 38+00 "B" LINE

|           |           |             |           |              |
|-----------|-----------|-------------|-----------|--------------|
| J.L. REF. | W.O. NO.  | DRAWING NO. | SHEET NO. | TOTAL SHEETS |
| JL XXXX   | XX XXXXXX | SL-07       | 83        | X            |

Don't Dig...Until You Call U.S.A. Toll Free  
DIAL: 811  
for the location  
of buried  
utility lines.  
Don't disrupt  
vital services.



TWO WORKING DAYS BEFORE YOU DIG

|               |            |                                    |
|---------------|------------|------------------------------------|
|               |            |                                    |
|               |            |                                    |
|               |            |                                    |
| MARK          | CHANGES    |                                    |
|               | NO CHANGES | RESIDENT ENGINEER _____ DATE _____ |
| FIELD CHANGES |            |                                    |

PLANS PREPARED BY:  
**AECOM**  
999 W. TOWN AND COUNTRY ROAD  
ORANGE, CA 92868-4713  
(714) 567-2501

JAMES FABER R.C.E. 45668 EXPIRES 12-31-12

COUNTY OF SAN BERNARDINO  
DEPARTMENT OF PUBLIC WORKS

RECOMMENDED / APPROVED BY

XXXX XXXX P.E.      DEPUTY DIRECTOR      DATE

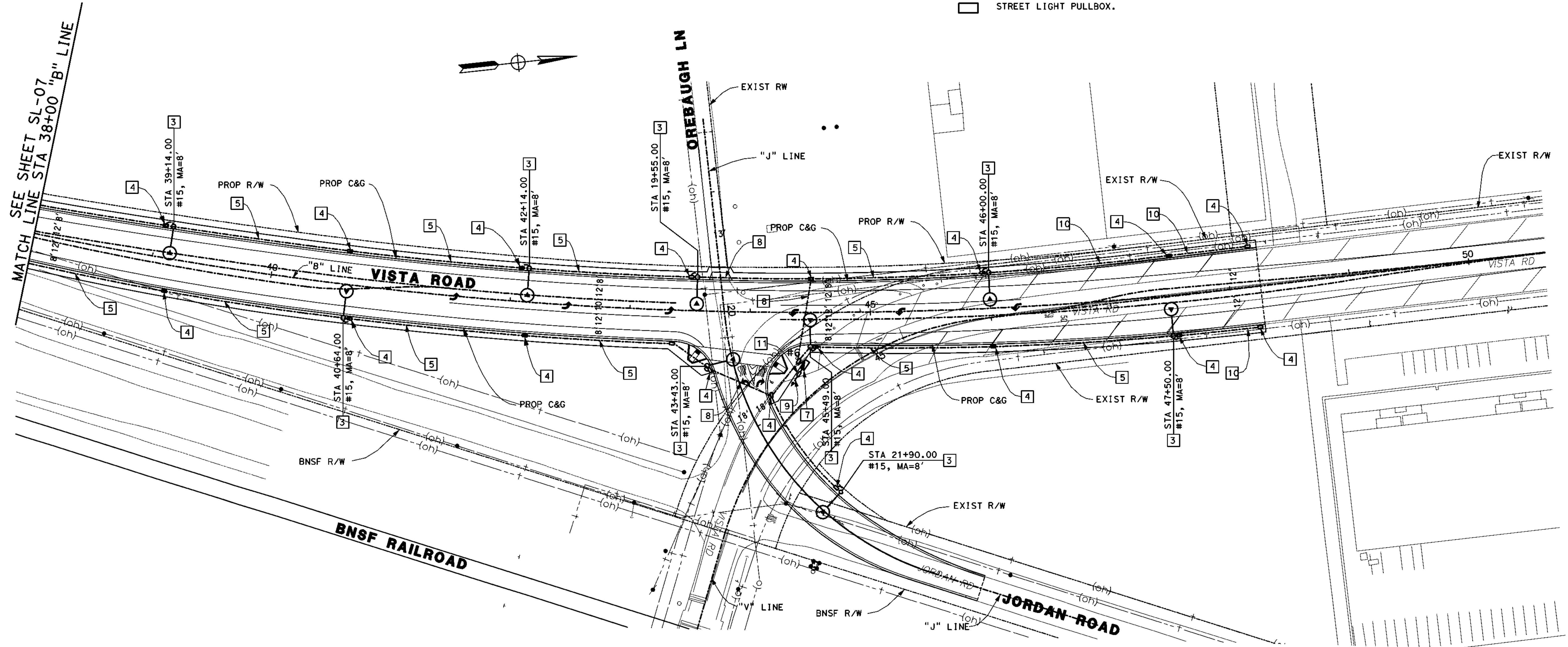
XXXX XXXX P.E.      DIRECTOR OF PUBLIC WORKS      DATE

