REQUEST FOR PROPOSALS (RFP) 3-3028

BRIDGE AND DRAINAGE FACILITY INSPECTION SERVICES ON OC STREETCAR PROJECT

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

Key RFP Dates

Issue Date:	**December 4, 2023**
Pre-Proposal Conference Date:	**December 11, 2023**
Question Submittal Date:	**December 18, 2023**
Proposal Submittal Date:	**January 16, 2024**
Interview Date:	**March 5, 2024**

TABLE OF CONTENTS

December 4, 2023

NOTICE OF REQUEST FOR PROPOSALS

(RFP): 3-3028: "BRIDGE AND DRAINAGE FACILITY INSPECTION SERVICES ON OC STREETCAR PROJECT"

TO: ALL OFFERORS

FROM: ORANGE COUNTY TRANSPORTATION AUTHORITY

The Orange County Transportation Authority (Authority) invites proposals from qualified consultants to Provide facility inspection services for the two (2) new bridges, Westminster Avenue Bridge and Santa Ana River Bridge, and the drainage systems within the OCTA Pacific Electric right of way on OC Streetcar project.

Please note that by submitting a Proposal, Offeror certifies that it is not subject to any Ukraine/Russia-related economic sanctions imposed by the State of California or the United States Government including, but not limited to, Presidential Executive Order Nos. 13660, 13661, 13662, 13685, and 14065. Any individual or entity that is the subject of any Ukraine/Russia-related economic sanction is not eligible to submit a Proposal. In submitting a Proposal, all Offerors agree to comply with all economic sanctions imposed by the State or U.S. Government.

Proposals must be submitted, electronically, through the following URL link: http://www.octa.net/Proposal Upload Link, at or before the deadline of **2:00 p.m. on January 16, 2024. The link has an upload file size limit of 80MB. Authority will not accept hard copy proposals for this RFP.**

Offerors are instructed to click the upload link, select "**RFP 3-3028**" from the drop-down menu, and follow the instructions as prompted to upload the proposal. The upload link will expire at the submittal deadline and will not allow proposals to be uploaded.

Should Offerors encounter technical issues with uploading the proposals via the link provided, Offerors are required to contact the Contract Administrator prior to the submission deadline. Proposals and supplemental information to proposals received after the date and time specified above will be rejected.

Firms interested in obtaining a copy of this Request for Proposals (RFP) may do so by downloading the RFP from CAMM NET at https://cammnet.octa.net.

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

To receive all further information regarding this RFP 3-3028, firms and subconsultants must be registered on CAMM NET with at least one of the following commodity codes for this solicitation selected as part of the vendor's on-line registration profile:

Category:	Commodity:
Professional Services	Engineering - Architectural
	Engineering - Civil
	Engineering - General
	Engineering - Right of Way
	Engineering - Structural
	Engineering - Traffic
	Engineering Drawings
	Inspection - Steel/Welding
	Inspection - Testing & Analysis

A hybrid pre-proposal conference will be held on December 11, 2023, at 1:00 p.m. Prospective Offerors may join in person, via Teams, or call-in using the following credentials:

- Microsoft Teams Meeting
- OR Call-in Number: 1-916-550-9867
- Conference ID: 130 508 037#
- In-Person: 550 S. Main Street Orange, CA 92863; Conference Room 09

A copy of the presentation slides and pre-proposal conference registration sheet(s) will be issued via addendum prior to the date of the pre-proposal conference. All prospective Offerors are encouraged to attend the pre-proposal conference.

The Authority has established March 5, 2024, as the date to conduct interviews. All prospective Offerors will be asked to keep this date available.

Certain labor categories under this project are subject to prevailing wages as identified in the State of California Labor Code commencing in Section 1770 et. Seq. It is required that all mechanics and laborers employed or working at

the site be paid not less than the basic hourly rates of pay and fringe benefits as shown in the current minimum wage schedules. Offerors must use the current wage schedules applicable at the time the work is in progress.

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

All Offerors will be required to comply with all applicable equal opportunity laws and regulations.

The award of this contract is subject to receipt of federal, state and/or local funds adequate to carry out the provisions of the proposed agreement including the identified Scope of Work.

The prime consultants and all subconsultants awarded a contract as a result of this solicitation shall maintain an appropriate time-keeping system that identifies labor hours expended by project.

SECTION I: INSTRUCTIONS TO OFFERORS

SECTION I. INSTRUCTIONS TO OFFERORS

A. PRE-PROPOSAL CONFERENCE

A hybrid pre-proposal conference will be held on December 11, 2023, at 1:00 p.m.. Prospective Offerors may join in person, via Teams, or call-in using the following credentials:

- Microsoft Teams Meeting
- OR Call-in Number: 1-916-550-9867
- Conference ID: 130 508 037#
- In-Person: 550 S. Main Street Orange, CA 92863; Conference Room 09

A copy of the presentation slides and pre-proposal conference registration sheet(s) will be issued via addendum prior to the date of the pre-proposal conference. All prospective Offerors are encouraged to attend the pre-proposal conference.

B. EXAMINATION OF PROPOSAL DOCUMENTS

By submitting a proposal, Offeror represents that it has thoroughly examined and become familiar with the work required under this RFP and that it is capable of performing quality work to achieve the Authority's objectives.

C. ADDENDA

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

D. AUTHORITY CONTACT

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

Aaron Delgado, Associate Contracts Administrator
Contracts Administration and Materials Management Department
600 South Main Street
P.O. Box 14184
Orange, CA 92863-1584
Phone: 714.560. 5443, Fax: 888.404.6282
Email: adelgado@octa.net

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

E. CLARIFICATIONS

1. Examination of Documents

Should an Offeror require clarifications of this RFP, the Offeror shall notify the Authority in writing in accordance with Section D.2. below. Should it be found that the point in question is not clearly and fully set forth, the Authority will issue a written addendum clarifying the matter which will be sent to all firms registered on CAMM NET under the commodity codes specified in this RFP.

2. Submitting Requests

a. All questions, including questions that could not be specifically answered at the pre-proposal conference must be put in writing and must be received by the Authority no later than 5:00 p.m., on December 18, 2023.

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

c. Any of the following methods of delivering written questions are acceptable as long as the questions are received no later than the

date and time specified above:

(1) U.S. Mail: Orange County Transportation Authority, 550 South Main Street, P.O. Box 14184, Orange, California 92863-1584.

(2) Personal Delivery: Contracts Administration and Materials Management Department, 600 South Main Street, Lobby Receptionist, Orange, California 92868.

(3) Facsimile: (888) 404-6282.

(4) Email: adelgado@octa.net

3. Authority Responses

Responses from the Authority will be posted on CAMM NET, no later than December 27, 2023. Offerors may download responses from CAMM NET at *https://cammnet.octa.net*, or request responses be sent via email.

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

Category:	Commodity:
Professional Services	Engineering - Architectural Engineering - Civil Engineering - General Engineering - Right of Way Engineering - Structural Engineering - Traffic Engineering Drawings Inspection - Steel/Welding Inspection - Testing & Analysis

Inquiries received after 5:00 p.m. on December 18, 2023, will not be responded to.

F. SUBMISSION OF PROPOSALS

1. Date and Time

Proposals must be submitted, electronically, through the following URL link: http://www.octa.net/Proposal Upload Link, at or before the deadline of **2:00 p.m. on January 16, 2024. The link has an upload file size limit of 80MB. Authority will not accept hard copy proposals for this RFP.**

Offerors are instructed to click the upload link, select "**RFP 3-3028**" from the drop-down menu, and follow the instructions as prompted to upload the proposal. The upload link will expire at the submittal deadline and will not allow proposals to be uploaded.

Should Offerors encounter technical issues with uploading the proposals via the link provided, Offerors are required to contact the Contract Administrator prior to the submission deadline. Proposals and supplemental information to proposals received after the date and time specified above will be rejected.

2. Acceptance of Proposals

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

b. The Authority reserves the right to withdraw or cancel this RFP at any time without prior notice and the Authority makes no representations that any contract will be awarded to any Offeror responding to this RFP.

c. The Authority reserves the right to issue a new RFP for the project.

d. The Authority reserves the right to postpone proposal openings for its own convenience.

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

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

g. Submitted proposals are not to be copyrighted.

G. PRE-CONTRACTUAL EXPENSES

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

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

1. Preparing its proposal in response to this RFP;
2. Submitting that proposal to the Authority;
3. Negotiating with the Authority any matter related to this proposal; or
4. Any other expenses incurred by Offeror prior to date of award, if any, of the Agreement.

H. JOINT OFFERS

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

I. TAXES

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

J. PROTEST PROCEDURES

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

K. CONTRACT TYPE

It is anticipated that the Agreement resulting from this solicitation, if awarded, will be a firm-fixed price contract specifying firm-fixed prices for individual tasks specified in the Scope of Work, included in this RFP as Exhibit A.

L. PREVAILING WAGES

Certain labor categories under this project are subject to prevailing wages as identified in the State of California Labor Code commencing in Section 1770 et.seq. The offeror to whom a contract for the work is awarded by the Authority shall comply with the provision of the California Labor Code, including, without limitation, the obligation to pay the general prevailing rates of wages in the locality in which the work is to be performed in accordance with, without limitation, Sections 1773.1, 1774, 1775 and 1776 of the California Labor Code governing employment of apprentices. Copies of the prevailing rates of per diem wages are on file at the Authority's principal office at 550 S. Main Street, Orange, CA 92868 and are available to any interested party on request.

M. CONFLICT OF INTEREST

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

All Offerors must disclose in their proposal and immediately throughout the course of the evaluation process if they have hired or retained an advocate to lobby Authority staff or the Board of Directors on their behalf.

Offerors hired to perform services for the Authority are prohibited from concurrently acting as an advocate for another firm who is competing for a contract with the Authority, either as a prime or subcontractor.

N. CODE OF CONDUCT

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

O. OWNERSHIP OF RECORDS/PUBLIC RECORDS ACT

All proposals and documents submitted in response to this RFP shall become the property of the Authority and a matter of public record pursuant to the California Public Records Act, Government Code sections 6250 et seq. (the "Act"). Offerors should familiarize themselves with the provisions of the Act requiring disclosure of public information. Offerors are discouraged from marking their proposal documents as "confidential" or "proprietary."

If a Proposal does include "confidential" or "proprietary" markings and the Authority receives a request pursuant to the Act, the Authority will endeavor (but cannot guarantee) to notify the Offeror of such a request. In order to protect any information submitted within a Proposal, the Offeror must pursue, at its sole cost and expense, any and all appropriate legal action necessary to maintain the confidentiality of such information. The Authority generally does not consider pricing information, subcontractor lists, or key personnel, including resumes, as being exempt from disclosure under the Act. In no event shall the Authority or any of its officers, directors, employees, agents, representatives, or consultants be liable to a Offeror for the disclosure of any materials or information submitted in response to the RFP or by failing to notify a Offeror of a request seeking its Proposal. The Authority reserves the right to make an independent decision to

disclose records and material.

Notwithstanding the above, all information regarding proposal responses will be held as confidential until such time as the evaluation has been completed; an award has been made by the Board of Directors or Authority Staff, as appropriate; and the contract has been fully negotiated.

P. STATEMENT OF ECONOMIC INTERESTS

The awarded Offeror (including designated employees and subconsultants) may be required to file Statements of Economic Interests (Form 700) in accordance with the Political Reform Act (Government Code section 81000 et seq.). This applies to individuals who make, participate in making, or act in a staff capacity for making governmental decisions. The Authority determines which individuals are required to file a Form 700, and if such determination is made, the individuals must file Form 700s with the Authority's Clerk of the Board no later than 30 days after the execution of the Agreement, annually thereafter for the duration of the Agreement, and within 30 days of termination of the Agreement.

SECTION II: PROPOSAL CONTENT

SECTION II. PROPOSAL CONTENT

A. PROPOSAL FORMAT AND CONTENT

1. Format

Proposals should be typed with a standard 12-point font, double-spaced, and submitted in 8 1/2" x 11" format. Charts and schedules may be included in 11" x 17" format. Proposals should not include any unnecessarily elaborate or promotional materials. Proposals should not exceed fifty (50) pages in length, excluding any appendices, cover letters, resumes, or forms.

2. Letter of Transmittal

The Letter of Transmittal shall be addressed to Aaron Delgado, Associate Contracts Administrator and must, at a minimum, contain the following:

a. Identification of Offeror that will have contractual responsibility with the Authority. Identification shall include legal name of company, corporate address, telephone and fax number, and email address. Include name, title, address, email address and telephone number of the contact person identified during period of proposal evaluation.

b. Identification of all proposed subcontractors including legal name of company, whether the firm is a Disadvantaged Business Enterprise (DBE), contact person's name and address, phone number and fax number, and email address; relationship between Offeror and subcontractors, if applicable.

c. Acknowledgement of receipt of all RFP addenda, if any.

d. A statement to the effect that the proposal shall remain valid for a period of not less than 180 days from the date of submittal.

e. Signature of a person authorized to bind Offeror to the terms of the proposal.

f. Signed statement attesting that all information submitted with the proposal is true and correct.

3. Technical Proposal

a. Qualifications, Related Experience and References of Offeror

This section of the proposal should establish the ability of Offeror to satisfactorily perform the required work by reasons of: experience in

performing work of a similar nature; demonstrated competence in the services to be provided; strength and stability of the firm; staffing capability; work load; record of meeting schedules on similar projects; and supportive client references.

Offeror to:

(1) Provide a brief profile of the firm, including the types of services offered; the year founded; form of the organization (corporation, partnership, sole proprietorship); number, size and location of offices; and number of employees.

(2) Provide a general description of the firm's financial condition and identify any conditions (e.g., bankruptcy, pending litigation, planned office closures, impending merger) that may impede Offeror's ability to complete the project.

(3) Describe the firm's experience in performing work of a similar nature to that solicited in this RFP, and highlight the participation in such work by the key personnel proposed for assignment to this project.

(4) Identify subcontractors by company name, address, contact person, telephone number, email, and project function. Describe Offeror's experience working with each subcontractor.

(5) Identify all firms hired or retained to provide lobbying or advocating services on behalf of the Offeror by company name, address, contact person, telephone number and email address. This information is required to be provided by the Offeror immediately during the evaluation process, if a lobbyist or advocate is hired or retained.

(6) Provide as a minimum three (3) references for the projects cited as related experience, and furnish the name, title, address, telephone number, and email address of the person(s) at the client organization who is most knowledgeable about the work performed. Offeror may also supply references from other work not cited in this section as related experience.

b. Proposed Staffing and Project Organization

This section of the proposal should establish the method, which will be used by the Offeror to manage the project as well as identify key personnel assigned.

Offeror to:

(1) Identify key personnel proposed to perform the work in the specified tasks and include major areas of subcontract work. Include the person's name, current location, proposed position for this project, current assignment, level of commitment to that assignment, availability for this assignment and how long each person has been with the firm.

(2) Furnish brief resumes (not more than two [2] pages each) for the proposed Project Manager and other key personnel that includes education, experience, and applicable professional credentials.

(3) Indicate adequacy of labor resources utilizing a table projecting the resource allocation to the project by individual task.

(4) Include a project organization chart, which clearly delineates communication/reporting relationships among the project staff.

(5) Include a statement that key personnel will be available to the extent proposed for the duration of the project acknowledging that no person designated as "key" to the project shall be removed or replaced without the prior written concurrence of the Authority.

c. Work Plan

Offeror should provide a narrative, which addresses the Scope of Work, and shows Offeror's understanding of Authority's needs and requirements.

Offeror to:

(1) Describe the approach to completing the tasks specified in the Scope of Work. The approach to the work plan shall be of such detail to demonstrate the Offeror's ability to accomplish the project objectives and overall schedule.

(2) Outline sequentially the activities that would be undertaken in completing the tasks and specify who would perform them.

(3) Furnish a project schedule for completing the tasks in terms of elapsed weeks.

(4) Identify methods that Offeror will use to ensure quality control as well as budget and schedule control for the project.

(5) Identify any special issues or problems that are likely to be encountered in this project and how the Offeror would propose to address them.

(6) Offeror is encouraged to propose enhancements or procedural or technical innovations to the Scope of Work that do not materially deviate from the objectives or required content of the project.

d. Exceptions/Deviations

State any technical and/or contractual exceptions and/or deviations from the requirements of this RFP, including the Authority's technical requirements and contractual terms and conditions set forth in the Scope of Work (Exhibit A) and Proposed Agreement (Exhibit B), using the form entitled "Proposal Exceptions and/or Deviations" included in this RFP. This Proposal Exceptions and/or Deviations form must be included in the original proposal submitted by the Offeror. If no technical or contractual exceptions and/or deviations are submitted as part of the original proposal, Offerors are deemed to have accepted the Authority's technical requirements and contractual terms and conditions set forth in the Scope of Work (Exhibit A) and Proposed Agreement (Exhibit B). Offerors will not be allowed to submit the Proposal Exceptions and/or Deviations form or any technical and/or contractual exceptions after the proposal submittal date identified in the RFP. Exceptions and/or deviations submitted after the proposal submittal date will not be reviewed by Authority.

All exceptions and/or deviations will be reviewed by the Authority and will be assigned a "pass" or "fail" status. Exceptions and deviations that "pass" do not mean that the Authority has accepted the change but that it is a potential negotiable issue. Exceptions and deviations that receive a "fail" status means that the requested change is not something that the Authority would consider a potential negotiable issue. Offerors that receive a "fail" status on their exceptions and/or deviations will be notified by the Authority and will be allowed to retract the exception and/or deviation and continue in the evaluation process. Any exceptions and/or deviation that receive a "fail" status and the Offeror cannot or does not retract the requested change may result in the firm being eliminated from further evaluation.

4. Cost and Price Proposal

Offerors are asked to submit only the technical qualifications as requested in the RFP. No cost proposal or work hours are to be included in this phase of the RFP process. Upon completion of the initial evaluations and interviews, if conducted, the highest ranked Offeror will be asked to submit a detailed cost proposal and negotiations will commence based on both the cost and technical proposals.

5. Appendices

Information considered by Offeror to be pertinent to this project and which has not been specifically solicited in any of the aforementioned sections may be placed in a separate appendix section. Offerors are cautioned, however, that this does not constitute an invitation to submit large amounts of extraneous materials. Appendices should be relevant and brief.

B. FORMS

1. Status of Past and Present Contracts Form

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

A separate form must be completed for each identified contract. Each form must be signed by the Offeror confirming that the information provided is true and accurate. Offeror is required to submit one copy of the completed form(s) as part of its proposals and it should be included in only the original proposal.

2. Proposal Exceptions and/or Deviations Form

Offerors shall complete the form entitled “Proposal Exceptions and/or Deviations” provided in this RFP and submit it as part of the original proposal. For each exception and/or deviation, a new form should be used, identifying the exception and/or deviation and the rationale for requesting

the change. Exceptions and/or deviations submitted after the proposal submittal date will not be reviewed nor considered by the Authority.

SECTION III: EVALUATION AND AWARD

SECTION III. EVALUATION AND AWARD

A. EVALUATION CRITERIA

The Authority will evaluate the offers received based on the following criteria:

1. Qualifications of the Firm **25%**

Technical experience in performing work of a closely similar nature; strength and stability of the firm; strength, stability, experience and technical competence of subcontractors; assessment by client references.

2. Staffing and Project Organization **40%**

Qualifications of project staff, particularly key personnel and especially the Project Manager; key personnel's level of involvement in performing related work cited in "Qualifications of the Firm" section; logic of project organization; adequacy of labor commitment; concurrence in the restrictions on changes in key personnel.

3. Work Plan **35%**

Depth of Offeror's understanding of Authority's requirements and overall quality of work plan; logic, clarity and specificity of work plan; appropriateness of resource allocation among the tasks; reasonableness of proposed schedule; utility of suggested technical or procedural innovations.

B. EVALUATION PROCEDURE

An evaluation committee will be appointed to review all proposals received for this RFP. The committee is comprised of Authority staff and may include outside personnel. The committee members will evaluate the written proposals using criteria identified in Section III A. A list of top ranked proposals, firms within a competitive range, will be developed based upon the totals of each committee members' score for each proposal.

During the evaluation period, the Authority may interview some or all of the proposing firms. The Authority has established March 5, 2024, as the date to conduct interviews. All prospective Offerors are asked to keep this date available. No other interview dates will be provided, therefore, if an Offeror is unable to attend the interview on this date, its proposal may be eliminated from further discussion. The interview may consist of a short presentation by the Offeror after which the evaluation committee will ask questions related to the firm's proposal and qualifications.

At the conclusion of the evaluation process, the evaluation committee will recommend the Offeror with the highest final ranking.

C. AWARD

The Authority will consider the selection of the firm(s) recommended by the Evaluation Committee.

The Authority may also negotiate contract terms with the selected Offeror prior to award, and expressly reserves the right to negotiate with several Offerors simultaneously and, thereafter, to award a contract to the Offeror offering the most favorable terms to the Authority.

Offeror acknowledges that the Authority reserves the right to award this contract in its sole and absolute discretion to any Offeror to this RFP regardless of the evaluation committee's recommendation.

The Authority reserves the right to award its total requirements to one Offeror or to apportion those requirements among several Offerors as the Authority may deem to be in its best interest. In addition, negotiations may or may not be conducted with Offerors; therefore, the proposal submitted should contain Offeror's most favorable terms and conditions, since the selection and award may be made without discussion with any Offeror.

The selected Offeror will be required to submit to the Authority's Accounting department a current IRS W-9 form prior to commencing work.

D. THE SELECTED OFFEROR WILL BE REQUIRED TO SUBMIT TO THE AUTHORITY'S ACCOUNTING DEPARTMENT A CURRENT IRS W-9 FORM PRIOR TO COMMENCING WORK.

E. NOTIFICATION OF AWARD AND DEBRIEFING

Offerors who submit a proposal in response to this RFP shall be notified via CAMM NET of the contract award. Such notification shall be made within three (3) business days of the date the contract is awarded.

Offerors who were not awarded the contract may obtain a debriefing concerning the strengths and weaknesses of their proposal. Unsuccessful Offerors, who wish to be debriefed, must request the debriefing in writing or electronic mail and the Authority must receive it within three (3) business days of notification of the contract award.

EXHIBIT A: STATEMENT OF WORK

STATEMENT OF WORK
FOR
BRIDGE AND DRAINAGE FACILITY INSPECTION SERVICES
ON OC STREETCAR PROJECT

1.0 PROJECT OBJECTIVES

The Orange County Transportation Authority (OCTA or Authority) is seeking a consultant (Consultant) to provide facility inspection services for the two (2) new bridges, Westminster Avenue Bridge and Santa Ana River Bridge, and the drainage systems within OCTA Pacific Electric right of way (PE R/W) on OC Streetcar project.

2.0 PROJECT BACKGROUND

The Orange County Transportation Authority (OCTA or Authority) in coordination with the City of Santa Ana and City of Garden Grove, is implementing a new east-west double track modern streetcar in Orange County between the Santa Ana Regional Transportation Center in the City of Santa Ana, and the Harbor Boulevard/Westminster Boulevard intersection in the City of Garden Grove (OC Streetcar Project) to improve transit connectivity and accessibility, increase transit options, relieve congestion, and provide benefits to the traveling public.

Part of OC Streetcar project is construction of two (2) newly built bridges – Westminster Avenue Bridge and Santa Ana River Bridge and the drainage systems within OCTA Pacific Electric Right of Way (PE R/W). Refer to Attachment A for the bridge drawings and Attachment B for OCTA PE R/W.

The selected Consultant shall perform facility inspection services for the bridge and drainage systems mentioned above, provide all inspection data, evaluations, and recommendations to maintain the bridges and drainage systems at good conditions as defined in American Public Transportation Association (APTA) Standards and other requirements in a comprehensive report to OCTA.

LIMITATION ON GOVERNMENTAL DECISIONS

Nothing contained in this scope of work permits Consultant's personnel to authorize or direct any actions, votes, appoint any person, obligate, or commit Authority to any course of action or enter into any contractual agreement on behalf of Authority. In addition, Consultant's personnel shall not provide information, an opinion, or a recommendation for the purpose of affecting a decision without significant intervening substantive review by Authority personnel, counsel, and management.

3.0 STATEMENT OF WORK DEFINITIONS

As used throughout this Statement of Work the following terms shall have the meanings set forth below:

3.1 "Board" shall be the Board of Directors of the Orange County Transportation Authority.

3.2 "Work" shall mean the work performed or to be performed and services rendered by Consultant, in accordance with the provisions hereof.

3.3 "Project" shall mean inspection services for bridges and drainage systems within PE ROW on OC Streetcar project.

3.4 "Consultant" as used in this statement of work means the person or persons, firm, partnership, corporation, or combination thereof, private or municipal who have entered into Agreement with OCTA, to perform inspection services as it applies to the work identified herein.

3.5 "Authorities Having Jurisdiction" (AHJ) shall mean the agencies having jurisdiction over Project.

3.6 "APTA Standard" shall mean the latest version American Public Transportation Association Rail Transit Fixed Structures Inspection and Maintenance Standard. Attachment C to this statement of work is for the Consultant's reference only.

4.0 GENERAL CONDITIONS AND REQUIREMENTS

4.1. Work Performance

Consultant shall commence work immediately upon receiving the executed Agreement. Consultant shall use diligence in completing the work in accordance with the schedule.

In case of conflict, ambiguities, discrepancies, errors or omissions, among any of the items of work, Consultant shall submit the matters to OCTA for clarification. Any work affected by such conflicts, ambiguities, discrepancies, errors, or omissions which is performed by the Consultant prior to clarification by OCTA shall be at Consultant's risk. Such conflicts, ambiguities, discrepancies, or errors or omissions among the references shall not give rise to a claim by Consultant for extra work unless Consultant can demonstrate that it has incurred additional expenses as a result thereof.

4.2. Health, Safety and Environmental Requirements

Consultant shall comply with all OCTA Health, Safety and Environmental requirements, and all guidelines from the agencies having jurisdictions including the Orange County Health Care Agency (HCA) and Cal-OSHA while conducting work at scope sites.

Within seven (7) calendar days upon execution of this Agreement, Consultant shall submit its latest Injury and Illness Prevention Plan (IIPP), Policy of Company's Substance Abuse Prevention Policy, and other safety submittals as required in the Agreement.

4.3. Deliverable Requirements

All submittals shall be consistent with the schedule in Section 5.1.2. Schedule. Submittals shall be reviewed and accepted by OCTA.

Plans required for the reports shall be scalable on hard copies and shall be at least in size 11”x17”. Reports and calculations shall be developed using Microsoft Word and Excel in letter size (8.5”x11”). OCTA requires PDF version and native file submittals.

All submittals to OCTA shall be transmitted via emails and shared with OCTA using Microsoft Office 365 OneDrive. Consultant shall address all comments, revise the deliverables, and resubmit to OCTA for verification.

4.4. Communication

All Project communications using email shall have an email subject line starting with “Bridge and Drainage Facility Inspection Services on OC Streetcar Project – {add email subject matter}”. Consultant shall include OCTA Project Manager in all project-related communications.

4.5. Coordination

Consultant shall coordinate with OCTA, utility companies, AHJ, and all other stakeholders in the work of Project. Provide OCTA with a copy of each submittal and documentations submitted to AHJ.

5.0 SCOPE OF WORK

5.1. TASK 1 – PROJECT MANAGEMENT/ADMINISTRATION AND SCHEDULE

5.1.1. Project Administration/Management

Consultant shall designate a qualified Program Manager/Project Manager to manage and oversee all aspects of Consultant’s work. Included in this task will be project meetings required to conduct the scope of work.

Consultant shall conduct an initial kick-off meeting with OCTA staff to discuss project objectives, the approaches to complete the project, key delivery dates, and coordination with OCTA staff.

Consultant shall conduct at least one (1) project meeting per month over the term of this Agreement to report the status of the project, work efforts, progress, and schedule updates to the OCTA Project Manager. Project meetings will be held either via Microsoft Teams platform or in-person/on-site as requested by OCTA.

Consultant shall prepare and distribute meeting agendas at least two (2) business days prior to each meeting. Consultant shall prepare and distribute meeting minutes within three (3) business days of the meetings to the project parties. Meeting minutes shall include completed items, items in progress, upcoming items, changes, schedule updates, and budget impacts. Consultant is also expected to make action item checklists and other pertinent documentation to successfully manage the project. Consultant shall notify the OCTA Project Manager immediately of any problem(s), which may impact either the project’s schedule or

budget.

Consultant shall prepare a monthly project progress report for the work during the reported month, cumulative work completed up to the report date, and projected work for the next month. The report shall be submitted prior to the monthly meeting. The progress narrative shall document progress from the first day through the last day of the reported month and the projected work for the next month.

5.1.2. Schedule

OCTA's intent is for Consultant to accelerate performance of Scope of Work under the Agreement, and at the latest Project's final reports shall be completed, within one hundred fifty (150) calendar days from execution of the Agreement.

A project schedule shall be submitted to OCTA for approval within five (5) business days after the kick-off meeting. The schedule shall include all activities, sub-activities, start dates, submittal dates, completion date relationships, and durations, and shall indicate a logical sequence for completing the work within the allotted time. The schedule shall account for interface with OCTA and AHJ, and review time. Within five (5) business days upon receipt of OCTA review comments, a final schedule shall be submitted for approval. Upon approval, this schedule shall be designated Project baseline schedule, from which Agreement progress shall be tracked. Periodic updates of the schedule to show progress may be required bi-weekly, but not less than monthly.

Deliverables: Submit an electronic file in PDF format of each of the following documents:

- Meeting agenda and meeting minutes for each project meeting.
- Monthly progress report.
- Detailed project schedules (draft and final).
- Monthly project schedule updates.

5.2. TASK 2 - IMPLEMENT AND MAINTAIN QUALITY ASSURANCE/QUALITY CONTROL (QA/QC)

Consultant shall implement and maintain its firm's QA/QC plan in effect during the performance of the services under this Agreement to ensure that the inspection process and required deliverables are reviewed, checked, proofread, accurate, and complete.

Within seven (7) calendar days of receiving the executed Agreement, Consultant shall submit its firm's QA/QC plan to OCTA for review and acceptance. Consultant shall address OCTA's comments on the QA/QC plan and submit a revised QA/QC plan within seven (7) calendar days from the date of receipt of OCTA's comments.

The QA/QC plan shall include a project organization chart. QA/QC plan and shall clearly identify the name and title of Consultant's QA/QC manager and personnel performing the QA/QC for this project.

Consultant shall certify each deliverable as being prepared and checked in accordance with the Consultant's QA/QC plan and have been found to meet the quality objectives set forth therein. Consultant QA/QC certification shall be in writing on a form furnished by OCTA and shall be signed by Consultant Quality Assurance Manager and Consultant Project Manager. Deliverables received by OCTA without Consultant QA/QC certification will be returned without review by OCTA.

Deliverables:

- Submit an electronic file in PDF format of QA/QC plan.
- Certification for each deliverable.

5.3. TASK 3 – BRIDGE AND DRAINAGE INSPECTIONS

5.3.1 Consultant shall be responsible for the researching, studying, planning, and performing bridge and drainage inspections for OC Streetcar project in compliance with American Public Transportation Association (APTA) standard. Consultant shall provide comprehensive reports as results of the inspections and shall recommend to OCTA the actions needed to maintain the bridges and drainage systems. Consultant shall be responsible for their professional inspection services. OCTA's review, comments, and approval shall not release Consultant from its responsibility to perform its services and professional practices.

5.3.2 Consultant shall be responsible for obtaining all required approvals from AHJ. Bridge and drainage inspection work shall include, but shall not be limited to, civil, structural, electrical, mechanical, geotechnical, and drainage systems, as required.

5.3.3 Consultant shall review all existing record drawings since the bridges and drainage systems were constructed. Consultant shall request additional information that is deemed necessary for the inspection work.

5.3.4 Consultant shall review the scope of work and conduct site visits to field verify the existing conditions, dimensions, and site configurations shown on the record drawings. Notify OCTA if there are any discrepancies between the existing conditions and the record drawings.

5.3.5 Within one (1) month from the project kick-off meeting, Consultant shall prepare a bridge and drainage inspection plan and submit it to OCTA for review, discussions, and acceptance. The inspection plan shall show procedures, methods, and AHJ's requirements to perform the project. Consultant shall meet and present to OCTA the inspection plan. Allow OCTA a minimum of two (2) weeks to review the inspection plan after the presentation. Consultant shall address any comments from OCTA on the inspection plan within one (1) week upon receipt of OCTA comments.

5.3.6 Consultant shall perform physical inspections for bridges and drainage systems within OCTA PE R/W on OC Streetcar project.

5.3.7 Consultant shall prepare a site inspection report for each day Consultant commences inspection work and submit to OCTA within two (2) business days from the day the inspection work commences. The report shall include facilities that are inspected that

day, Consultant's staff name, date, time, total hours spent, and all field notes generated by Consultant's staff. The report shall be signed and dated by Consultant's onsite staff who performs the inspection work, Consultant's Project Manager, and by the OCTA staff who shadow the work.

5.3.8 Consultant shall consider the following criteria for the bridge and drainage inspection work.

1) Bridge and drainage inspections shall comply with the latest APTA Standard.

2) Bridge inspections shall include inspections for all bridge components, utilities, and appurtenances.

3) Drainage inspections shall include all drainage systems within OCTA PE R/W on OC Streetcar project. Video camera drain inspections shall be included as part of the drainage inspection work.

4) Consultant shall perform bridge and drainage inspections as shown on the accepted inspection plan. Notify OCTA of Consultant's inspections a minimum of 72 hours prior to each inspection day. OCTA staff may observe and shadow the Consultant over all inspection work.

5) The Westminster Avenue Bridge and Santa Ana River Bridge shall remain in service during the inspection process. Consultant shall comply with all safety measures while performing the work at the project sites. Consultant shall include in the inspection plan any traffic disruption required for the inspection. Consultant shall work with OCTA and other local agencies for traffic disruption coordination. Comply with local agencies' requirements for any traffic disruption and lane closures required for the inspection work. Consultant shall include all costs to perform the work scope including any traffic controls required for inspections.

6) Consultant shall be responsible for filling out applications and obtaining any and all permits for encroachment to private or government-owned properties as required to perform the scope work.

7) Within four (4) weeks after completion of inspections, Consultant shall prepare one (1) draft bridge inspection report for each bridge and one (1) drainage inspection report for the drainage systems within OCTA PE R/W. The reports shall include all site inspection reports, all data collected, analysis and evaluations. The reports shall include Consultant's recommendations for any replacement, repairs, and improvements to the bridges and drainage systems to maintain the bridges and drainage systems at a good condition as defined in APTA Standard and other requirements. Submit the reports to OCTA for review and discussions. Consultant shall meet and present the reports to OCTA. Allow OCTA a minimum of four (4) weeks to review the reports after the presentation. Consultant shall address OCTA's comments within two (2)

weeks upon receipt of OCTA comments and resubmit the revised reports to OCTA as final reports, both PDF versions and native files.

5.3.9 Inspection Staff Qualifications

Bridge and drainage inspection personnel shall be qualified as required by American Public Transportation Association Rail Transit Fixed Structures Inspection and Maintenance Standard, section 2.3. Consultant shall include in its proposal the resumes and supporting documentation/certifications of its qualified inspection personnel. OCTA requires the inspection team to include a qualified program manager and a qualified structures inspection team leader.

Deliverables:

- Bridge and drainage inspection plan (draft and final).
- Site inspection report for each day Consultant commence inspection work.
- Bridge inspection reports (draft and final).
- Drainage inspection reports (draft and final).

6.0 CERTIFICATION

Upon acceptance of the final reports, Consultant shall provide OCTA with a statement of certification that Consultant's work is in compliance with the requirements of this Agreement and of agencies having jurisdiction over the Project; Consultant has used reasonable care and diligence, and the work is complete.

7.0 OCTA RESPONSIBILITIES

OCTA shall provide available information regarding its requirements for Project, including record drawings, and will from time to time furnish such additional available information as may be necessary for the orderly prosecution of the Work.

OCTA Project Manager shall examine all documents submitted by Consultant and shall render decisions pertaining to Project. Project Manager shall review all documents and applications as required.

END OF STATEMENT OF WORK

ATTACHMENT A

OC STREETCAR
WESTMINSTER AVENUE BRIDGE
AND
SANTA ANA RIVER BRIDGE DRAWINGS

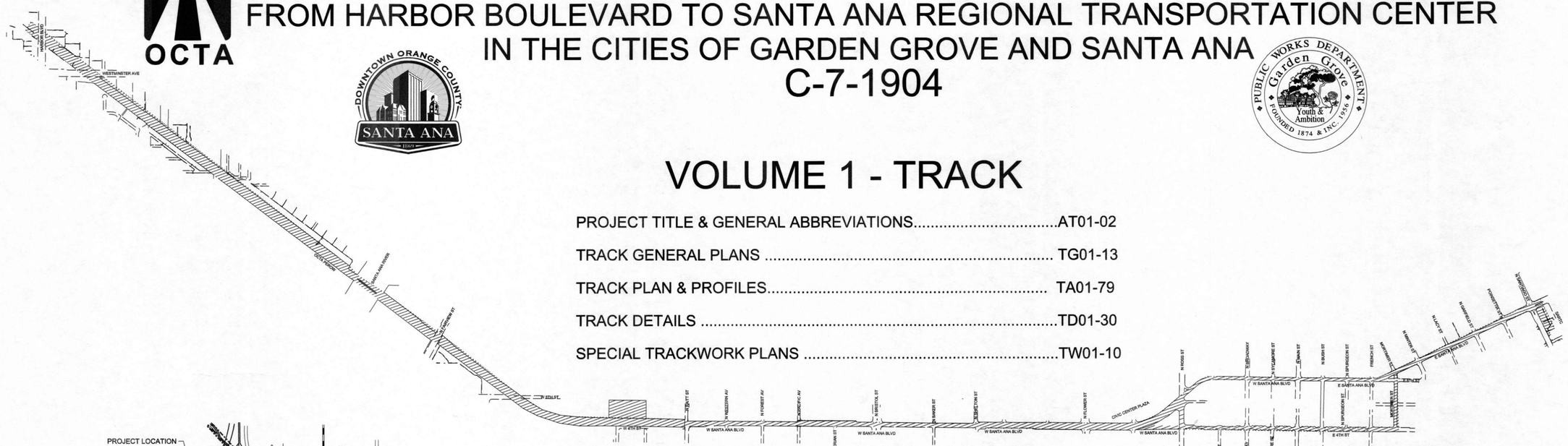
ORANGE COUNTY TRANSPORTATION AUTHORITY

OC STREETCAR PLANS

FROM HARBOR BOULEVARD TO SANTA ANA REGIONAL TRANSPORTATION CENTER

IN THE CITIES OF GARDEN GROVE AND SANTA ANA

C-7-1904



LOCATION MAP

(NOT TO SCALE)

VOLUME 1 - TRACK

VICINITY MAP

(NOT TO SCALE)

Underground Service Alert of Southern California

CALL: **TOLL FREE 1-800-422-4133**

TWO WORKING DAYS BEFORE YOU DIG

NOTICE TO CONTRACTOR

PURSUANT TO ASSEMBLY BILL 3019 NO EXCAVATION PERMIT IS VALID UNLESS THE CONTRACTOR CONTACTS AND OBTAINS AN INQUIRY I.D. NUMBER FROM "UNDERGROUND SERVICE ALERT" (1-800-422-4133) AT LEAST TWO WORKING DAYS PRIOR TO COMMENCING EXCAVATION.

INDEX OF PLANS

APPROVALS:

12/5/17

EXECUTIVE DIRECTOR CAPITAL PROGRAMS, ORANGE COUNTY TRANSPORTATION AUTHORITY — DATE

12/5/2017

CITY ENGINEER — DATE

12/6/2017

CITY ENGINEER – Public Works Director — DATE

REGISTERED PROFESSIONAL ENGINEER
TERRENCE JOSEPH NASH
RCE NO. 87096
Exp. 06/30/2019
CIVIL
STATE OF CALIFORNIA

10/2017

TERRENCE JOSEPH NASH — R.C.E. NO.: 87096 — DATE

PREPARED UNDER THE SUPERVISION OF:

TITLE / MASTER INDEX OF PLANS

AT01

OC STREETCAR

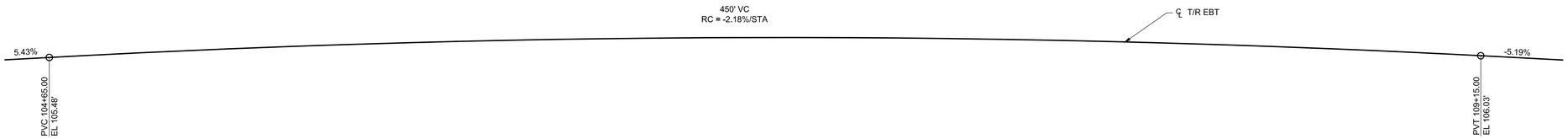
ORANGE COUNTY TRANSPORTATION AUTHORITY

SHEET 1 of 1520

CITY OF SANTA ANA PROJECT NO. 17-6766-C: OC STREETCAR FROM HARBOR BLVD TO SARTC

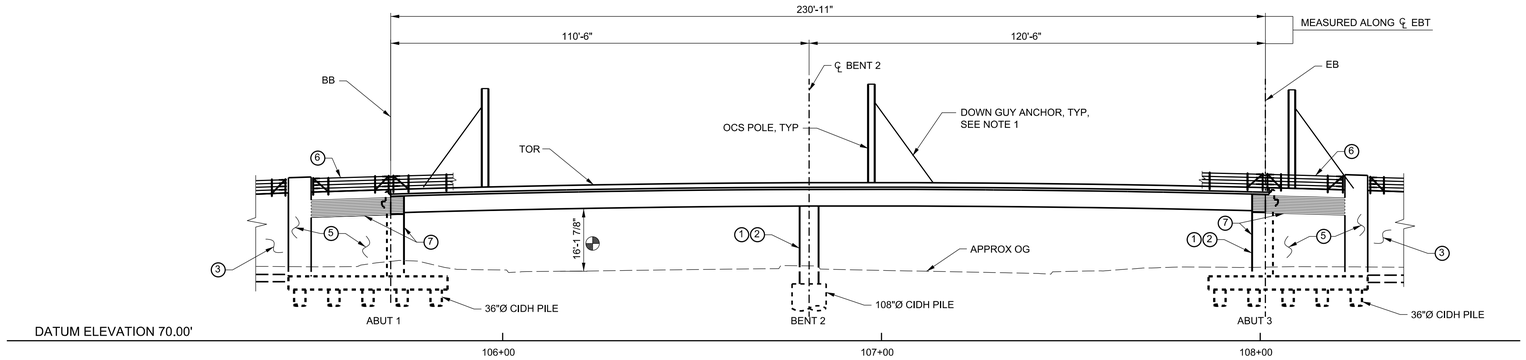
SHT-AT01-62481-R00.dgn 12/5/2017 6:06:16 AM

SHT-AT01-62481-R00.DGN



PROFILE GRADE

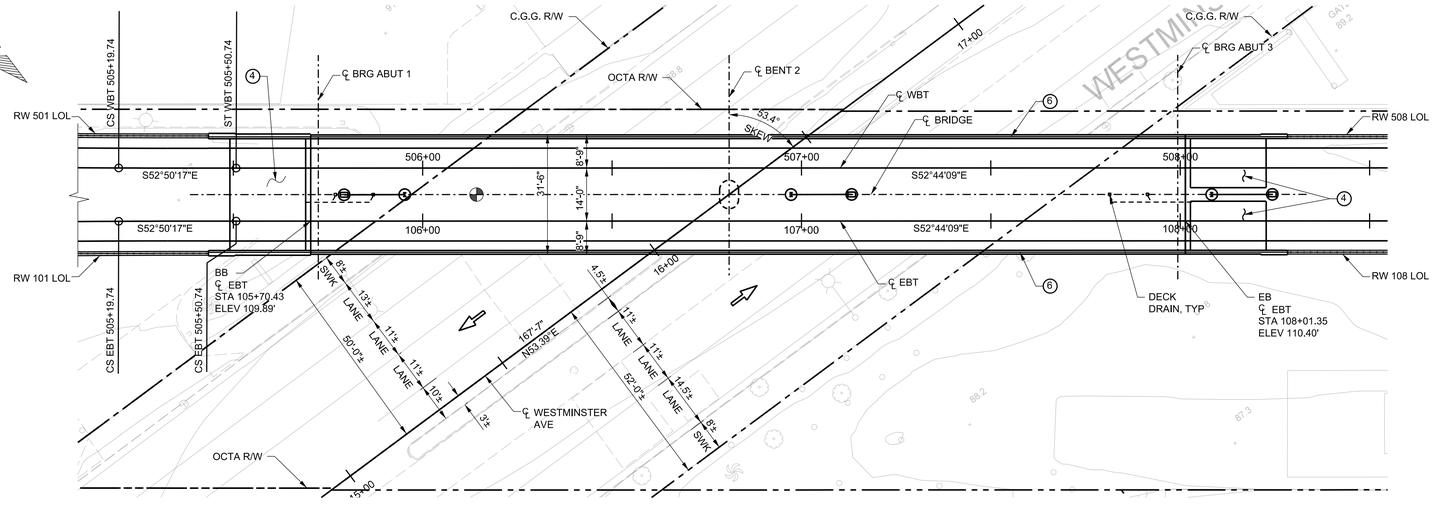
NO SCALE



ELEVATION

1"=20'

(SCALE : 1" = 20')



PLAN

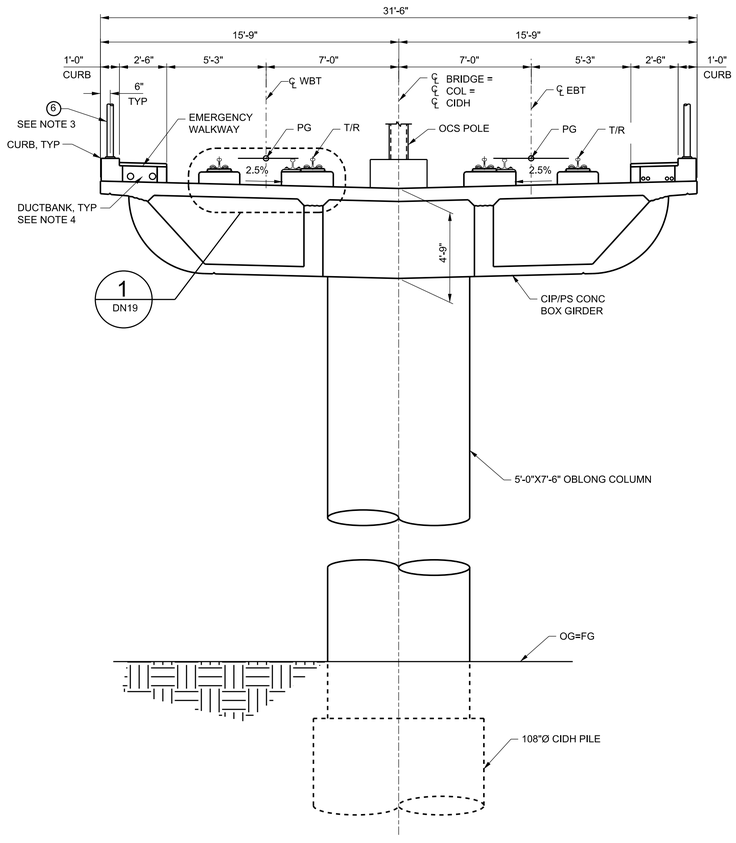
1"=20'

LEGEND

- DIRECTION OF TRAFFIC
- POINT OF MINIMUM VERTICAL CLEARANCE
- DECK DRAINS
- OCS POLE FOUNDATION
- DOWN GUY ANCHOR FOUNDATION
- (1) PAINT "BRIDGE NO.118-SA-0.13B"
- (2) PAINT BRIDGE NAME "WESTMINSTER AVENUE BRIDGE"
- (3) RETAINING WALL
- (4) STRUCTURE APPROACH
- (5) RETURN WALL
- (6) STRETCHED CABLE RAILING (MOD)
- (7) RAISED RIB RUSTICATION

NOTES:

1. FOR OCS POLE AND DOWN GUY ANCHOR LOCATIONS, SEE OCS DRAWINGS.
2. FOR RETAINING WALL DETAILS, SEE "WALL PLANS".
3. FOR SAFETY RAILING INSTALLATION DETAILS AND GROUNDING DETAILS, SEE "RAILING DETAILS" DRAWING.
4. FOR DUCTBANK LOCATION AND DETAILS, SEE SYSTEM DRAWINGS.