# STREET LIGHTING CONSTRUCTION NOTES:

- INSTALL LIGHT STANDARD PER SAN BERNARDINO COUNTY STREET LIGHTING REQUIREMENTS WITH 8' LUMINAIRE ARM (150 WATT)
- INSTALL NO. 3/2 PULLBOX PER SAN BERNARDINO COUNTY REQUIREMENTS
- INSTALL 1 1/2" CONDUIT WITH 2#8 CONDUCTORS
- INSTALL SERVICE EQUIPMENT ENCLOSURE STANDARD PER SAN BERNARDINO COUNTY REQUIREMENTS
- INSTALL 2" CONDUIT WITH 2#8 CONDUCTORS
- INSTALL 3" SERVICE CONDUIT PER SCE REQUIREMENTS
- INSTALL 1 1/2" CONDUIT WITH PULL ROPE
- INSTALL NO. 5 PULLBOX PER SAN BERNARDINO COUNTY REQUIREMENTS

## LEGEND:

- PROPOSED STREET LIGHT LOCATION (22000 LUMEN HPSV, 200 WATT, #20).
- PROPOSED BARRIER MOUNTED STREET LIGHT LOCATION (22000 LUMEN HPSV, 200 WATT, #20).
- PROPOSED STREET LIGHT LOCATION (18000 LUMEN HPSV, 150 WATT, #15).
- INDICATES SAFETY LIGHT LOCATION (27500 LUMEN HPSV, 250 WATT, #25) SEE TRAFFIC SIGNAL PLANS SHEET 69, 70 AND 71.
- ELECTRIC SERVICE ENCLOSURE
- STREET LIGHT PULLBOX.



0 20 40 80 120 160  
SCALE: 1" = 40'

ALL DIMENSIONS ARE IN FEET  
UNLESS OTHERWISE SHOWN



| MARK | CHANGES    | RESIDENT ENGINEER | DATE |
|------|------------|-------------------|------|
|      | NO CHANGES |                   |      |

FIELD CHANGES

PLANS PREPARED BY:  
**AECOM**  
999 W. TOWN AND COUNTRY ROAD  
ORANGE, CA 92668-4713  
(714) 567-2501

JAMES FABER R.C.E. 45668 EXPIRES 12-31-12

COUNTY OF SAN BERNARDINO  
DEPARTMENT OF PUBLIC WORKS

RECOMMENDED / APPROVED BY

XXXX XXXX P.E. DEPUTY DIRECTOR DATE

XXXX XXXX P.E. DIRECTOR OF PUBLIC WORKS DATE

SHADOW MOUNTAIN ROAD  
STREET LIGHTING PLAN  
STA 38+00 "B" LINE TO 50+90 "B" LINE

| J.L. REF. | W.O. NO.  | DRAWING NO. | SHEET NO. | TOTAL SHEETS |
|-----------|-----------|-------------|-----------|--------------|
| JL XXXX   | XX XXXXXX | SL-08       | 84        | X            |