TYPICAL SECTION

1/4"=1'-0"

Underground Service Alert of Southern California

811 CALL: **TOLL FREE 1-800-422-4133**

TWO WORKING DAYS BEFORE YOU DIG

NOTICE TO CONTRACTOR

PURSUANT TO ASSEMBLY BILL 3019 NO EXCAVATION PERMIT IS VALID UNLESS THE CONTRACTOR CONTACTS AND OBTAINS AN INQUIRY I.D. NUMBER FROM "UNDERGROUND SERVICE ALERT" (1-800-422-4133) AT LEAST TWO WORKING DAYS PRIOR TO COMMENCING EXCAVATION.

CITY OF SANTA ANA PROJECT NO. 17-6766-C: OC STREETCAR FROM HARBOR BLVD TO SARTC

FILE NO.:

SHT-DN01-62481-R00.dgn 10/19/2017 5:07:50 PM

REVISIONS

NUMBER	DATE	INITIALS	DESCRIPTION	APPROVED	INSTALLED
A	12/2017		ISSUED FOR BID		

REFERENCES

BENCHMARK NO.: 3B-98-85 (PT. 400) ELEV.: 140.19 (NAVD 88)

FOUND 3.75" OCS ALUMINUM BENCHMARK DISK STAMPED "3B-98-5", SET IN THE NORTHWESTERLY CORNER OF A 4 FT. BY 8 FT. CONCRETE CATCH BASIN. MONUMENT IS LOCATED IN THE SOUTHEASTERLY CORNER OF THE INTERSECTION OF FRUIT STREET AND THE ATCHINSON TOPEKA AND SANTA FE RAILROAD, 23 FT. EASTERLY OF THE CENTERLINE OF THE RAILWAY, 19.5 FT. SOUTHERLY OF THE CENTERLINE OF FRUIT STREET AND 14.3 FT. WEST OF A POWER POLE (#716815E"). ORANGE COUNTY SURVEYS, PUBLIC WORKS.

REGISTERED PROFESSIONAL ENGINEER PATRICK W. PENCE RCE NO. C52680 Exp. 12/31/2018 CIVIL STATE OF CALIFORNIA

HNTB
The HNTB Companies Infrastructure Solutions
200 E. Sandpointe Ave., Ste. 200
Santa Ana, CA 92707
Phone: 714-460-1600

PREPARED UNDER THE SUPERVISION OF: P. PENCE — DATE 12/31/2018
RCE NO.: 52680
DESIGNED: P. PENCE DRAWN: L. ZHANG CHECKED: J. WANG — DATE 10/2017

PUBLIC WORKS DEPARTMENT Citizen Government Trust Authority Integrity Professionalism Service Excellence

OCTA

DOWNTOWN ORANGE COUNTY SANTA ANA

WESTMINSTER AVENUE BRIDGE

OC STREETCAR

GENERAL PLAN

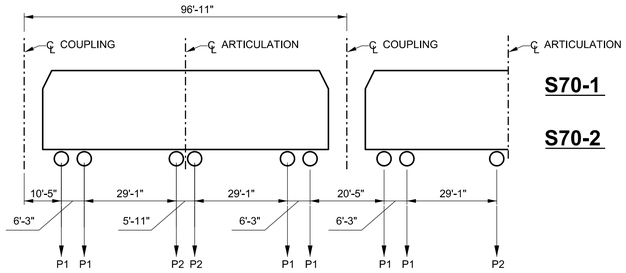
ORANGE COUNTY TRANSPORTATION AUTHORITY

DN01

SHEET 615 of 1520

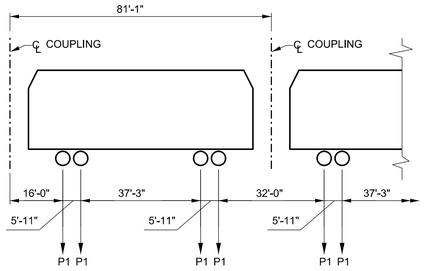
GENERAL NOTES
LOAD AND RESISTANCE FACTOR DESIGN

DESIGN:	AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, 6TH EDITION, WITH CALIFORNIA AMENDMENTS PREFACE DATED MARCH 2014 AND OC STREETCAR PROJECT BASIS OF DESIGN REPORT, DECEMBER 2016
SEISMIC DESIGN:	CALTRANS SEISMIC DESIGN CRITERIA (SDC), VERSION 1.7, DATED APRIL 2013.
ADDITIONAL DEAD LOADS:	RAILING: 250 lbs/ft (EACH SIDE) RAIL PLINTHS: 460 plf/TRACK RAIL: 130 plf/TRACK (NOT INCLUDING GUARD RAIL) DUCT BANK: 260 plf (EACH SIDE INCLUDING EMERGENCY WALKWAY) OCS POLE/OR DOWN GUY: 12 kips/SUPPORT,
LIVE LOAD:	OCTA DESIGN VEHICLES WITH AW4 LOAD (SEE "OCTA DESIGN VEHICLES" THIS SHEET).
SEISMIC LOADING:	SOIL PROFILE: V_{S30} = 755 ft/s (230 m/s) MOMENT MAGNITUDE: M_{wm} = 7.0 PEAK GROUND ACCELERATION = 0.47 g
REINFORCED CONCRETE:	fy = 60,000 psi (ASTM A706) f'c = SEE "CONCRETE STRENGTH AND TYPE LIMITS"
PRESTRESSED CONCRETE:	SEE "PRESTRESSING NOTES" ON "GIRDER LAYOUT" SHEET.
STRUCTURAL STEEL:	ASTM A709, GRADE 36 UNLESS OTHERWISE NOTED



S70-1

S70-2



CAF-3

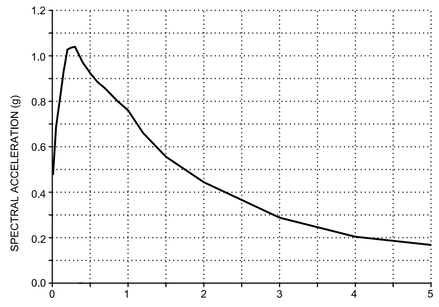
	AXLE LOAD (AW4), kips		
VEHICLE	S70-1	S70-2	CAF-3
P1	23.5	25.9	30.1
P2	27.0	22.2	-

OCTA DESIGN VEHICLES

NO SCALE

IMPACT LOAD:
VERT = 33% OF LL, HORIZ = 10% OF LL
MAX SPEED = 45 MPH

NOTE:
ALL OTHER VEHICLES AND/OR EQUIPMENT EXCEEDING THE ABOVE VALUES, TO BE EVALUATED BY ENGINEER.



DESIGN HORIZONTAL ACCELERATION RESPONSE SPECTRUM

(5% DAMPING)

INDEX TO PLANS

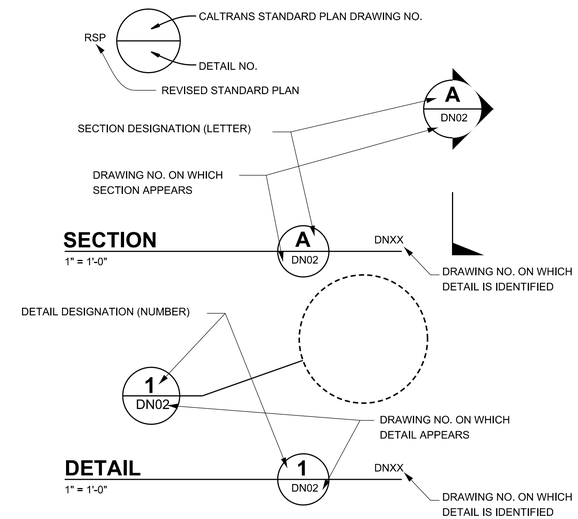
ABBREVIATIONS:

FOR ABBREVIATIONS REFER TO DRAWING AT02

CALTRANS STANDARD PLANS DATED 2015

	A10A	LEGEND LINES AND SYMBOLS (SHEET 1 OF 5)
RSP	A10B	LEGEND LINES AND SYMBOLS (SHEET 2 OF 5)
	A10C	LEGEND LINES AND SYMBOLS (SHEET 3 OF 5)
	A10D	LEGEND LINES AND SYMBOLS (SHEET 4 OF 5)
	A10E	LINES AND SYMBOLS (SHEET 5 OF 5)
	B0-1	BRIDGE DETAILS
RSP	B0-3	BRIDGE DETAILS
	B0-5	BRIDGE DETAILS
	B0-13	BRIDGE DETAILS
	B7-1	BOX GIRDER DETAILS
	B7-8	DECK DRAINAGE DETAILS
	B7-10	UTILITY OPENING - BOX GIRDER
RSP	B7-11	UTILITY DETAILS
RSP	B8-5	CAST-IN-PLACE POST-TENSIONED GIRDER DETAILS
	B14-5	WATER SUPPLY LINE (DETAILS) (PIPE SIZES LESS THAN 4")

PLAN SYMBOLS



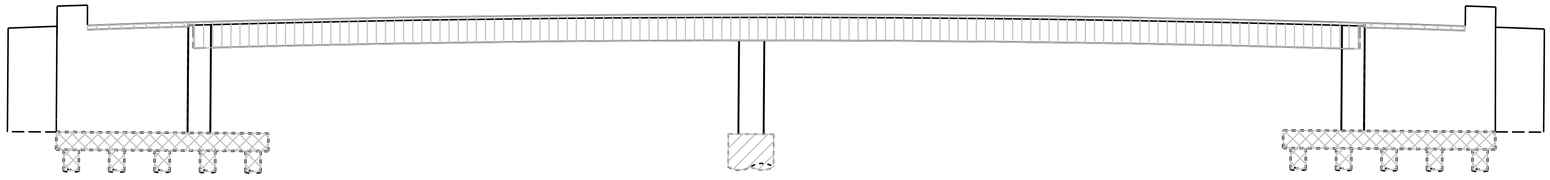
STRUCTURAL CONCRETE, BRIDGE
(f'c = 4,000 PSI @ 28 DAYS)

STRUCTURAL CONCRETE, BRIDGE FOOTING AND ABUTMENT CIDH PILE
(f'c = 4,000 PSI @ 28 DAYS)

STRUCTURAL CONCRETE, SUPERSTRUCTURE
(SEE "GIRDER LAYOUT" SHEET)

STRUCTURAL CONCRETE, APPROACH SLAB
(f'c = 4,000 PSI @ 28 DAYS)

STRUCTURAL CONCRETE, CIDH CONCRETE PILE AT BENT
(f'c = 4,000 PSI @ 28 DAYS)



CONCRETE STRENGTH AND TYPE LIMITS

NO SCALE

Underground Service Alert of Southern California
811
CALL: **TOLL FREE 1-800-422-4133**
TWO WORKING DAYS BEFORE YOU DIG

NOTICE TO CONTRACTOR

PURSUANT TO ASSEMBLY BILL 3019 NO EXCAVATION PERMIT IS VALID UNLESS THE CONTRACTOR CONTACTS AND OBTAINS AN INQUIRY I.D. NUMBER FROM "UNDERGROUND SERVICE ALERT" (1-800-422-4133) AT LEAST TWO WORKING DAYS PRIOR TO COMMENCING EXCAVATION.

FILE NO.:

REVISIONS

NUMBER	DATE	INITIALS	DESCRIPTION	APPROVED	INSTALLED
A	12/2017		ISSUED FOR BID		

REFERENCES

BENCHMARK NO.: 3B-98-85 (PT. 400) ELEV.: 140.19 (NAVD 88)
FOUND 3.75" OCS ALUMINUM BENCHMARK DISK STAMPED "3B-98-5", SET IN THE NORTHWESTERLY CORNER OF A 4 FT. BY 8 FT. CONCRETE CATCH BASIN. MONUMENT IS LOCATED IN THE SOUTHEASTERLY CORNER OF THE INTERSECTION OF FRUIT STREET AND THE ATCHINSON TOPEKA AND SANTA FE RAILROAD, 23 FT. EASTERLY OF THE CENTERLINE OF THE RAILWAY, 19.5 FT. SOUTHERLY OF THE CENTERLINE OF FRUIT STREET AND 14.3 FT. WEST OF A POWER POLE (#716815E"). ORANGE COUNTY SURVEYS, PUBLIC WORKS.

REGISTERED PROFESSIONAL ENGINEER
PATRICK W. PENCE
RCE NO. C52680
Exp. 12/31/2018
CIVIL
STATE OF CALIFORNIA

HNTB
The HNTB Companies
Infrastructure Solutions
200 E. Sandpointe Ave., Ste. 200
Santa Ana, CA 92707
Phone: 714-460-1600

PREPARED UNDER THE SUPERVISION OF:	P. PENCE		DATE
		RCE NO.: 52680	12/31/2018
DESIGNED: P. PENCE	DRAWN: L. ZHANG	CHECKED: J. WANG	10/2017

WESTMINSTER AVENUE BRIDGE

OC STREETCAR

GENERAL NOTES AND INDEX TO PLANS

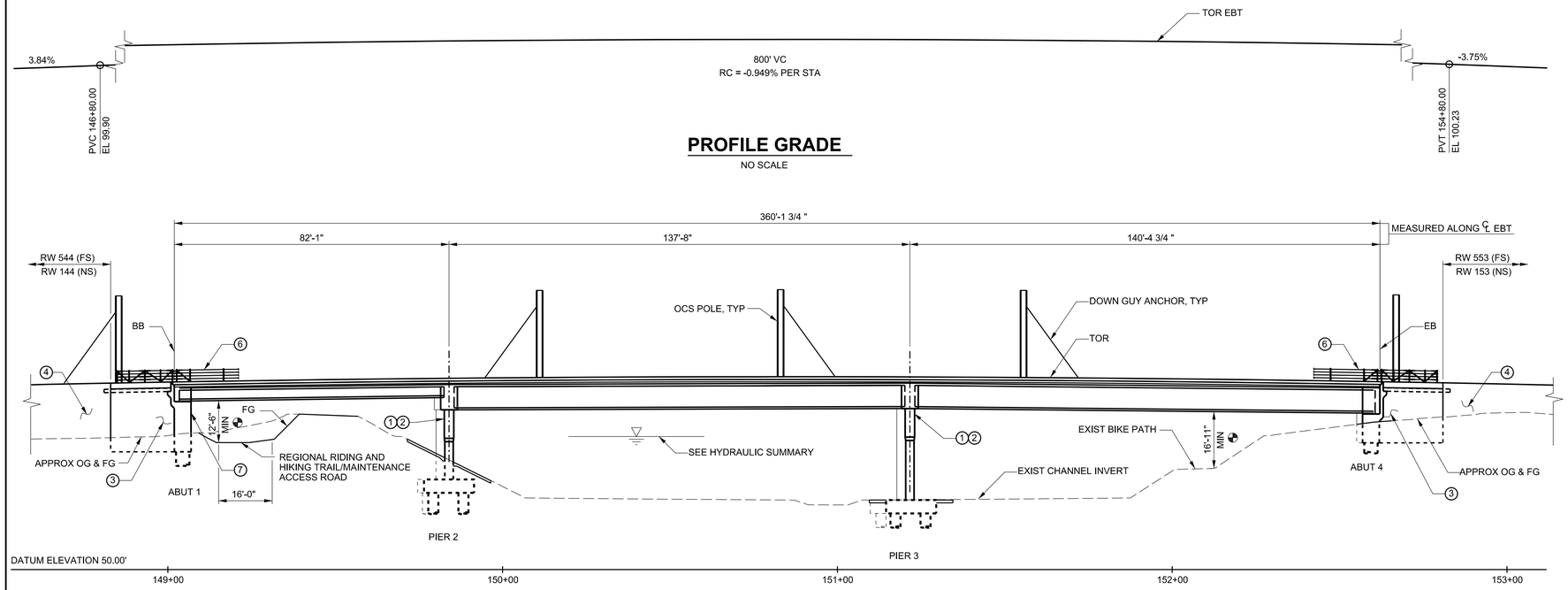
ORANGE COUNTY TRANSPORTATION AUTHORITY

DN02

SHEET 616 of 1520

CITY OF SANTA ANA PROJECT NO. 17-6766-C: OC STREETCAR FROM HARBOR BLVD TO SARTC

SHT-DN02-62481-R00.dgn 10/13/2017 5:07:56 PM

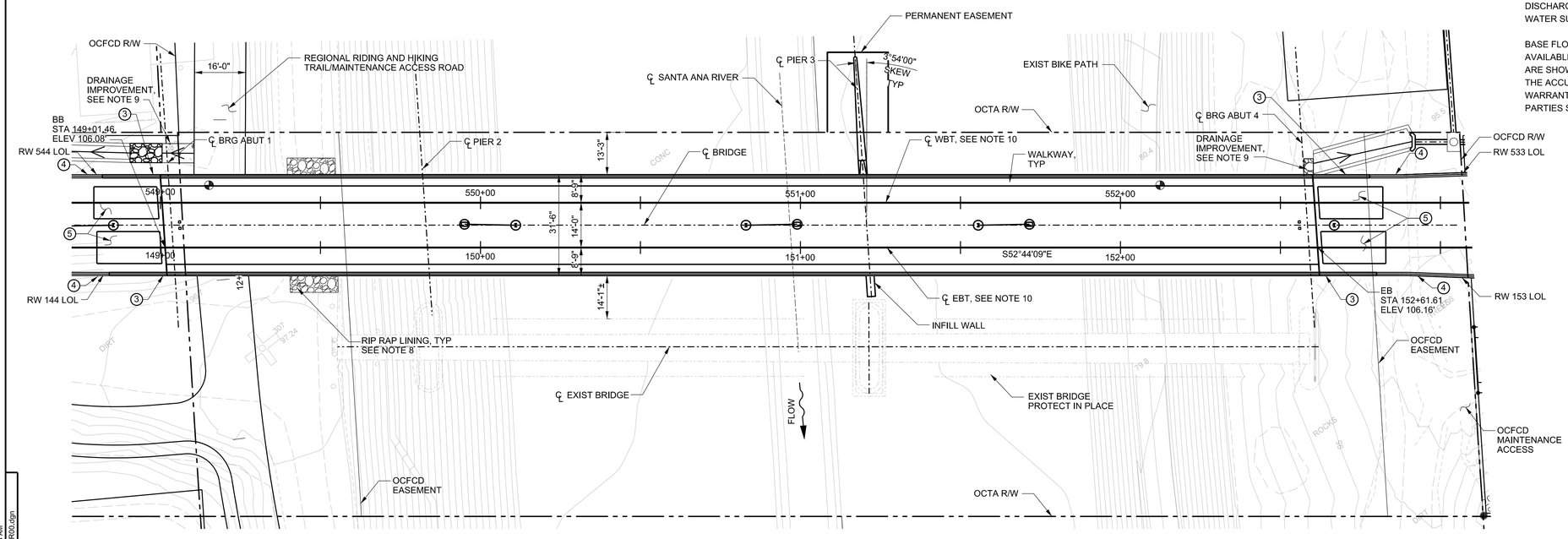


PROFILE GRADE

NO SCALE

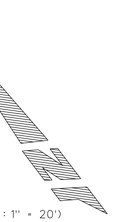
ELEVATION

1"=20'



PLAN

1"=20'



LEGEND

- EXIST STRUCTURE
- NEW CONSTRUCTION
- FLOW DIRECTION OF FLOW
- POINT OF MINIMUM VERTICAL CLEARANCE
- DECK DRAINS
- OR INDICATES OCS POLE OR DOWN GUY ANCHOR FOUNDATION
- BASE FLOOD WATER SURFACE ELEVATION AT BRIDGE
- (1) PAINT "BR NO. 118-SA-0.93B WEST" AND BR NO. 118-SA-0.98B EAST"
- (2) PAINT BRIDGE NAME "SANTA ANA RIVER BRIDGE"
- (3) RETURN WALL
- (4) RETAINING WALL
- (5) STRUCTURE APPROACH
- (6) CABLE RAILING (MOD)
- (7) CAST-IN YEAR CONSTRUCTED, SEE DN25

NOTES:

1. FOR OCS POLE AND DOWN GUY ANCHOR LOCATIONS, SEE OCS DRAWINGS.
2. FOR PILE DATA TABLE, SEE "FOUNDATION PLAN" DRAWING.
3. UTILITY CALL OUT NOT SHOWN FOR CLARITY. SEE "FOUNDATION PLAN".
4. ALL STATIONS ARE ALONG ℄ EBT UNLESS NOTED OTHERWISE.
5. FOR BRIDGE RAILING DETAILS, SEE "RAILING DETAILS" DRAWING.
6. FOR TYPICAL SECTIONS, SEE "GENERAL PLAN NO.2" DRAWING.
7. FOR GENERAL NOTES, SEE "GENERAL NOTES AND INDEX TO PLANS" DRAWING.
8. FOR RIP RAP LINING DETAILS, SEE "CIVIL IMPROVEMENTS PLANS", DRAWING CA38.
9. FOR DRAINAGE IMPROVEMENT DETAILS, SEE DRAWINGS CA07 & CA08.
10. FOR TRACK ALIGNMENT DATA, SEE DRAWINGS TG03 & TG07.

HYDRAULIC SUMMARY

	BASE FLOOD
FREQUENCY (YEARS)	190
DISCHARGE (CUBIC FEET PER SECOND)	46,000
WATER SURFACE ELEVATION AT BRIDGE (FEET)	86.98 (NAVD 88)

BASE FLOOD DATA ARE BASED UPON INFORMATION AVAILABLE WHEN THE PLANS WERE PREPARED AND ARE SHOWN TO MEET FEDERAL REQUIREMENTS. THE ACCURACY OF SAID INFORMATION IS NOT WARRANTED BY THE CITY AND INTERESTED OR AFFECTED PARTIES SHOULD MAKE THEIR OWN INVESTIGATION.

Underground Service Alert of Southern California

CALL: **TOLL FREE 1-800-422-4133**

TWO WORKING DAYS BEFORE YOU DIG

NOTICE TO CONTRACTOR

PURSUANT TO ASSEMBLY BILL 3019 NO EXCAVATION PERMIT IS VALID UNLESS THE CONTRACTOR CONTACTS AND OBTAINS AN INQUIRY I.D. NUMBER FROM "UNDERGROUND SERVICE ALERT" (1-800-422-4133) AT LEAST TWO WORKING DAYS PRIOR TO COMMENCING EXCAVATION.

CITY OF SANTA ANA PROJECT NO. 17-6766-C: OC STREETCAR FROM HARBOR BLVD TO SARTC

FILE NO.:

SHT-DN23-52481-R00.dgn 10/29/2017 10:42:44 AM

REVISIONS

NUMBER	DATE	INITIALS	DESCRIPTION	APPROVED	INSTALLED
A	12/2017		ISSUED FOR BID		

REFERENCES

BENCHMARK NO.: 3B-98-85 (PT. 400) ELEV.: 140.19 (NAVD 88)

FOUND 3.75" OCS ALUMINUM BENCHMARK DISK STAMPED "3B-98-5", SET IN THE NORTHWESTERLY CORNER OF A 4 FT. BY 8 FT. CONCRETE CATCH BASIN. MONUMENT IS LOCATED IN THE SOUTHEASTERLY CORNER OF THE INTERSECTION OF FRUIT STREET AND THE ATCHINSON TOPEKA AND SANTA FE RAILROAD, 23 FT. EASTERLY OF THE CENTERLINE OF THE RAILWAY, 19.5 FT. SOUTHERLY OF THE CENTERLINE OF FRUIT STREET AND 14.3 FT. WEST OF A POWER POLE (#716815E"). ORANGE COUNTY SURVEYS, PUBLIC WORKS.

REGISTERED PROFESSIONAL ENGINEER — MICHAEL VAN DUYN — RCE NO. 55950 — Exp. 12/31/2018 — STRUCTURAL — STATE OF CALIFORNIA

HNTB
The HNTB Companies
Infrastructure Solutions
200 E. Sandpointe Ave., Ste. 200
Santa Ana, CA 92707
Phone: 714-460-1600

PREPARED UNDER THE SUPERVISION OF: MICHAEL VAN DUYN		DATE
	RCE NO.: 5950	12/31/2018
DESIGNED: P. PENCE DRAWN: L. ZHANG	CHECKED: J. WANG	10/2017

DN23

SANTA ANA RIVER BRIDGE

OC STREETCAR

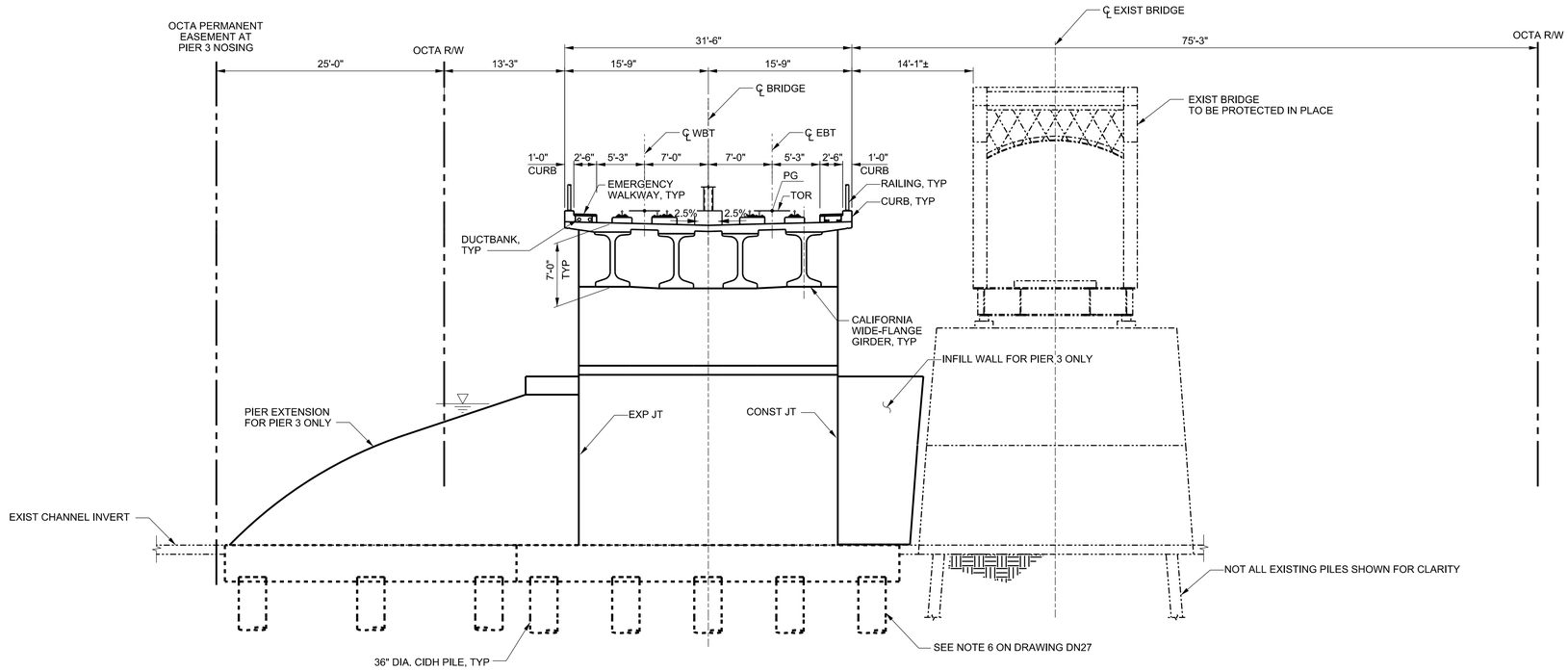
GENERAL PLAN NO. 1

ORANGE COUNTY TRANSPORTATION AUTHORITY

SHEET 637 of 1520

LEGEND

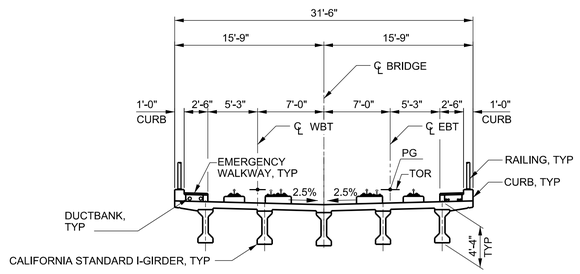
- EXIST STRUCTURE
- NEW CONSTRUCTION
- BASED FLOOD WATER SURFACE ELEVATION AT BRIDGE



TYPICAL SECTION

1/8"=1'-0"

(SPAN 2 AND 3 SHOWN)



TYPICAL SECTION

1/8"=1'-0"

(SPAN 1 SHOWN)

CITY OF SANTA ANA PROJECT NO. 17-6766-C: OC STREETCAR FROM HARBOR BLVD TO SARTC

Underground Service Alert of Southern California

CALL: **TOLL FREE 1-800-422-4133**

TWO WORKING DAYS BEFORE YOU DIG

NOTICE TO CONTRACTOR

PURSUANT TO ASSEMBLY BILL 3019 NO EXCAVATION PERMIT IS VALID UNLESS THE CONTRACTOR CONTACTS AND OBTAINS AN INQUIRY I.D. NUMBER FROM "UNDERGROUND SERVICE ALERT" (1-800-422-4133) AT LEAST TWO WORKING DAYS PRIOR TO COMMENCING EXCAVATION.

FILE NO.:

SHT-DN24-52481-R00.dgn 10/25/2017 10:42:59 AM

REVISIONS

NUMBER	DATE	INITIALS	DESCRIPTION	APPROVED	INSTALLED
A	12/2017		ISSUED FOR BID		

REFERENCES

BENCHMARK NO.: 3B-98-85 (PT. 400) ELEV.: 140.19 (NAVD 88)

FOUND 3.75" OCS ALUMINUM BENCHMARK DISK STAMPED "3B-98-5", SET IN THE NORTHWESTERLY CORNER OF A 4 FT. BY 8 FT. CONCRETE CATCH BASIN. MONUMENT IS LOCATED IN THE SOUTHEASTERLY CORNER OF THE INTERSECTION OF FRUIT STREET AND THE ATCHINSON TOPEKA AND SANTA FE RAILROAD, 23 FT. EASTERLY OF THE CENTERLINE OF THE RAILWAY, 19.5 FT. SOUTHERLY OF THE CENTERLINE OF FRUIT STREET AND 14.3 FT. WEST OF A POWER POLE (#716815E"). ORANGE COUNTY SURVEYS, PUBLIC WORKS.

REGISTERED PROFESSIONAL ENGINEER — MICHAEL VAN DUYN — RCE NO. 55950 — Exp. 12/31/2018 — STRUCTURAL — STATE OF CALIFORNIA

HNTB
The HNTB Companies
Infrastructure Solutions
200 E. Sandpointe Ave., Ste. 200
Santa Ana, CA 92707
Phone: 714-460-1600

PREPARED UNDER THE SUPERVISION OF:	MICHAEL VAN DUYN	DATE
	RCE NO.: 5950	12/31/2018
DESIGNED: P. PENCE	DRAWN: L. ZHANG	CHECKED: J. WANG	10/2017

DN24

SANTA ANA RIVER BRIDGE

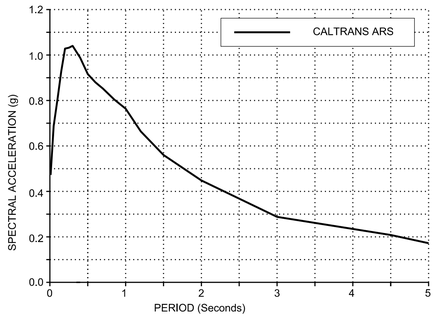
OC STREETCAR

GENERAL PLAN NO. 2

ORANGE COUNTY TRANSPORTATION AUTHORITY

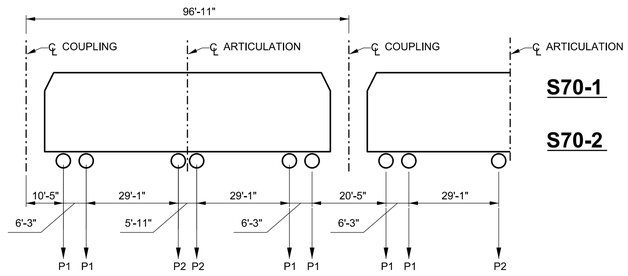
GENERAL NOTES
LOAD AND RESISTANCE FACTOR DESIGN

DESIGN:	AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, 6TH EDITION, WITH THE CALIFORNIA AMENDMENTS PREFACE DATED MARCH 2014 AND THE OC STREETCAR PROJECT BASIS OF DESIGN REPORT, DECEMBER 2016
SEISMIC DESIGN:	CALTRANS SEISMIC DESIGN CRITERIA (SDC), VERSION 1.7, DATED APRIL 2013.
ADDITIONAL DEAD LOADS:	RAILING: 250 lbs/ft (EACH SIDE) RAIL PLINTHS: 460 plf/TRACK RAIL: 130 plf/TRACK (NOT INCLUDING GUARD RAIL) DUCT BANK: 260 plf (EACH SIDE INCLUDING EMERGENCY WALKWAY) OCS POLE OR DOWN GUY: 12.0 kips/SUPPORT
LIVE LOAD:	OCTA DESIGN VEHICLES WITH AW4 LOAD (SEE "OCTA DESIGN VEHICLES" THIS DRAWING).
SEISMIC LOADING:	SHEAR WAVE VELOCITY: V_{S30} = 230 M/S (755 FT/S) MOMENT MAGNITUDE: M_{MAX} = 7.0 PEAK GROUND ACCELERATION = 0.47 g
REINFORCED CONCRETE:	fy = 60 KSI f'c = SEE "CONCRETE STRENGTH AND TYPE LIMITS"
PRESTRESSED CONCRETE:	SEE "PRESTRESSING NOTES" ON "GIRDER DETAILS" DRAWINGS
STRUCTURAL STEEL:	ASTM A709, GRADE 36 UNLESS OTHERWISE NOTED



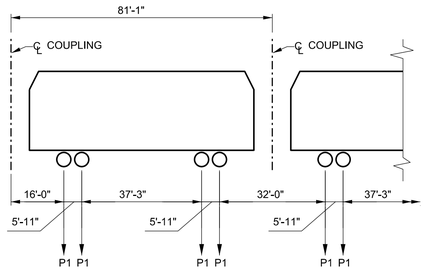
DESIGN HORIZONTAL ACCELERATION RESPONSE SPECTRUM

(5% DAMPING)



S70-1

S70-2



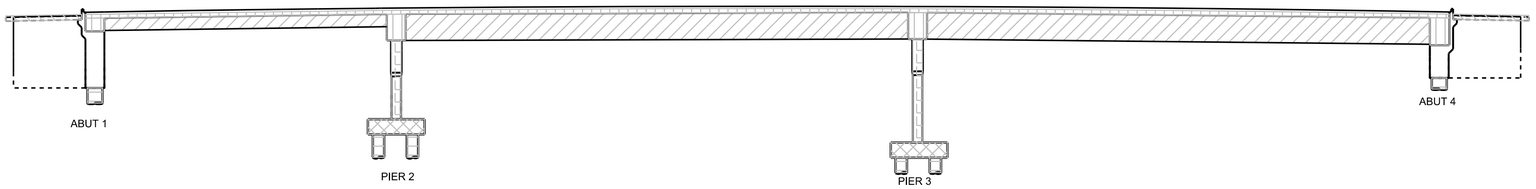
CAF-3

VEHICLE	AXLE LOAD (AW4), kips		
	S70-1	S70-2	CAF-3
P1	23.5	25.9	30.1
P2	27.0	22.2	-

OCTA DESIGN VEHICLES

NO SCALE

NOTE:
ALL OTHER VEHICLES AND/OR EQUIPMENT DIFFERING FROM THE ABOVE VALUES, TO BE EVALUATED BY ENGINEER.



CONCRETE STRENGTH AND TYPE LIMITS

- STRUCTURAL CONCRETE (BRIDGE ABUT STEM WALL AND RETRUN WALL) (4,000 PSI @ 28 DAYS)
- STRUCTURAL CONCRETE, BRIDGE FOOTING (PILE CAP) (4,000 PSI @ 28 DAYS)
- STRUCTURAL CONCRETE, BRIDGE (BRIDGE DECK AND DIAPHRAGM) (4,500 PSI @ 28 DAYS)
- PRECAST PRESTRESSED CA STANDARD I-GIRDER AND CALIFORNIA WIDE FLANGE GIRDER (9,000 PSI @ 28 DAYS)
- STRUCTURAL CONCRETE, APPROACH SLAB (4,000 PSI @ 28 DAYS)
- CIDH CONCRETE PILE (4,000 PSI @ 28 DAYS)
- STRUCTURAL CONCRETE (PIER WALL, PIER NOSING AND PIER INFILL WALL) (4,000 PSI @ 28 DAYS)

INDEX TO PLANS

CALTRANS STANDARD PLANS DATED 2015

	A10A	LEGEND - LINES AND SYMBOLS (SHEET 1 OF 5)
RSP	A10B	LEGEND - LINES AND SYMBOLS (SHEET 2 OF 5)
	A10C	LEGEND - LINES AND SYMBOLS (SHEET 3 OF 5)
	A10D	LEGEND - LINES AND SYMBOLS (SHEET 4 OF 5)
	A10E	LEGEND - LINES AND SYMBOLS (SHEET 5 OF 5)
	A62B	LIMITS OF PAYMENT FOR EXCAVATION AND BACKFILL- BRIDGE SURCHARGE AND WALL
	A62C	LIMITS OF PAYMENT FOR EXCAVATION AND BACKFILL- BRIDGE
	B0-1	BRIDGE DETAILS
RSP	B0-3	BRIDGE DETAILS
	B0-5	BRIDGE DETAILS
	B0-13	BRIDGE DETAILS
RSP	B3-1A,B,C	RETAINING WALL TYPE 1 (CASE 1, 2, 3)
	B3-5	RETAINING WALL DETAILS NO. 1
	B3-6	RETAINING WALL DETAILS NO. 2
	B6-10	UTILITY OPENINGS, T-BEAM
	B7-1	BOX GIRDER DETAILS
	B7-8	DECK DRAINAGE DETAILS
	B7-10	UTILITY OPENING - BOX GIRDER
RSP	B7-11	UTILITY DETAILS
RSP	B8-5	CAST-IN-PLACE PRESTRESSED GIRDER DETAILS
RSP	B11-54	CONCRETE BARRIER TYPE 26
	B14-5	WATER SUPPLY LINE (DETAILS) (PIPE SIZES LESS THAN 4")
	T-3A,B	TEMPORARY RAILING (TYPE K)
RSP	T4	TEMPORARY TRAFFIC SCREEN

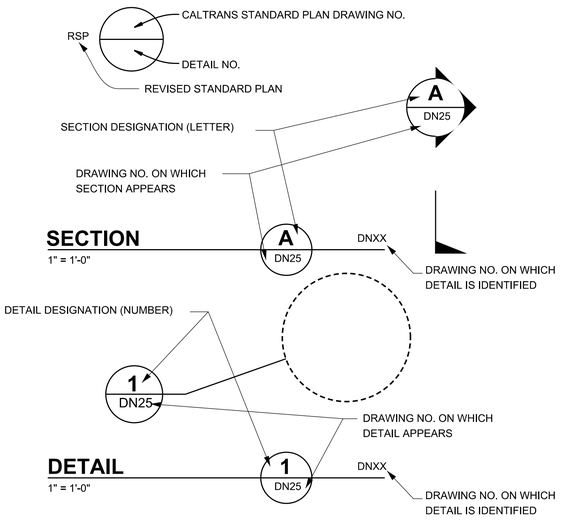
ABBREVIATIONS:

FOR ABBREVIATIONS REFER TO DRAWING AT02

REINFORCED CONCRETE

WHERE INDICATED, CAST-IN THE YEAR CONSTRUCTED WITH MINIMUM 6" TALL AND 1" DEEP NUMBERS.

PLAN SYMBOLS



Underground Service Alert of Southern California

811 CALL: **TOLL FREE 1-800-422-4133**

TWO WORKING DAYS BEFORE YOU DIG

NOTICE TO CONTRACTOR

PURSUANT TO ASSEMBLY BILL 3019 NO EXCAVATION PERMIT IS VALID UNLESS THE CONTRACTOR CONTACTS AND OBTAINS AN INQUIRY I.D. NUMBER FROM "UNDERGROUND SERVICE ALERT" (1-800-422-4133) AT LEAST TWO WORKING DAYS PRIOR TO COMMENCING EXCAVATION.

CITY OF SANTA ANA PROJECT NO. 17-6766-C: OC STREETCAR FROM HARBOR BLVD TO SARTC

10/26/2017 10:42:56 AM SHT-DN25-82481-R00.dgn

SHT-DN25-82481-R00.dgn 10/26/2017

FILE NO.:

REVISIONS

NUMBER	DATE	INITIALS	DESCRIPTION	APPROVED	INSTALLED
A	12/2017		ISSUED FOR BID		

REFERENCES

BENCHMARK NO.: 3B-98-85 (PT. 400) ELEV.: 140.19 (NAVD 88)

FOUND 3.75" OCS ALUMINUM BENCHMARK DISK STAMPED "3B-98-5", SET IN THE NORTHWESTERLY CORNER OF A 4 FT. BY 8 FT. CONCRETE CATCH BASIN. MONUMENT IS LOCATED IN THE SOUTHEASTERLY CORNER OF THE INTERSECTION OF FRUIT STREET AND THE ATCHINSON TOPEKA AND SANTA FE RAILROAD, 23 FT. EASTERLY OF THE CENTERLINE OF THE RAILWAY, 19.5 FT. SOUTHERLY OF THE CENTERLINE OF FRUIT STREET AND 14.3 FT. WEST OF A POWER POLE (#716815E"). ORANGE COUNTY SURVEYS, PUBLIC WORKS.

REGISTERED PROFESSIONAL ENGINEER MICHAEL VAN DUYN RCE NO. 55950 Exp. 12/31/2018 STRUCTURAL STATE OF CALIFORNIA

HNTB
The HNTB Companies Infrastructure Solutions
200 E. Sandpointe Ave., Ste. 200
Santa Ana, CA 92707
Phone: 714-460-1600

PREPARED UNDER THE SUPERVISION OF:	MICHAEL VAN DUYN	DATE
	RCE NO.: 5950	12/31/2018
DESIGNED: P. PENCE	DRAWN: L. ZHANG CHECKED: J. WANG	10/2017

PUBLIC WORKS DEPARTMENT Garden Grove Youth & Ambition

OCTA

DOWNTOWN ORANGE COUNTY SANTA ANA

SANTA ANA RIVER BRIDGE

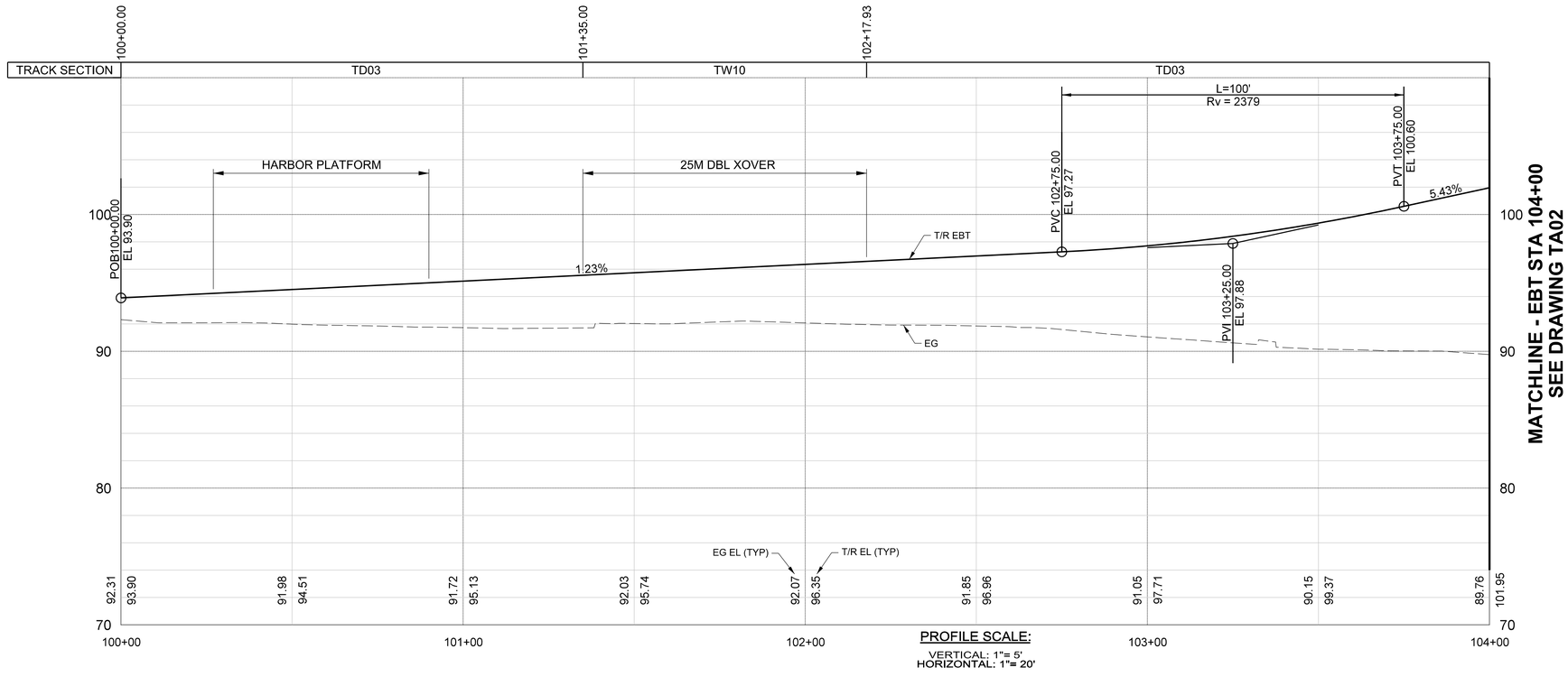
OC STREETCAR

GENERAL NOTES AND INDEX TO PLANS

ORANGE COUNTY TRANSPORTATION AUTHORITY

DN25

SHEET 639 of 1520

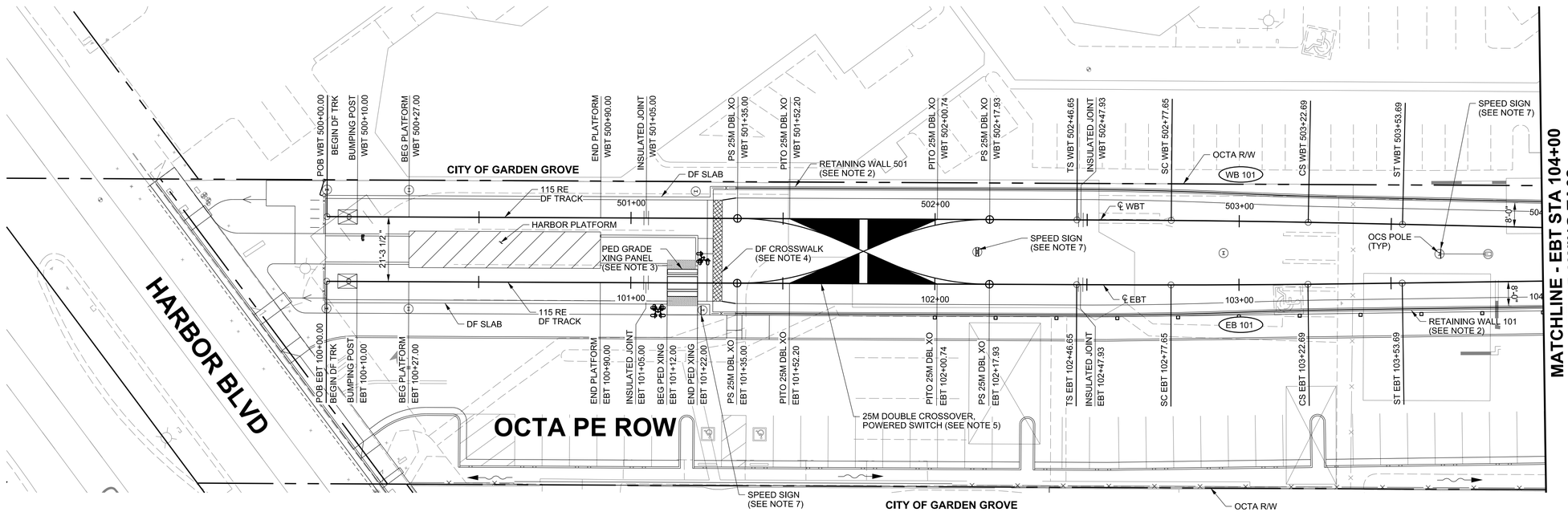


PROFILE SCALE:
VERTICAL: 1"= 5'
HORIZONTAL: 1"= 20'

MATCHLINE - EBT STA 104+00
SEE DRAWING TA02

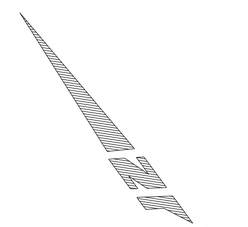
NOTES:

1. STATIONING AND PROFILE GRADES ARE BASED ON EASTBOUND TRACK (EBT). ELEVATION OF WESTBOUND TRACK (WBT) IS EQUAL TO PERPENDICULAR HORIZONTAL PROJECTION OF EBT UNLESS OTHERWISE NOTED.
2. FOR WALL DETAILS, SEE WALL DRAWINGS ND01-ND06, NN01-NN14, AND NS01-NS02.
3. FOR PEDESTRIAN GRADE CROSSING DETAILS, SEE DRAWING TD14.
4. FOR DIRECT FIXATION TRACK MAINTENANCE CROSSWALK, SEE DRAWING TD27.
5. FOR DIRECT FIXATED DOUBLE CROSSOVER DETAILS SEE DRAWING TW10.
6. UTILITIES SHOWN ARE FOR REFERENCE ONLY. FOR DETAILED UTILITY INFORMATION, SEE UTILITY PLANS CU01-CU29.
7. FOR SPEED SIGN DETAILS, SEE DRAWING TD25.



MATCHLINE - EBT STA 104+00
SEE DRAWING TA02

CURVE NO	V (MPH)	RADIUS (FT)	SPIRAL (FT)	Ea (IN)	Eu (IN)
WB 101	30	4110.00	31.00	0.50	0.37
EB 101	30	4110.00	31.00	0.50	0.37



Underground Service Alert
of Southern California
CALL: **TOLL FREE 1-800-422-4133**
TWO WORKING DAYS
BEFORE YOU DIG

NOTICE TO CONTRACTOR

PURSUANT TO ASSEMBLY BILL 3019 NO EXCAVATION PERMIT IS VALID UNLESS THE CONTRACTOR CONTACTS AND OBTAINS AN INQUIRY I.D. NUMBER FROM "UNDERGROUND SERVICE ALERT" (1-800-422-4133) AT LEAST TWO WORKING DAYS PRIOR TO COMMENCING EXCAVATION.

CITY OF SANTA ANA PROJECT NO. 17-6766-C: OC STREETCAR FROM HARBOR BLVD TO SARTC

SHT-TA01-62481-R00.dgn 10/20/2017 11:35:43 AM

FILE NO.:

REVISIONS

NUMBER	DATE	INITIALS	DESCRIPTION	APPROVED	INSTALLED
A	12/2017		ISSUED FOR BID		

REFERENCES

BENCHMARK NO.: 3B-98-85 (PT. 400) ELEV.: 140.19 (NAVD 88)

FOUND 3.75" OCS ALUMINUM BENCHMARK DISK STAMPED "3B-98-5", SET IN THE NORTHWESTERLY CORNER OF A 4 FT. BY 8 FT. CONCRETE CATCH BASIN. MONUMENT IS LOCATED IN THE SOUTHEASTERLY CORNER OF THE INTERSECTION OF FRUIT STREET AND THE ATCHINSON TOPEKA AND SANTA FE RAILROAD, 23 FT. EASTERLY OF THE CENTERLINE OF THE RAILWAY, 19.5 FT. SOUTHERLY OF THE CENTERLINE OF FRUIT STREET AND 14.3 FT. WEST OF A POWER POLE (#716815E"). ORANGE COUNTY SURVEYS. PUBLIC WORKS.

REGISTERED PROFESSIONAL ENGINEER
STEPHANIE N. JEFFERY
RCE NO. 77387
Exp. 06/30/2019
CIVIL
STATE OF CALIFORNIA

HNTB
The HNTB Companies
Infrastructure Solutions
200 E. Sandpointe Ave., Ste. 200
Santa Ana, CA 92707
Phone: 714-460-1600

PREPARED UNDER THE SUPERVISION OF: N. JEFFERY			DATE
		RCE NO.: 77387	12/2018
DESIGNED: N. JEFFERY	DRAWN: C. KATZ	CHECKED: C. COFFMAN	10/2017

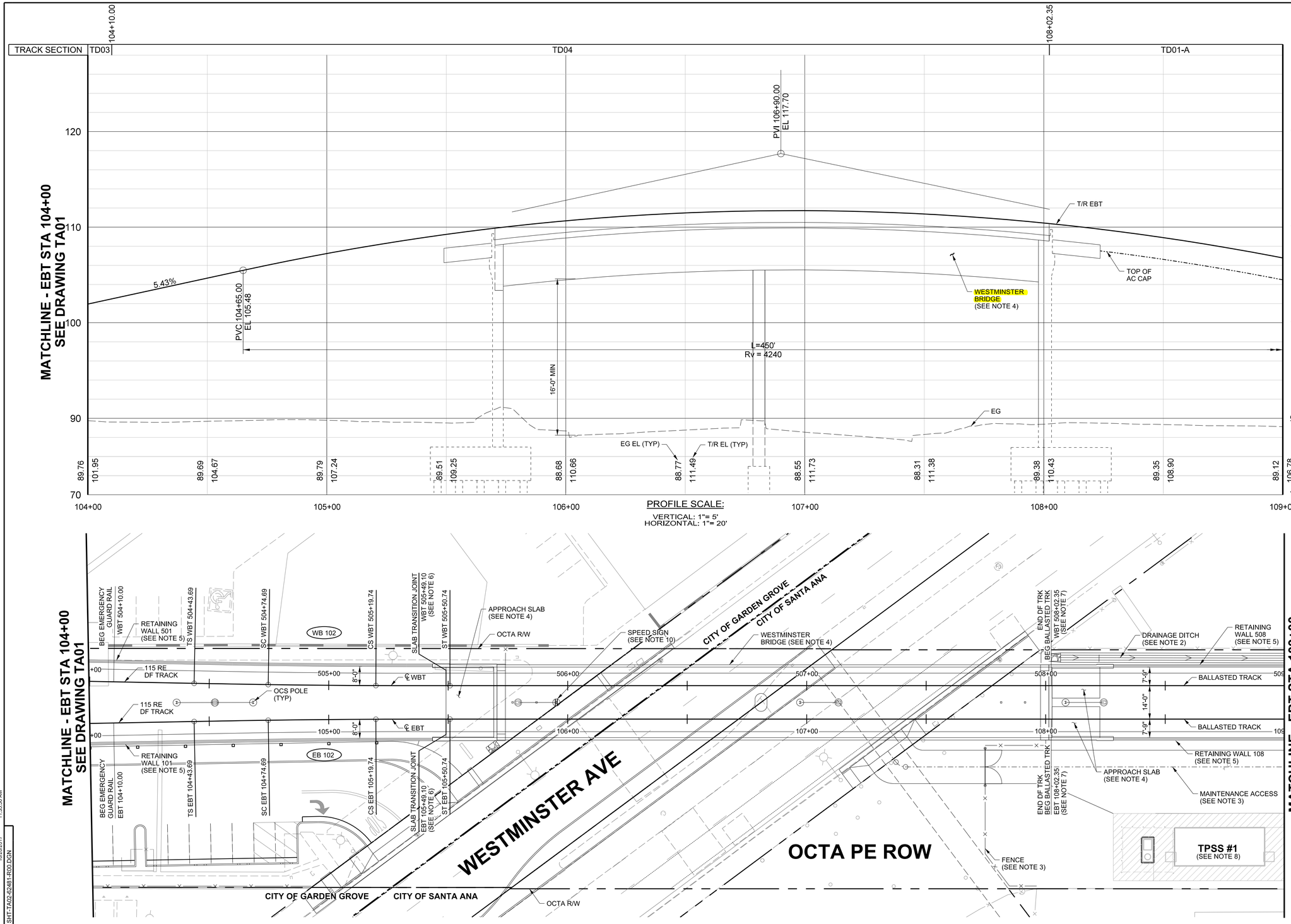
TRACK ALIGNMENT PLAN AND PROFILE

TA01

OC STREETCAR

EBT STA 100+00 - STA 104+00

ORANGE COUNTY TRANSPORTATION AUTHORITY



NOTES:

1. STATIONING AND PROFILE GRADES ARE BASED ON EASTBOUND TRACK (EBT). ELEVATION OF WESTBOUND TRACK (WBT) IS EQUAL TO PERPENDICULAR HORIZONTAL PROJECTION OF EBT UNLESS OTHERWISE NOTED.
2. FOR DRAINAGE DETAILS, SEE CIVIL PLANS CA01-CA40.
3. FOR ACCESS AND FENCE DETAILS, SEE CIVIL PLANS CA01-CA40.
4. FOR BRIDGE DETAILS, SEE BRIDGE PLANS DN01-DN58.
5. FOR WALL DETAILS, SEE WALL PLANS ND01-ND06, NN01-NN14, AND NS01-NS02.
6. FOR SLAB TRANSITION JOINT DETAILS, SEE DRAWING TD05, DETAIL 1.
7. FOR TRANSITION DETAILS BETWEEN DIRECT FIXATION AND BALLASTED TRACK, SEE DRAWING TD24.
8. FOR TRACTION POWER SUBSTATION DETAILS, SEE TRACTION POWER PLANS.
9. UTILITIES ARE SHOWN FOR REFERENCE ONLY. FOR DETAILED UTILITY INFORMATION, SEE UTILITY PLANS CU01-CU29.
10. FOR SPEED SIGN DETAILS, SEE DRAWING TD25.

CURVE NO	V (MPH)	RADIUS (FT)	SPIRAL (FT)	Ea (IN)	Eu (IN)
WB 102	30	4110.00	31.00	0.50	0.37
EB 102	30	4110.00	31.00	0.50	0.37

(SCALE : 1" = 20')

Underground Service Alert
of Southern California
CALL: **TOLL FREE 1-800-422-4133**
TWO WORKING DAYS
BEFORE YOU DIG

NOTICE TO CONTRACTOR

PURSUANT TO ASSEMBLY BILL 3019 NO EXCAVATION PERMIT IS VALID UNLESS THE CONTRACTOR CONTACTS AND OBTAINS AN INQUIRY I.D. NUMBER FROM "UNDERGROUND SERVICE ALERT" (1-800-422-4133) AT LEAST TWO WORKING DAYS PRIOR TO COMMENCING EXCAVATION.

CITY OF SANTA ANA PROJECT NO. 17-6766-C: OC STREETCAR FROM HARBOR BLVD TO SARTC

FILE NO.:

SHT-TA02-62481-R00.dgn 10/20/2017 11:35:50 AM

REVISIONS

NUMBER	DATE	INITIALS	DESCRIPTION	APPROVED	INSTALLED
A	12/2017		ISSUED FOR BID		

REFERENCES

BENCHMARK NO.: 3B-98-85 (PT. 400) ELEV.: 140.19 (NAVD 88)

FOUND 3.75" OCS ALUMINUM BENCHMARK DISK STAMPED "3B-98-5", SET IN THE NORTHWESTERLY CORNER OF A 4 FT, BY 8 FT, CONCRETE CATCH BASIN. MONUMENT IS LOCATED IN THE SOUTHEASTERLY CORNER OF THE INTERSECTION OF FRUIT STREET AND THE ATCHINSON TOPEKA AND SANTA FE RAILROAD, 23 FT. EASTERLY OF THE CENTERLINE OF THE RAILWAY, 19.5 FT. SOUTHERLY OF THE CENTERLINE OF FRUIT STREET AND 14.3 FT. WEST OF A POWER POLE (#716815E"). ORANGE COUNTY SURVEYS, PUBLIC WORKS.

REGISTERED PROFESSIONAL ENGINEER
STEPHANIE N. JEFFERY
RCE NO. 77387
Exp. 06/30/2019
CIVIL
STATE OF CALIFORNIA

HNTB
The HNTB Companies
Infrastructure Solutions
200 E. Sandpointe Ave., Ste. 200
Santa Ana, CA 92707
Phone: 714-460-1600

PREPARED UNDER THE SUPERVISION OF: N. JEFFERY			DATE
		RCE NO.: 77387	12/2018
DESIGNED: N. JEFFERY	DRAWN: C. KATZ	CHECKED: C. COFFMAN	10/2017

TRACK ALIGNMENT PLAN AND PROFILE

TA02

OC STREETCAR

EBT STA 104+00 - STA 109+00

ORANGE COUNTY TRANSPORTATION AUTHORITY

TRACK SECTION

TD01-A

MATCHLINE - EBT STA 109+00
SEE DRAWING TA02

MATCHLINE - EBT STA 114+00
SEE DRAWING TA04

L=450'
Rv = 4240

PVT 109+15.00
EL 106.03

-5.19%

PVC 110+50.00
EL 99.03

L=240'
Rv = 4814

PVI 111+70.00
EL 92.81

PVT 112+90.00
EL 92.57

-0.20%

TOP OF
AC CAP

T/R EBT

EG

EG EL (TYP)

T/R EL (TYP)

5'x3' RCB
(SEE NOTE 2)

89.12	106.78	89.02	104.22	88.61	101.62	88.47	99.03	88.62	96.70	88.52	94.88	88.68	93.59	88.56	92.81	88.36	92.55	88.84	92.45	89.02	92.35

109+00 110+00 111+00 112+00 113+00 114+00

PROFILE SCALE:
VERTICAL: 1"= 5'
HORIZONTAL: 1"= 20'

MATCHLINE - EBT STA 109+00
SEE DRAWING TA02

MATCHLINE - EBT STA 114+00
SEE DRAWING TA04

SPEED SIGN
(SEE NOTE 6)

RETAINING WALL 508
(SEE NOTE 4)

END EMERGENCY
GUARD RAIL
WBT 510+15.00

DRAINAGE DITCH
(SEE NOTE 2)

CITY OF SANTA ANA

OCTA R/W

510+00 511+00 512+00 513+00

℄ WBT

115 RE BALLASTED TRACK

OCS POLE
(TYP)

7'-9"
14'-0"
7'-9"

110+00 111+00 112+00 113+00

℄ EBT

115 RE BALLASTED TRACK

RETAINING WALL 108
(SEE NOTE 4)

END EMERGENCY
GUARD RAIL
EBT 110+15.00

OCTA PE ROW

SPEED SIGN
(SEE NOTE 6)

5'X3' RCB
(SEE NOTE 2)

5' SEWER
EASEMENT

CITY OF SANTA ANA

OCTA R/W

(SCALE : 1" = 20')

NOTES:

1. STATIONING AND PROFILE GRADES ARE BASED ON EASTBOUND TRACK (EBT). ELEVATION OF WESTBOUND TRACK (WBT) IS EQUAL TO PERPENDICULAR HORIZONTAL PROJECTION OF EBT UNLESS OTHERWISE NOTED.
2. FOR DRAINAGE DETAILS, SEE CIVIL PLANS CA01-CA40.
3. FOR ACCESS DETAILS, SEE CIVIL PLANS CA01-CA40.
4. FOR WALL DETAILS, SEE WALL PLANS ND01-ND06, NN01-NN14, AND NS01-NS02.
5. UTILITIES ARE SHOWN FOR REFERENCE ONLY. FOR DETAILED UTILITY INFORMATION, SEE UTILITY PLANS CU01-CU29.
6. FOR SPEED SIGN DETAILS, SEE DRAWING TD25.

Underground Service Alert
of Southern California
811 CALL: **TOLL FREE 1-800-422-4133**
TWO WORKING DAYS
BEFORE YOU DIG

NOTICE TO CONTRACTOR

PURSUANT TO ASSEMBLY BILL 3019 NO EXCAVATION PERMIT IS VALID UNLESS THE CONTRACTOR CONTACTS AND OBTAINS AN INQUIRY I.D. NUMBER FROM "UNDERGROUND SERVICE ALERT" (1-800-422-4133) AT LEAST TWO WORKING DAYS PRIOR TO COMMENCING EXCAVATION.

CITY OF SANTA ANA PROJECT NO. 17-6766-C; OC STREETCAR FROM HARBOR BLVD TO SARTC

FILE NO.:

SHT-TA03-62481-R00.dgn 10/20/2017 11:35:58 AM SHT-TA03-62481-R00.DGN

REVISIONS

NUMBER	DATE	INITIALS	DESCRIPTION	APPROVED	INSTALLED
A	12/2017		ISSUED FOR BID		

REFERENCES

BENCHMARK NO.: 3B-98-85 (PT. 400) ELEV.: 140.19 (NAVD 88)

FOUND 3.75" OCS ALUMINUM BENCHMARK DISK STAMPED "3B-98-5", SET IN THE NORTHWESTERLY CORNER OF A 4 FT. BY 8 FT. CONCRETE CATCH BASIN. MONUMENT IS LOCATED IN THE SOUTHEASTERLY CORNER OF THE INTERSECTION OF FRUIT STREET AND THE ATCHINSON TOPEKA AND SANTA FE RAILROAD, 23 FT. EASTERLY OF THE CENTERLINE OF THE RAILWAY, 19.5 FT. SOUTHERLY OF THE CENTERLINE OF FRUIT STREET AND 14.3 FT. WEST OF A POWER POLE (#716815E"). ORANGE COUNTY SURVEYS, PUBLIC WORKS.

REGISTERED PROFESSIONAL ENGINEER
STEPHANIE N. JEFFERY
RCE NO. 77387
Exp. 06/30/2019
CIVIL
STATE OF CALIFORNIA

HNTB
The HNTB Companies
Infrastructure Solutions
200 E. Sandpointe Ave., Ste. 200
Santa Ana, CA 92707
Phone: 714-460-1600

PREPARED UNDER THE SUPERVISION OF: N. JEFFERY — DATE

RCE NO.: 77387 — 12/2018

DESIGNED: N. JEFFERY DRAWN: C. KATZ CHECKED: C. COFFMAN — 10/2017

PUBLIC WORKS DEPARTMENT — Garden Grove — Youth & Families

OCTA

DOWNTOWN ORANGE COUNTY — SANTA ANA

TRACK ALIGNMENT PLAN AND PROFILE
OCTA PE ROW
OC STREETCAR
EBT STA 109+00 - STA 114+00

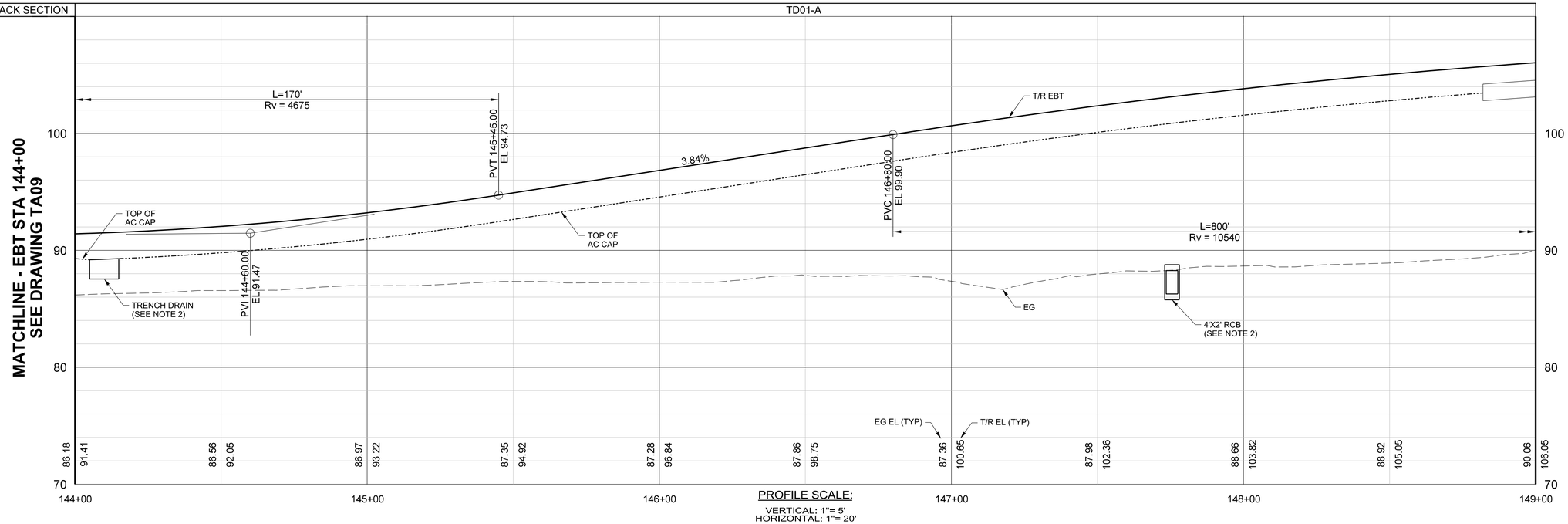
TA03

ORANGE COUNTY TRANSPORTATION AUTHORITY

SHEET 18 of 1520

TRACK SECTION

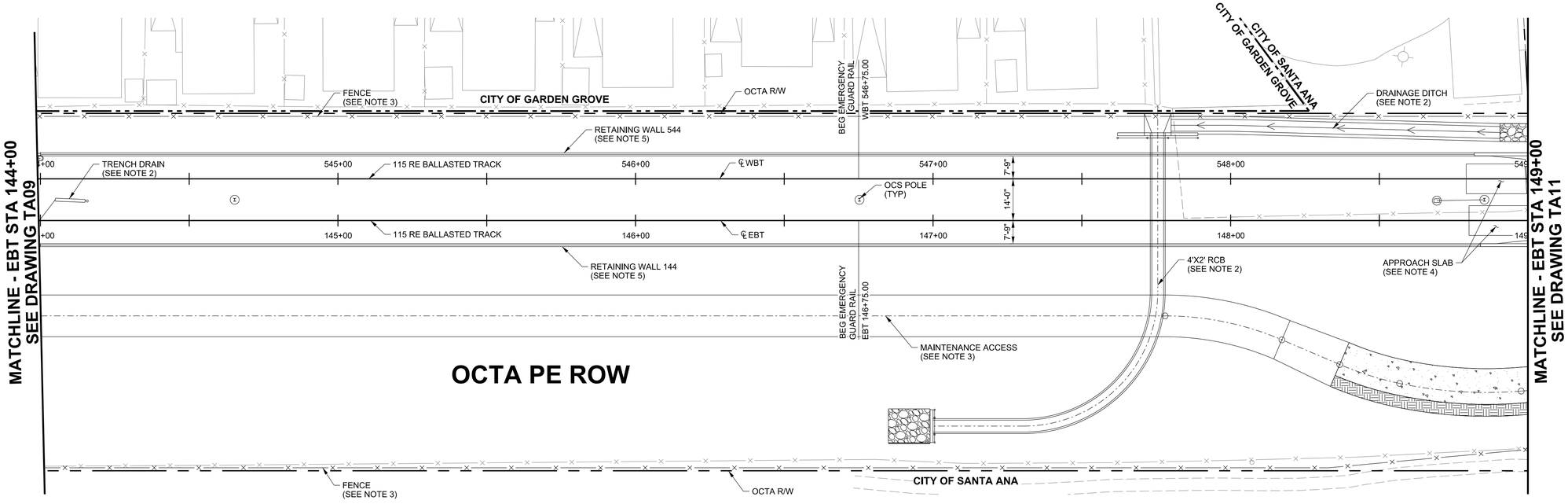
TD01-A



PROFILE SCALE:
VERTICAL: 1"= 5'
HORIZONTAL: 1"= 20'

NOTES:

1. STATIONING AND PROFILE GRADES ARE BASED ON EASTBOUND TRACK (EBT). ELEVATION OF WESTBOUND TRACK (WBT) IS EQUAL TO PERPENDICULAR HORIZONTAL PROJECTION OF EBT UNLESS OTHERWISE NOTED.
2. FOR DRAINAGE DETAILS, SEE CIVIL PLANS CA01-CA40.
3. FOR FENCE AND ACCESS DETAILS, SEE CIVIL PLANS CA01-CA40.
4. FOR BRIDGE DETAILS, SEE BRIDGE PLANS DN01-DN58.
5. FOR WALL DETAILS, SEE WALL PLANS ND01-ND06, NN01-NN14, AND NS01-NS02.
6. UTILITIES ARE SHOWN FOR REFERENCE ONLY. FOR DETAILED UTILITY INFORMATION, SEE UTILITY PLANS CU01-CU29.



(SCALE : 1" = 20')

Underground Service Alert
of Southern California
811
CALL: **TOLL FREE 1-800-422-4133**
TWO WORKING DAYS
BEFORE YOU DIG

NOTICE TO CONTRACTOR

PURSUANT TO ASSEMBLY BILL 3019 NO EXCAVATION PERMIT IS VALID UNLESS THE CONTRACTOR CONTACTS AND OBTAINS AN INQUIRY I.D. NUMBER FROM "UNDERGROUND SERVICE ALERT" (1-800-422-4133) AT LEAST TWO WORKING DAYS PRIOR TO COMMENCING EXCAVATION.

CITY OF SANTA ANA PROJECT NO. 17-6766-C; OC STREETCAR FROM HARBOR BLVD TO SARTC

FILE NO.:

REVISIONS

NUMBER	DATE	INITIALS	DESCRIPTION	APPROVED	INSTALLED
A	12/2017		ISSUED FOR BID		

REFERENCES

BENCHMARK NO.: 3B-98-85 (PT. 400) ELEV.: 140.19 (NAVD 88)

FOUND 3.75" OCS ALUMINUM BENCHMARK DISK STAMPED "3B-98-5", SET IN THE NORTHWESTERLY CORNER OF A 4 FT. BY 8 FT. CONCRETE CATCH BASIN. MONUMENT IS LOCATED IN THE SOUTHEASTERLY CORNER OF THE INTERSECTION OF FRUIT STREET AND THE ATCHINSON TOPEKA AND SANTA FE RAILROAD, 23 FT. EASTERLY OF THE CENTERLINE OF THE RAILWAY, 19.5 FT. SOUTHERLY OF THE CENTERLINE OF FRUIT STREET AND 14.3 FT. WEST OF A POWER POLE (#716815E"). ORANGE COUNTY SURVEYS, PUBLIC WORKS.

REGISTERED PROFESSIONAL ENGINEER
STEFANIE N. JEFFERY
RCE NO. 77387
Exp. 06/30/2019
CIVIL
STATE OF CALIFORNIA

HNTB
The HNTB Companies
Infrastructure Solutions
200 E. Sandpointe Ave., Ste. 200
Santa Ana, CA 92707
Phone: 714-460-1600

PREPARED UNDER THE SUPERVISION OF: N. JEFFERY — DATE
RCE NO.: 77387 — 12/2018
DESIGNED: N. JEFFERY DRAWN: C. KATZ CHECKED: C. COFFMAN — 10/2017

TRACK ALIGNMENT PLAN AND PROFILE

TA10

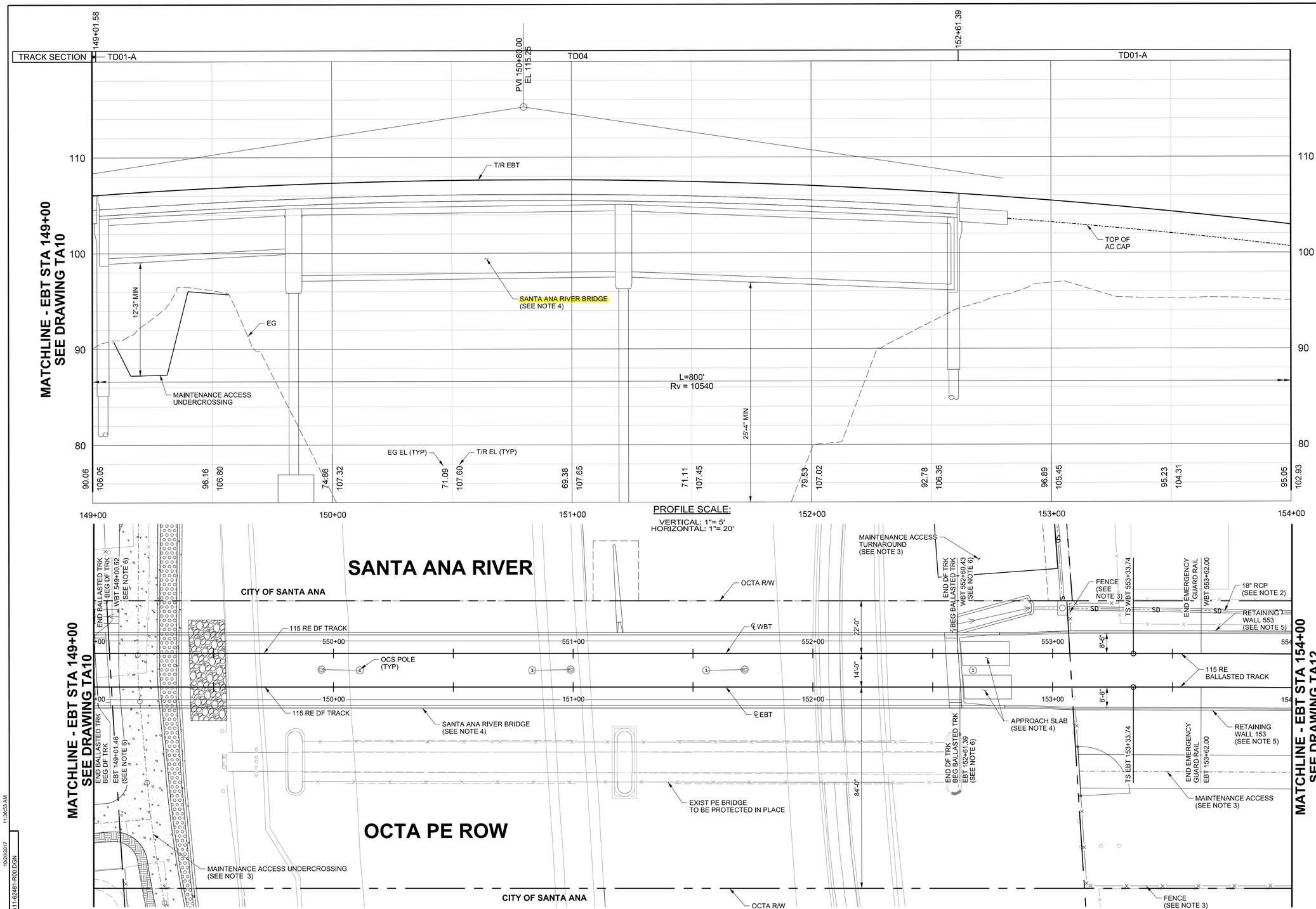
OC STREETCAR

EBT STA 144+00 - STA 149+00

ORANGE COUNTY TRANSPORTATION AUTHORITY

SHEET 25 of 1520

SHT-TA10-62481-R00.DGN 10/20/2017 11:38:46 AM



NOTES:

1. STATIONING AND PROFILE GRADES ARE BASED ON EASTBOUND TRACK (EBT). ELEVATION OF WESTBOUND TRACK (WBT) IS EQUAL TO PERPENDICULAR HORIZONTAL PROJECTION OF EBT UNLESS OTHERWISE NOTED.
2. FOR DRAINAGE DETAILS, SEE CIVIL PLANS CA01-CA40.
3. FOR MAINTENANCE UNDERCROSSING, ACCESS, AND FENCE DETAILS, SEE CIVIL PLANS CA01-CA40.
4. FOR BRIDGE DETAILS, SEE BRIDGE PLANS DN01-DN58.
5. FOR WALL DETAILS, SEE WALL PLANS ND01-ND06, NN01-NN14, AND NS01-NS02.
6. FOR TRANSITION DETAILS BETWEEN DIRECT FIXATION AND BALLASTED TRACK, SEE DRAWING TD24.
7. UTILITIES ARE SHOWN FOR REFERENCE ONLY. FOR DETAILED UTILITY INFORMATION, SEE UTILITY PLANS CU01-CU29.

CITY OF SANTA ANA PROJECT NO. 17-6766-C: OC STREETCAR FROM HARBOR BLVD TO SARTC

FILE NO.:

REVISIONS

NUMBER	DATE	INITIALS	DESCRIPTION	APPROVED	INSTALLED
A	12/2017		ISSUED FOR BID		

REFERENCES

BENCHMARK NO.: 3B-98-85 (PT. 400) ELEV.: 140.19 (NAVD 88)

FOUND 3.75" OCS ALUMINUM BENCHMARK DISK STAMPED "3B-98-5", SET IN THE NORTHWESTERLY CORNER OF A 4 FT. BY 8 FT. CONCRETE CATCH BASIN. MONUMENT IS LOCATED IN THE SOUTHEASTERLY CORNER OF THE INTERSECTION OF FRUIT STREET AND THE ATCHINSON TOPEIKA AND SANTA FE RAILROAD, 23 FT. EASTERLY OF THE CENTERLINE OF THE RAILWAY, 19.5 FT. SOUTHERLY OF THE CENTERLINE OF FRUIT STREET AND 14.3 FT. WEST OF A POWER POLE (#716815E"). ORANGE COUNTY SURVEYS, PUBLIC WORKS.

REGISTERED PROFESSIONAL ENGINEER
STEPHANIE N. JEFFERY
RCE NO. 77387
Exp. 06/30/2019
CIVIL
STATE OF CALIFORNIA

HNTB
The HNTB Companies
Infrastructure Solutions
200 E. Sandpointe Ave., Ste. 200
Santa Ana, CA 92707
Phone: 714-460-1600

PREPARED UNDER THE SUPERVISION OF: N. JEFFERY — DATE 12/2018
RCE NO.: 77387
DESIGNED: N. JEFFERY DRAWN: C. KATZ CHECKED: C. COFFMAN — DATE 10/2017

PUBLIC WORKS DEPARTMENT Citizen Commitment Vision & Action Anthem
OCTA
DOWNTOWN ORANGE COUNTY SANTA ANA

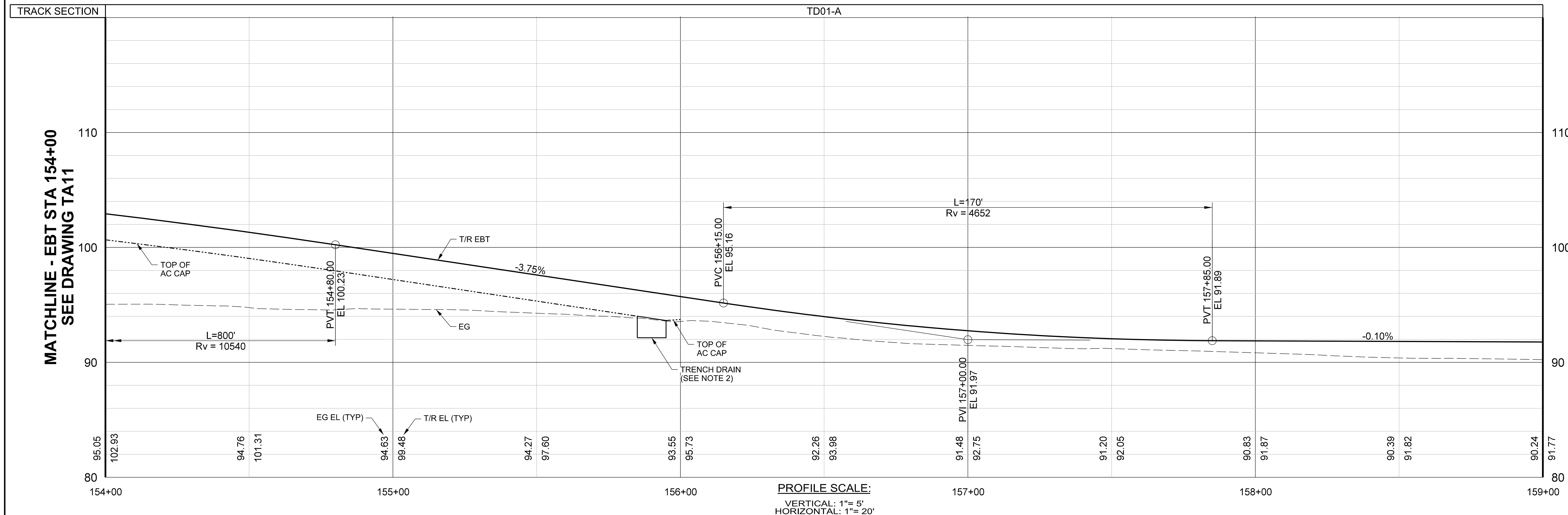
TRACK ALIGNMENT PLAN AND PROFILE — TA11

OC STREETCAR

EBT STA 149+00 - STA 154+00

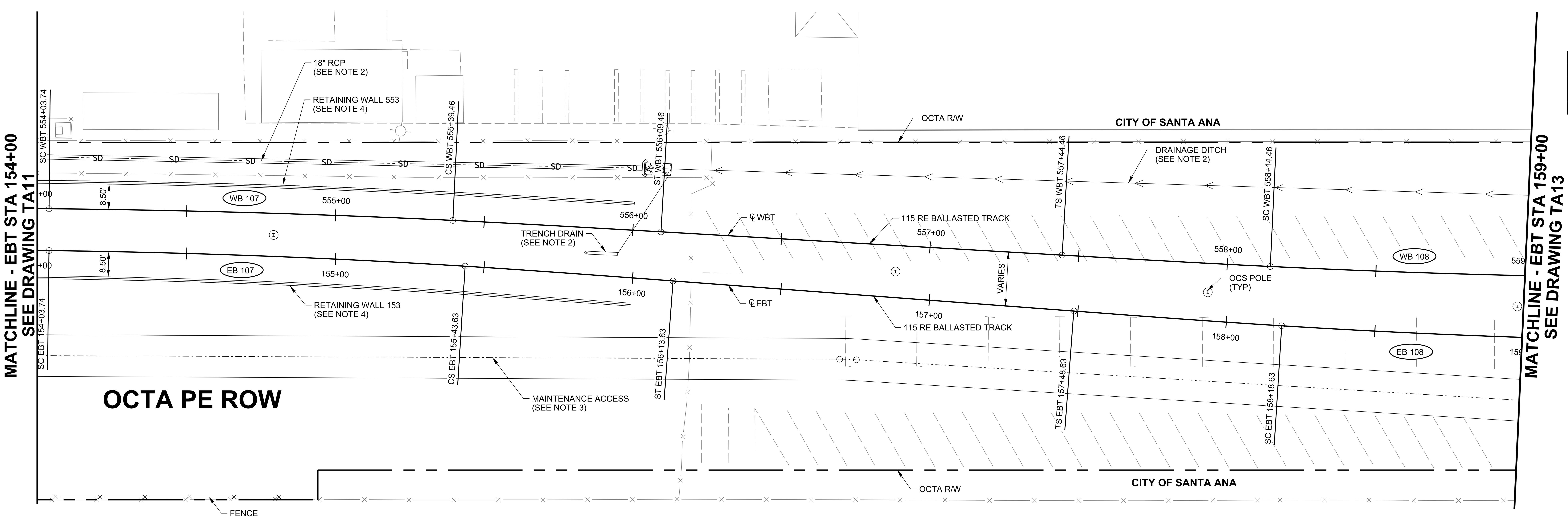
ORANGE COUNTY TRANSPORTATION AUTHORITY

SHT-TA11-62481-R00.dgn 10/20/2017 11:38:03 AM

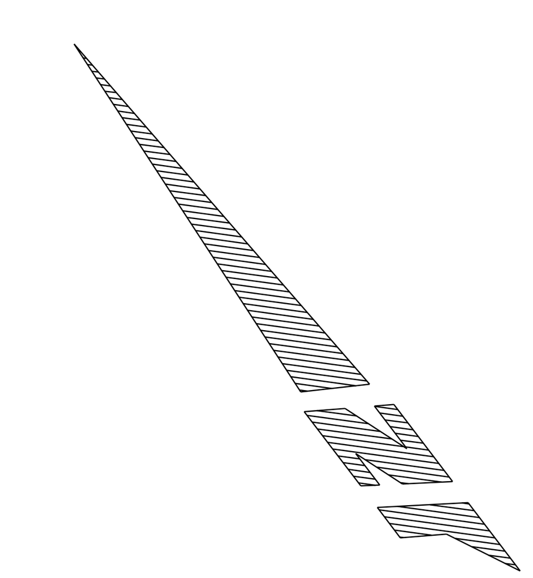


NOTES:

1. STATIONING AND PROFILE GRADES ARE BASED ON EASTBOUND TRACK (EBT). ELEVATION OF WESTBOUND TRACK (WBT) IS EQUAL TO PERPENDICULAR HORIZONTAL PROJECTION OF EBT UNLESS OTHERWISE NOTED.
2. FOR DRAINAGE DETAILS, SEE CIVIL PLANS CA01-CA40.
3. FOR FENCE AND ACCESS DETAILS, SEE CIVIL PLANS CA01-CA40.
4. FOR WALL DETAILS, SEE WALL PLANS ND01-ND06, NN01-NN14, AND NS01-NS02.
5. UTILITIES ARE SHOWN FOR REFERENCE ONLY. FOR DETAILED UTILITY INFORMATION, SEE UTILITY PLANS CU01-CU29.



CURVE NO	V (MPH)	RADIUS (FT)	SPIRAL (FT)	Ea (IN)	Eu (IN)
WB 107	45	3550.00	70.00	1.25	1.01
WB 108	45	3550.00	70.00	1.25	1.01
EB 107	45	2800.00	70.00	1.25	1.61
EB 108	45	2800.00	70.00	1.25	1.61



(SCALE : 1" = 20')

Underground Service Alert
of Southern California
811
CALL: **TOLL FREE 1-800-422-4133**
TWO WORKING DAYS BEFORE YOU DIG

NOTICE TO CONTRACTOR

PURSUANT TO ASSEMBLY BILL 3019 NO EXCAVATION PERMIT IS VALID UNLESS THE CONTRACTOR CONTACTS AND OBTAINS AN INQUIRY I.D. NUMBER FROM "UNDERGROUND SERVICE ALERT" (1-800-422-4133) AT LEAST TWO WORKING DAYS PRIOR TO COMMENCING EXCAVATION.

CITY OF SANTA ANA PROJECT NO. 17-6766-C: OC STREETCAR FROM HARBOR BLVD TO SARTC

SHT-TA12-62481-R00.DGN 10/20/2017 11:37:00 AM

FILE NO.:

REVISIONS

NUMBER	DATE	INITIALS	DESCRIPTION	APPROVED	INSTALLED
A	12/2017		**ISSUED FOR BID**		

REFERENCES

BENCHMARK NO.: 3B-98-85 (PT. 400) ELEV.: 140.19 (NAVD 88)

FOUND 3.75" OCS ALUMINUM BENCHMARK DISK STAMPED "3B-98-5", SET IN THE NORTHWESTERLY CORNER OF A 4 FT. BY 8 FT. CONCRETE CATCH BASIN. MONUMENT IS LOCATED IN THE SOUTHEASTERLY CORNER OF THE INTERSECTION OF FRUIT STREET AND THE ATCHINSON TOPEKA AND SANTA FE RAILROAD, 23 FT. EASTERLY OF THE CENTERLINE OF THE RAILWAY, 19.5 FT. SOUTHERLY OF THE CENTERLINE OF FRUIT STREET AND 14.3 FT. WEST OF A POWER POLE (#716815E"). ORANGE COUNTY SURVEYS, PUBLIC WORKS.

REGISTERED PROFESSIONAL ENGINEER
STEFANIE N. JEFFERY
RCE NO. 77387
Exp. 06/30/2019
CIVIL
STATE OF CALIFORNIA

HNTB
The HNTB Companies
Infrastructure Solutions
200 E. Sandpointe Ave., Ste. 200
Santa Ana, CA 92707
Phone: 714-460-1600

PREPARED UNDER THE SUPERVISION OF: N. JEFFERY — DATE
RCE NO.: 77387 — 12/2018
DESIGNED: N. JEFFERY DRAWN: C. KATZ CHECKED: C. COFFMAN — 10/2017

PUBLIC WORKS DEPARTMENT Garden Grove
OCTA
DOWNTOWN ORANGE COUNTY SANTA ANA

TRACK ALIGNMENT PLAN AND PROFILE

TA12

OC STREETCAR

EBT STA 154+00 - STA 159+00

ORANGE COUNTY TRANSPORTATION AUTHORITY

SHEET 27 of 1520

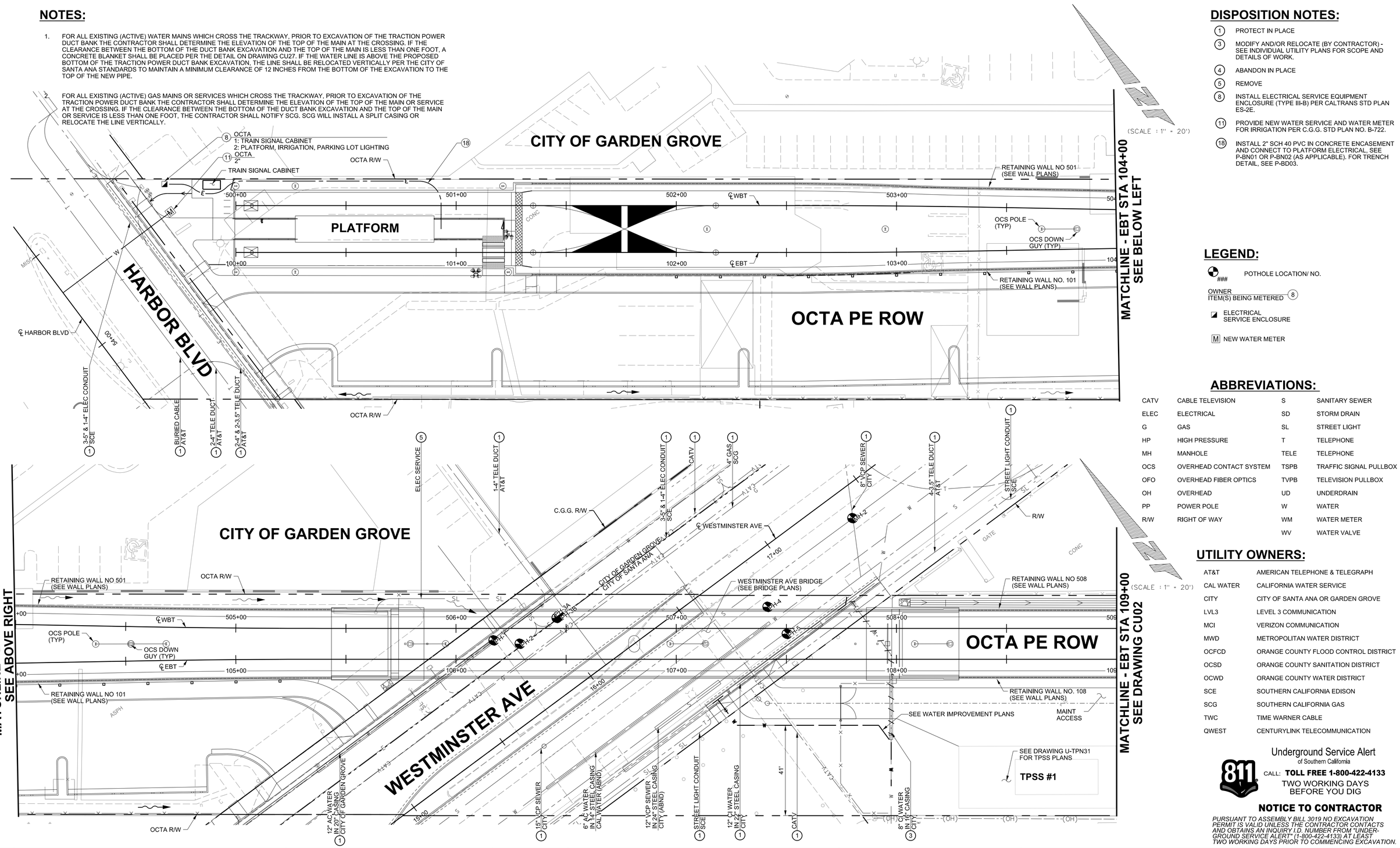
ATTACHMENT B

OC STREETCAR
OCTA PE RIGHT-OF-WAY
DRAWINGS

NOTES:

1. FOR ALL EXISTING (ACTIVE) WATER MAINS WHICH CROSS THE TRACKWAY, PRIOR TO EXCAVATION OF THE TRACTION POWER DUCT BANK THE CONTRACTOR SHALL DETERMINE THE ELEVATION OF THE TOP OF THE MAIN AT THE CROSSING. IF THE CLEARANCE BETWEEN THE BOTTOM OF THE DUCT BANK EXCAVATION AND THE TOP OF THE MAIN IS LESS THAN ONE FOOT, A CONCRETE BLANKET SHALL BE PLACED PER THE DETAIL ON DRAWING CU27. IF THE WATER LINE IS ABOVE THE PROPOSED BOTTOM OF THE TRACTION POWER DUCT BANK EXCAVATION, THE LINE SHALL BE RELOCATED VERTICALLY PER THE CITY OF SANTA ANA STANDARDS TO MAINTAIN A MINIMUM CLEARANCE OF 12 INCHES FROM THE BOTTOM OF THE EXCAVATION TO THE TOP OF THE NEW PIPE.

2. FOR ALL EXISTING (ACTIVE) GAS MAINS OR SERVICES WHICH CROSS THE TRACKWAY, PRIOR TO EXCAVATION OF THE TRACTION POWER DUCT BANK THE CONTRACTOR SHALL DETERMINE THE ELEVATION OF THE TOP OF THE MAIN OR SERVICE AT THE CROSSING. IF THE CLEARANCE BETWEEN THE BOTTOM OF THE DUCT BANK EXCAVATION AND THE TOP OF THE MAIN OR SERVICE IS LESS THAN ONE FOOT, THE CONTRACTOR SHALL NOTIFY SCG. SCG WILL INSTALL A SPLIT CASING OR RELOCATE THE LINE VERTICALLY.



DISPOSITION NOTES:

1. PROTECT IN PLACE
3. MODIFY AND/OR RELOCATE (BY CONTRACTOR) - SEE INDIVIDUAL UTILITY PLANS FOR SCOPE AND DETAILS OF WORK.
4. ABANDON IN PLACE
5. REMOVE
8. INSTALL ELECTRICAL SERVICE EQUIPMENT ENCLOSURE (TYPE III-B) PER CALTRANS STD PLAN ES-2E.
11. PROVIDE NEW WATER SERVICE AND WATER METER FOR IRRIGATION PER C.G.G. STD PLAN NO. B-722.
18. INSTALL 2" SCH 40 PVC IN CONCRETE ENCASEMENT AND CONNECT TO PLATFORM ELECTRICAL, SEE P-BN01 OR P-BN02 (AS APPLICABLE). FOR TRENCH DETAIL, SEE P-BD03.

LEGEND:

- ### POTHOLE LOCATION/ NO.
- OWNER ITEM(S) BEING METERED (8)
- ELECTRICAL SERVICE ENCLOSURE
- M NEW WATER METER

ABBREVIATIONS:

CATV	CABLE TELEVISION	S	SANITARY SEWER
ELEC	ELECTRICAL	SD	STORM DRAIN
G	GAS	SL	STREET LIGHT
HP	HIGH PRESSURE	T	TELEPHONE
MH	MANHOLE	TELE	TELEPHONE
OCS	OVERHEAD CONTACT SYSTEM	TSPB	TRAFFIC SIGNAL PULLBOX
OFO	OVERHEAD FIBER OPTICS	TVPB	TELEVISION PULLBOX
OH	OVERHEAD	UD	UNDERDRAIN
PP	POWER POLE	W	WATER
R/W	RIGHT OF WAY	WM	WATER METER
		WV	WATER VALVE

UTILITY OWNERS:

AT&T	AMERICAN TELEPHONE & TELEGRAPH
CAL WATER	CALIFORNIA WATER SERVICE
CITY	CITY OF SANTA ANA OR GARDEN GROVE
LVL3	LEVEL 3 COMMUNICATION
MCI	VERIZON COMMUNICATION
MWD	METROPOLITAN WATER DISTRICT
OCFCD	ORANGE COUNTY FLOOD CONTROL DISTRICT
OCSD	ORANGE COUNTY SANITATION DISTRICT
OCWD	ORANGE COUNTY WATER DISTRICT
SCE	SOUTHERN CALIFORNIA EDISON
SCG	SOUTHERN CALIFORNIA GAS
TWC	TIME WARNER CABLE
QWEST	CENTURYLINK TELECOMMUNICATION

Underground Service Alert of Southern California
811 CALL: **TOLL FREE 1-800-422-4133**
TWO WORKING DAYS BEFORE YOU DIG

NOTICE TO CONTRACTOR

PURSUANT TO ASSEMBLY BILL 3019 NO EXCAVATION PERMIT IS VALID UNLESS THE CONTRACTOR CONTACTS AND OBTAINS AN INQUIRY I.D. NUMBER FROM "UNDERGROUND SERVICE ALERT" (1-800-422-4133) AT LEAST TWO WORKING DAYS PRIOR TO COMMENCING EXCAVATION.

CITY OF SANTA ANA PROJECT NO. 17-6766-C: OC STREETCAR FROM HARBOR BLVD TO SARTC

SHT-CU01-82481-R00.DGN 7:29:16 AM 11/19/2017

FILE NO.:

REVISIONS

NUMBER	DATE	INITIALS	DESCRIPTION	APPROVED	INSTALLED
A	12/2017		ISSUED FOR BID		

REFERENCES

BENCHMARK NO.: 3B-98-85 (PT. 400) ELEV.: 140.19 (NAVD 88)

FOUND 3.75" OCS ALUMINUM BENCHMARK DISK STAMPED "3B-98-5", SET IN THE NORTHWESTERLY CORNER OF A 4 FT. BY 8 FT. CONCRETE CATCH BASIN. MONUMENT IS LOCATED IN THE SOUTHEASTERLY CORNER OF THE INTERSECTION OF FRUIT STREET AND THE ATCHINSON TOPEKA AND SANTA FE RAILROAD, 23 FT. EASTERLY OF THE CENTERLINE OF THE RAILWAY, 19.5 FT. SOUTHERLY OF THE CENTERLINE OF FRUIT STREET AND 14.3 FT. WEST OF A POWER POLE (#716815E"). ORANGE COUNTY SURVEYS, PUBLIC WORKS.

REGISTERED PROFESSIONAL ENGINEER PETER T. ANASTOS RCE NO. C36062 Exp. 06/30/2018 CIVIL STATE OF CALIFORNIA

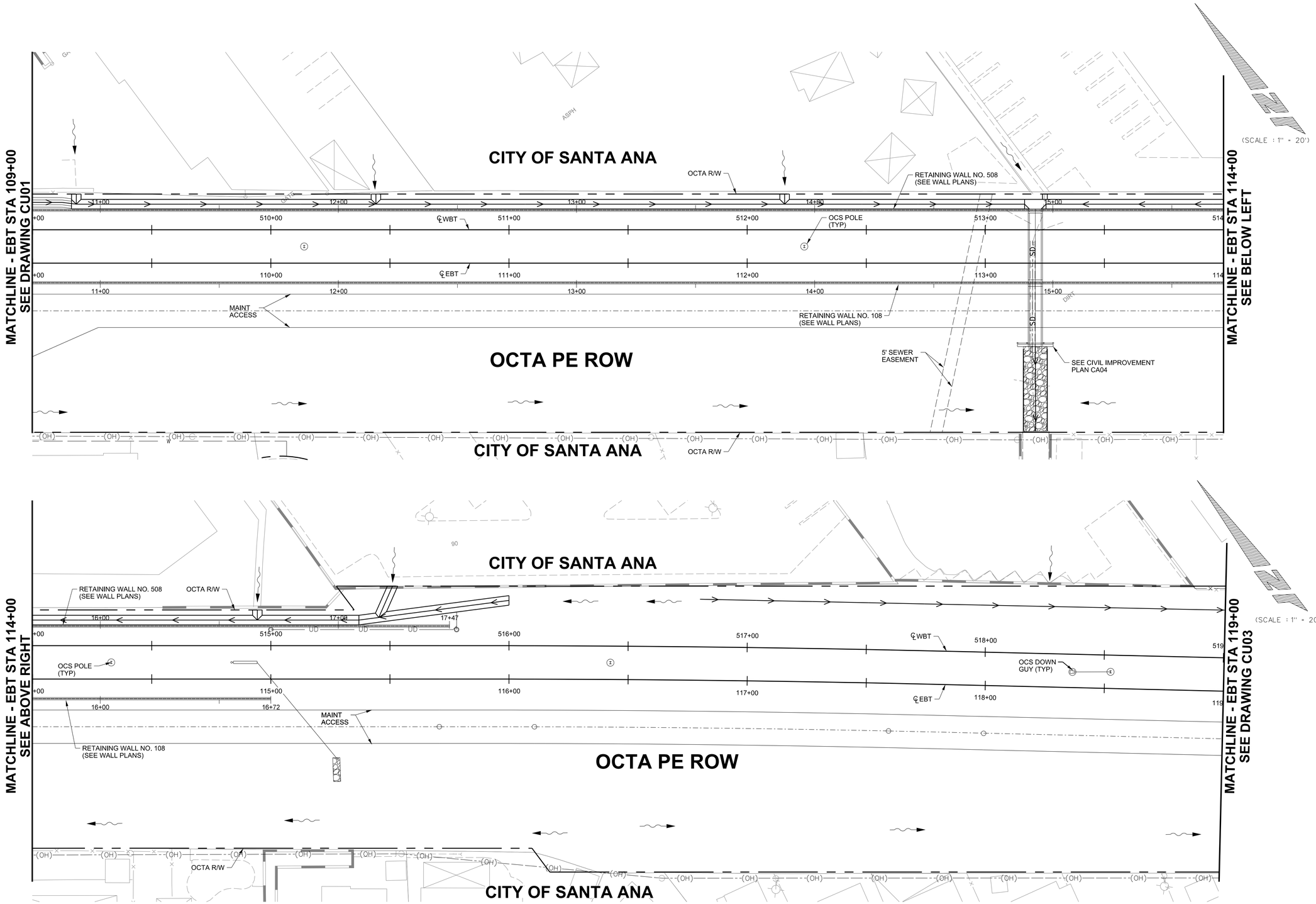
HNTB
The HNTB Companies Infrastructure Solutions
200 E. Sandpointe Ave., Ste. 200
Santa Ana, CA 92707
Phones: 714-460-1600

PREPARED UNDER THE SUPERVISION OF:	P. T. ANASTOS	DATE
	RCE NO.: C36062	06/2018
DESIGNED: BAO TRAN	DRAWN: S. SCHUSTER	CHECKED: P. ANASTOS — 10/2017

UTILITY PLAN
HARBOR BLVD AND WESTMINSTER AVE
OC STREETCAR
EBT STA 100+00 - STA 109+00

CU01

ORANGE COUNTY TRANSPORTATION AUTHORITY



Underground Service Alert
of Southern California
CALL: **TOLL FREE 1-800-422-4133**
TWO WORKING DAYS
BEFORE YOU DIG

NOTICE TO CONTRACTOR

PURSUANT TO ASSEMBLY BILL 3019 NO EXCAVATION PERMIT IS VALID UNLESS THE CONTRACTOR CONTACTS AND OBTAINS AN INQUIRY I.D. NUMBER FROM "UNDERGROUND SERVICE ALERT" (1-800-422-4133) AT LEAST TWO WORKING DAYS PRIOR TO COMMENCING EXCAVATION.

FILE NO.:

REVISIONS

NUMBER	DATE	INITIALS	DESCRIPTION	APPROVED	INSTALLED
A	12/2017		ISSUED FOR BID		

REFERENCES

BENCHMARK NO.: 3B-98-85 (PT. 400) ELEV.: 140.19 (NAVD 88)

FOUND 3.75" OCS ALUMINUM BENCHMARK DISK STAMPED "3B-98-5", SET IN THE NORTHWESTERLY CORNER OF A 4 FT. BY 8 FT. CONCRETE CATCH BASIN. MONUMENT IS LOCATED IN THE SOUTHEASTERLY CORNER OF THE INTERSECTION OF FRUIT STREET AND THE ATCHINSON TOPEKA AND SANTA FE RAILROAD, 23 FT. EASTERLY OF THE CENTERLINE OF THE RAILWAY, 19.5 FT. SOUTHERLY OF THE CENTERLINE OF FRUIT STREET AND 14.3 FT. WEST OF A POWER POLE (#716815E"). ORANGE COUNTY SURVEYS, PUBLIC WORKS.

REGISTERED PROFESSIONAL ENGINEER
PETER T. ANASTOS
RCE NO. C36062
Exp. 06/30/2018
CIVIL
STATE OF CALIFORNIA

HNTB
The HNTB Companies
Infrastructure Solutions
200 E. Sandpointe Ave., Ste. 200
Santa Ana, CA 92707
Phone: 714-460-1600

PREPARED UNDER THE SUPERVISION OF:	P. T. ANASTOS		DATE
		RCE NO.: C36062	06/2018
DESIGNED: BAO TRAN	DRAWN: S. SCHUSTER	CHECKED: P. ANASTOS	10/2017

UTILITY PLAN
OCTA PE ROW
OC STREETCAR
EBT STA 109+00 - STA 119+00

CU02

ORANGE COUNTY TRANSPORTATION AUTHORITY

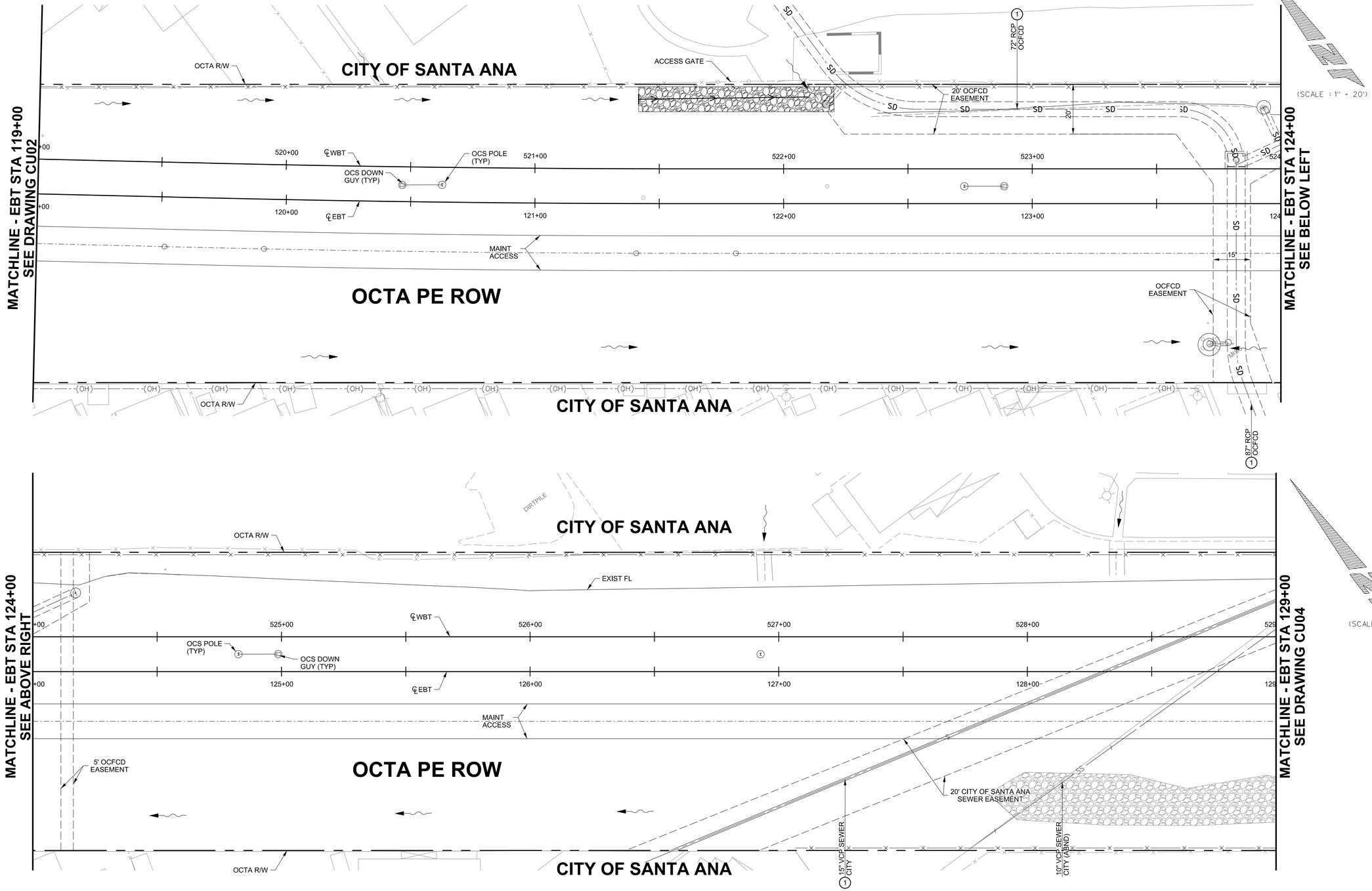
SHEET 353 of 1520

CITY OF SANTA ANA PROJECT NO. 17-6766-C; OC STREETCAR FROM HARBOR BLVD TO SARTC

SHT-CU02-82481-R00.dgn 11/10/2017 7:29:24 AM

DISPOSITION NOTES:

(1) PROTECT IN PLACE



Underground Service Alert
of Southern California
CALL: **TOLL FREE 1-800-422-4133**
TWO WORKING DAYS
BEFORE YOU DIG

NOTICE TO CONTRACTOR

PURSUANT TO ASSEMBLY BILL 3019 NO EXCAVATION PERMIT IS VALID UNLESS THE CONTRACTOR CONTACTS AND OBTAINS AN INQUIRY I.D. NUMBER FROM "UNDERGROUND SERVICE ALERT" (1-800-422-4133) AT LEAST TWO WORKING DAYS PRIOR TO COMMENCING EXCAVATION.

CITY OF SANTA ANA PROJECT NO. 17-6766-C: OC STREETCAR FROM HARBOR BLVD TO SARTC

SHT-CU03-82481-R00.dgn 11/16/2017 7:29:31 AM SHT-CU03-82481-R00.DGN

FILE NO.:

REVISIONS

NUMBER	DATE	INITIALS	DESCRIPTION	APPROVED	INSTALLED
A	12/2017		ISSUED FOR BID		

REFERENCES

BENCHMARK NO.: 3B-98-85 (PT. 400) ELEV.: 140.19 (NAVD 88)

FOUND 3.75" OCS ALUMINUM BENCHMARK DISK STAMPED "3B-98-5", SET IN THE NORTHWESTERLY CORNER OF A 4 FT. BY 8 FT. CONCRETE CATCH BASIN. MONUMENT IS LOCATED IN THE SOUTHEASTERLY CORNER OF THE INTERSECTION OF FRUIT STREET AND THE ATCHINSON TOPEKA AND SANTA FE RAILROAD, 23 FT. EASTERLY OF THE CENTERLINE OF THE RAILWAY, 19.5 FT. SOUTHERLY OF THE CENTERLINE OF FRUIT STREET AND 14.3 FT. WEST OF A POWER POLE (#716815E"). ORANGE COUNTY SURVEYS, PUBLIC WORKS.

REGISTERED PROFESSIONAL ENGINEER
PETER T. ANASTOS
RCE NO. C36062
Exp. 06/30/2018
CIVIL
STATE OF CALIFORNIA

HNTB
The HNTB Companies
Infrastructure Solutions
200 E. Sandpointe Ave., Ste. 200
Santa Ana, CA 92707
Phone: 714-460-1600

PREPARED UNDER THE SUPERVISION OF:	P. T. ANASTOS	DATE
	RCE NO.: C36062	06/2018
DESIGNED: BAO TRAN DRAWN: S. SCHUSTER	CHECKED: P. ANASTOS	10/2017

CU03

UTILITY PLAN
OCTA PE ROW

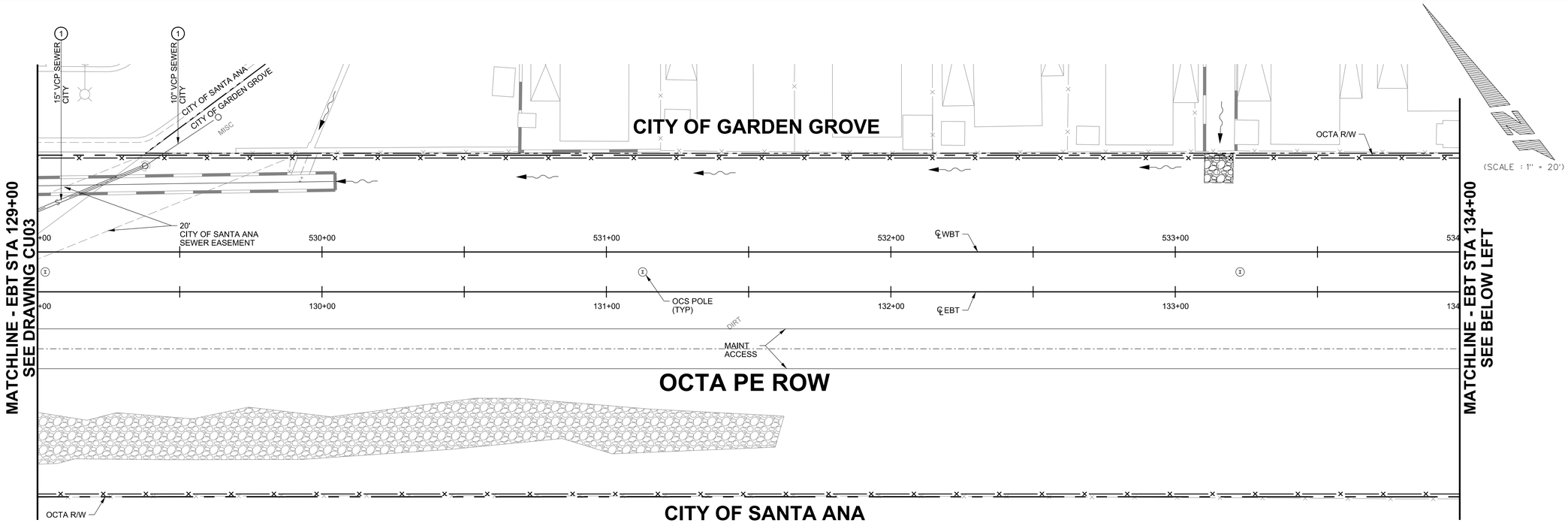
OC STREETCAR

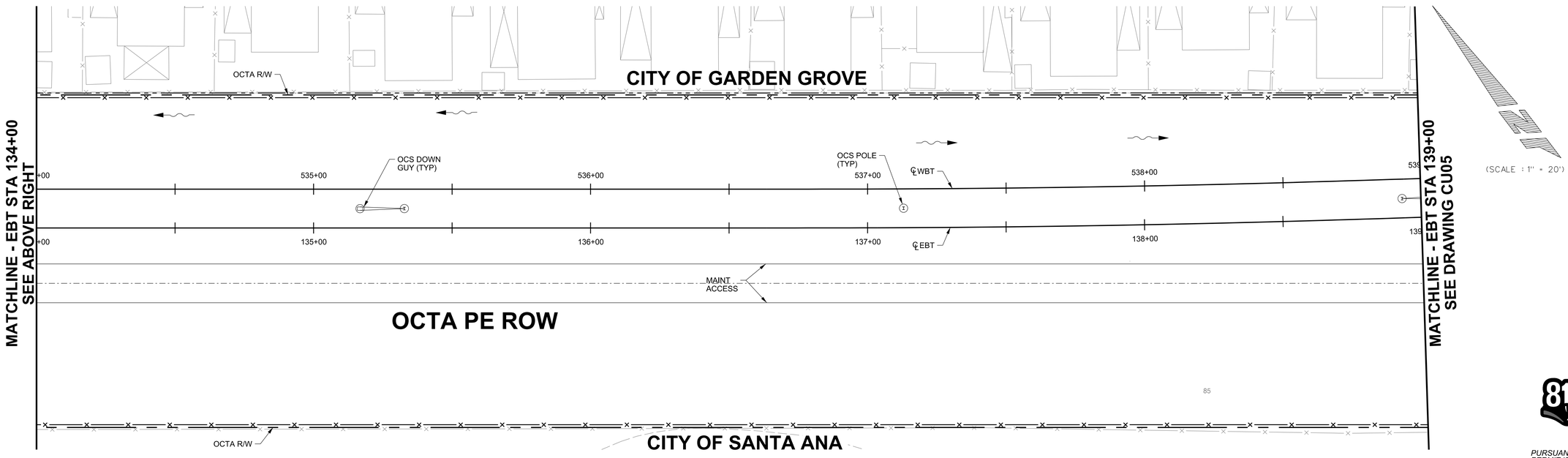
EBT STA 119+00 - STA 129+00

ORANGE COUNTY TRANSPORTATION AUTHORITY

DISPOSITION NOTE:

(1) PROTECT IN PLACE





Underground Service Alert of Southern California

811 CALL: **TOLL FREE 1-800-422-4133**

TWO WORKING DAYS BEFORE YOU DIG

NOTICE TO CONTRACTOR

PURSUANT TO ASSEMBLY BILL 3019 NO EXCAVATION PERMIT IS VALID UNLESS THE CONTRACTOR CONTACTS AND OBTAINS AN INQUIRY I.D. NUMBER FROM "UNDERGROUND SERVICE ALERT" (1-800-422-4133) AT LEAST TWO WORKING DAYS PRIOR TO COMMENCING EXCAVATION.

CITY OF SANTA ANA PROJECT NO. 17-6766-C: OC STREETCAR FROM HARBOR BLVD TO SARTC

FILE NO.:

SHT-CU04-65481-R00.dgn 11/1/2017 7:29:37 AM SHT-CU04-65481-R00.DGN

REVISIONS

NUMBER	DATE	INITIALS	DESCRIPTION	APPROVED	INSTALLED
A	12/2017		ISSUED FOR BID		

REFERENCES

BENCHMARK NO.: 3B-98-85 (PT. 400) ELEV.: 140.19 (NAVD 88)

FOUND 3.75" OCS ALUMINUM BENCHMARK DISK STAMPED "3B-98-5", SET IN THE NORTHWESTERLY CORNER OF A 4 FT. BY 8 FT. CONCRETE CATCH BASIN. MONUMENT IS LOCATED IN THE SOUTHEASTERLY CORNER OF THE INTERSECTION OF FRUIT STREET AND THE ATCHINSON TOPEKA AND SANTA FE RAILROAD, 23 FT. EASTERLY OF THE CENTERLINE OF THE RAILWAY, 19.5 FT. SOUTHERLY OF THE CENTERLINE OF FRUIT STREET AND 14.3 FT. WEST OF A POWER POLE (#716815E"). ORANGE COUNTY SURVEYS, PUBLIC WORKS.

REGISTERED PROFESSIONAL ENGINEER PETER T. ANASTOS RCE NO. C36062 Exp. 06/30/2018 CIVIL STATE OF CALIFORNIA

HNTB
The HNTB Companies
Infrastructure Solutions
200 E. Sandpointe Ave., Ste. 200
Santa Ana, CA 92707
Phone: 714-460-1600

PREPARED UNDER THE SUPERVISION OF:	P. T. ANASTOS		DATE
		RCE NO.: C36062	06/2018
DESIGNED: BAO TRAN	DRAWN: S. SCHUSTER	CHECKED: P. ANASTOS	10/2017

UTILITY PLAN
OCTA PE ROW

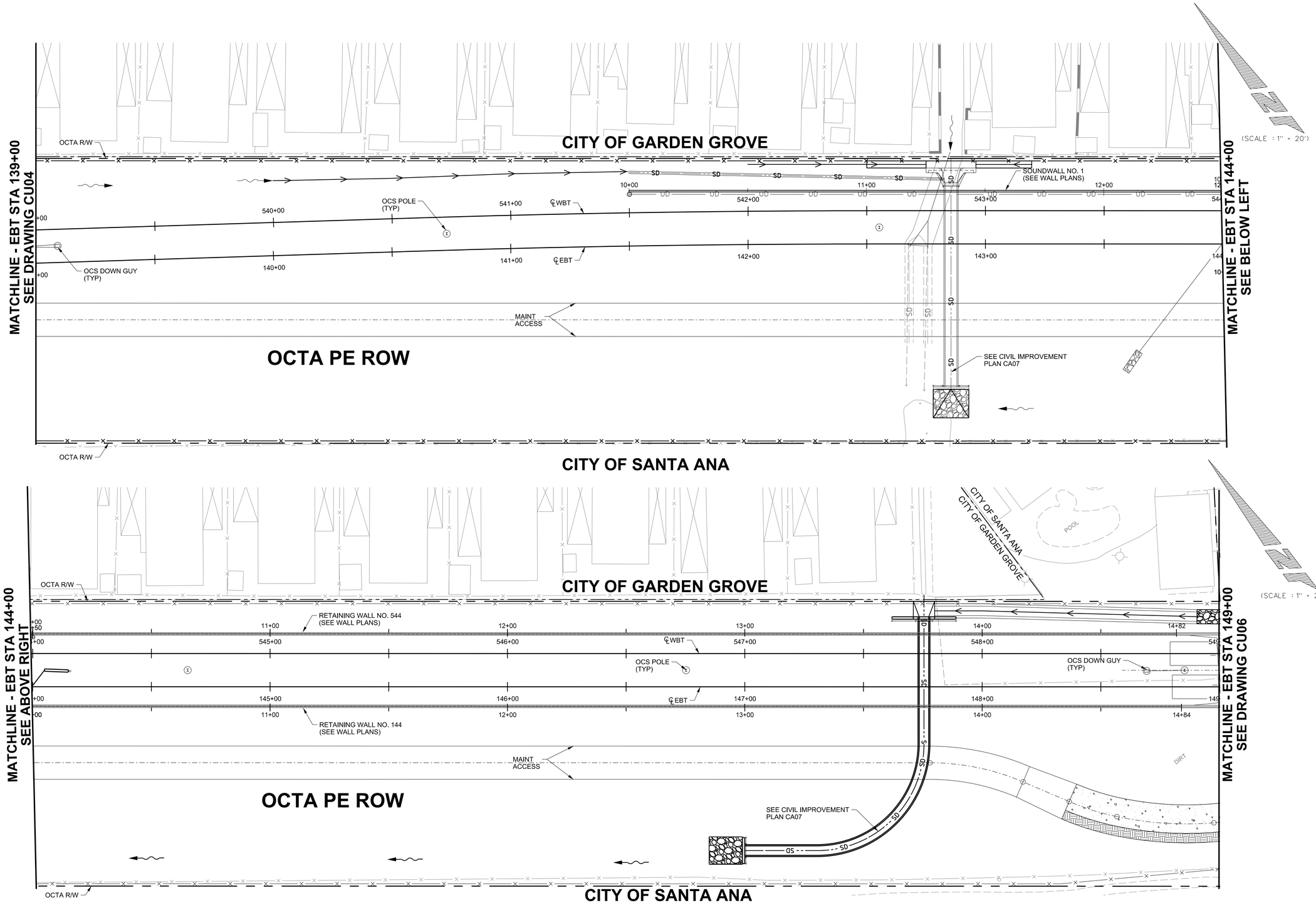
CU04

OC STREETCAR

EBT STA 129+00 - STA 139+00

ORANGE COUNTY TRANSPORTATION AUTHORITY

SHEET 355 of 1520



CITY OF SANTA ANA PROJECT NO. 17-6766-C: OC STREETCAR FROM HARBOR BLVD TO SARTC

Underground Service Alert
of Southern California
CALL: **TOLL FREE 1-800-422-4133**
TWO WORKING DAYS
BEFORE YOU DIG

NOTICE TO CONTRACTOR

PURSUANT TO ASSEMBLY BILL 3019 NO EXCAVATION PERMIT IS VALID UNLESS THE CONTRACTOR CONTACTS AND OBTAINS AN INQUIRY I.D. NUMBER FROM "UNDERGROUND SERVICE ALERT" (1-800-422-4133) AT LEAST TWO WORKING DAYS PRIOR TO COMMENCING EXCAVATION.

FILE NO.:

REVISIONS

NUMBER	DATE	INITIALS	DESCRIPTION	APPROVED	INSTALLED
A	12/2017		ISSUED FOR BID		

REFERENCES

BENCHMARK NO.: 3B-98-85 (PT. 400) ELEV.: 140.19 (NAVD 88)

FOUND 3.75" OCS ALUMINUM BENCHMARK DISK STAMPED "3B-98-5", SET IN THE NORTHWESTERLY CORNER OF A 4 FT. BY 8 FT. CONCRETE CATCH BASIN. MONUMENT IS LOCATED IN THE SOUTHEASTERLY CORNER OF THE INTERSECTION OF FRUIT STREET AND THE ATCHINSON TOPEKA AND SANTA FE RAILROAD, 23 FT. EASTERLY OF THE CENTERLINE OF THE RAILWAY, 19.5 FT. SOUTHERLY OF THE CENTERLINE OF FRUIT STREET AND 14.3 FT. WEST OF A POWER POLE (#716815E"). ORANGE COUNTY SURVEYS, PUBLIC WORKS.

REGISTERED PROFESSIONAL ENGINEER
PETER T. ANASTOS
RCE NO. C36062
Exp. 06/30/2018
CIVIL
STATE OF CALIFORNIA

HNTB
The HNTB Companies
Infrastructure Solutions
200 E. Sandpointe Ave., Ste. 200
Santa Ana, CA 92707
Phone: 714-460-1600

PREPARED UNDER THE SUPERVISION OF:	P. T. ANASTOS	DATE
	RCE NO.: C36062	06/2018
DESIGNED: BAO TRAN	DRAWN: S. SCHUSTER	CHECKED: P. ANASTOS	10/2017

UTILITY PLAN
OCTA PE ROW
OC STREETCAR
EBT STA 139+00 - STA 149+00

ORANGE COUNTY TRANSPORTATION AUTHORITY

CU05

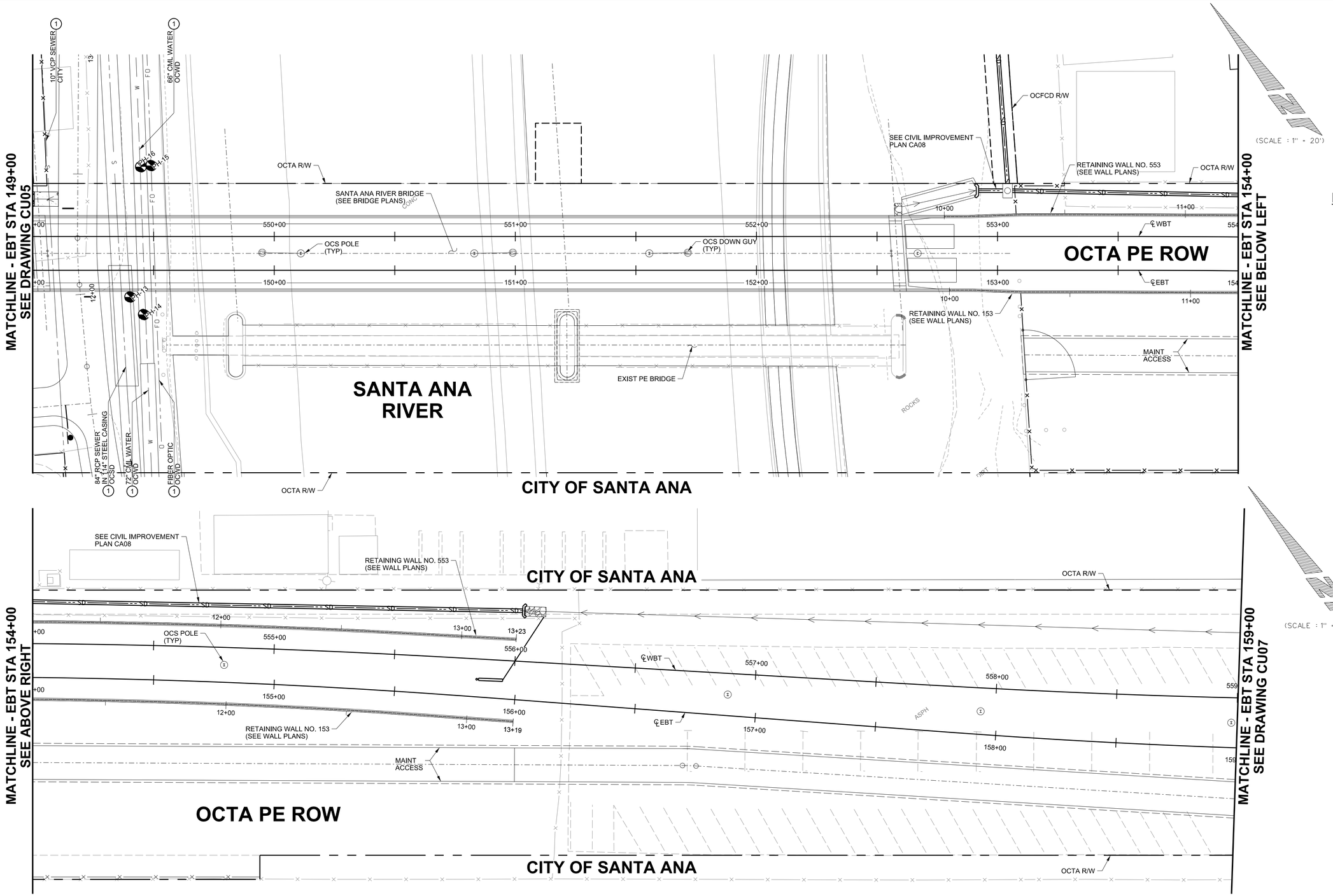
SHT-CU05-82481-R00.dgn 11/16/2017 7:29:43 AM SHT-CU05-82481-R00.DGN

DISPOSITION NOTE:

(1) PROTECT IN PLACE

LEGEND:

POTHOLE LOCATION/ NO.



NOTICE TO CONTRACTOR

PURSUANT TO ASSEMBLY BILL 3019 NO EXCAVATION PERMIT IS VALID UNLESS THE CONTRACTOR CONTACTS AND OBTAINS AN INQUIRY I.D. NUMBER FROM "UNDERGROUND SERVICE ALERT" (1-800-422-4133) AT LEAST TWO WORKING DAYS PRIOR TO COMMENCING EXCAVATION.

CITY OF SANTA ANA PROJECT NO. 17-6766-C: OC STREETCAR FROM HARBOR BLVD TO SARTC

FILE NO.:

REVISIONS

NUMBER	DATE	INITIALS	DESCRIPTION	APPROVED	INSTALLED
A	12/2017		ISSUED FOR BID		

REFERENCES

BENCHMARK NO.: 3B-98-85 (PT. 400) ELEV.: 140.19 (NAVD 88)

FOUND 3.75" OCS ALUMINUM BENCHMARK DISK STAMPED "3B-98-5", SET IN THE NORTHWESTERLY CORNER OF A 4 FT. BY 8 FT. CONCRETE CATCH BASIN. MONUMENT IS LOCATED IN THE SOUTHEASTERLY CORNER OF THE INTERSECTION OF FRUIT STREET AND THE ATCHINSON TOPEKA AND SANTA FE RAILROAD, 23 FT. EASTERLY OF THE CENTERLINE OF THE RAILWAY, 19.5 FT. SOUTHERLY OF THE CENTERLINE OF FRUIT STREET AND 14.3 FT. WEST OF A POWER POLE (#716815E"). ORANGE COUNTY SURVEYS, PUBLIC WORKS.

REGISTERED PROFESSIONAL ENGINEER PETER T. ANASTOS RCE NO. C36062 Exp. 06/30/2018 CIVIL STATE OF CALIFORNIA

HNTB
The HNTB Companies
Infrastructure Solutions
200 E. Sandpointe Ave., Ste. 200
Santa Ana, CA 92707
Phone: 714-460-1600

PREPARED UNDER THE SUPERVISION OF:	P. T. ANASTOS		DATE
		RCE NO.: C36062	06/2018
DESIGNED: BAO TRAN	DRAWN: S. SCHUSTER	CHECKED: P. ANASTOS	10/2017

UTILITY PLAN
OCTA PE ROW

OC STREETCAR

EBT STA 149+00 - STA 159+00

CU06

ORANGE COUNTY TRANSPORTATION AUTHORITY

SHEET 357 of 1520

11/10/2017 7:29:51 AM SHT-CU06-62481-R00.DGN

SHT-CU06-62481-R00.dgn

SEE BELOW RIGHT

MATCHLINE - EBT STA 159+00
SEE DRAWING CU06

MATCHLINE - EBT STA 164+00
SEE BELOW LEFT

OCTA R/W

CITY OF SANTA ANA

C.S.A.
STREET LIGHTING
SEE STREET LIGHTING PLANS

℄ N FAIRVIEW ST

C.S.A.
1: TRAFFIC SIGNAL
2: STREET LIGHTING
SEE TRAFFIC SIGNAL AND STREET LIGHTING PLANS (14)

PP #4195284E (1)

OH LINE
TWC, SCE, SUNESYS (2)

(18)

OCTA
1: TRAIN SIGNAL CABINET
2: PLATFORM, IRRIGATION (14)

(SCALE : 1" = 20')

MAINT
ACCESS

TRAIN SIGNAL
CABINET

OCS POLE
(TYP)

℄ WBT

PLATFORM

OCTA PE ROW

℄ EBT

MAINT
ACCESS

(7) OCTA
2"

(5) FIRE HYDRANT

STREET LIGHT CONDUIT
SCE (2)

SEE WATER
IMPROVEMENT PLANS

CITY OF SANTA ANA

OCTA R/W

C.S.A.
IRRIGATION (8)

C.S.A.
1" (7)

N FAIRVIEW ST

C.S.A.
STREET LIGHTING
SEE STREET LIGHTING PLANS

(1) 12" CI WATER
C.S.A.

(1) 3" GAS
SCG

(SCALE : 1" = 40')

MATCHLINE - EBT STA 164+00
SEE ABOVE RIGHT

MATCHLINE - EBT STA 169+00
SEE DRAWING CU08

(SCALE : 1" = 20')

SOUNDWALL NO. 2
(SEE WALL PLANS)

OCTA R/W

CITY OF SANTA ANA

OHE LINE
SCE, AT&T (1)

UG CABLE TV
TWC (1)

MAINT
ACCESS

OCS POLE
(TYP)

OCS DOWN GUY
(TYP)

OCTA PE ROW

℄ WBT

℄ EBT

CITY OF SANTA ANA

OCTA R/W

N FAIRVIEW ST

W CIVIC CENTER DR

(14) C.S.A.
1: TRAFFIC SIGNAL (E)
2: STREET LIGHTING

SEE ABOVE CENTER

DISPOSITION NOTES:

(1) PROTECT IN PLACE

(2) RELOCATE (BY OTHERS) - APPLIES TO TELECOM, ELECTRICAL, AND GAS WHICH ARE NOT PART OF THIS CONTRACT.

(5) REMOVE

(7) PROVIDE NEW WATER SERVICE AND WATER METER PER C.S.A STD 1401, 1402 OR 1403 (AS APPLICABLE) AND DRAWING WN11 DETAIL 1.

(8) INSTALL ELECTRICAL SERVICE EQUIPMENT ENCLOSURE (TYPE III-B) PER CALTRANS STD PLAN ES-2E.

(14) INSTALL ELECTRICAL SERVICE EQUIPMENT ENCLOSURE, MYERS ME-IIBD-M100/M100 OR APPROVED EQUAL.

(18) INSTALL 2" SCH 40 PVC IN CONCRETE ENCASEMENT AND CONNECT TO PLATFORM ELECTRICAL, SEE P-BN01 OR P-BN02 (AS APPLICABLE). FOR TRENCH DETAIL, SEE P-BD03.

LEGEND:

POTHOLE LOCATION/ NO.

OWNER
ITEM(S) BEING METERED (8)

ELECTRICAL SERVICE ENCLOSURE

M NEW WATER METER

(E) EXISTING SERVICE PANEL TO BE REPLACED

Underground Service Alert
of Southern California
811 CALL: **TOLL FREE 1-800-422-4133**
TWO WORKING DAYS
BEFORE YOU DIG

NOTICE TO CONTRACTOR

PURSUANT TO ASSEMBLY BILL 3019 NO EXCAVATION PERMIT IS VALID UNLESS THE CONTRACTOR CONTACTS AND OBTAINS AN INQUIRY I.D. NUMBER FROM "UNDER-GROUND SERVICE ALERT" (1-800-422-4133) AT LEAST TWO WORKING DAYS PRIOR TO COMMENCING EXCAVATION.

CITY OF SANTA ANA PROJECT NO. 17-6766-C; OC STREETCAR FROM HARBOR BLVD TO SARTC

FILE NO.:

REVISIONS

NUMBER	DATE	INITIALS	DESCRIPTION	APPROVED	INSTALLED
A	12/2017		ISSUED FOR BID		

REFERENCES

BENCHMARK NO.: 3B-98-85 (PT. 400) ELEV.: 140.19 (NAVD 88)

FOUND 3.75" OCS ALUMINUM BENCHMARK DISK STAMPED "3B-98-5", SET IN THE NORTHWESTERLY CORNER OF A 4 FT. BY 8 FT. CONCRETE CATCH BASIN, MONUMENT IS LOCATED IN THE SOUTHEASTERLY CORNER OF THE INTERSECTION OF FRUIT STREET AND THE ATCHINSON TOPEKA AND SANTA FE RAILROAD, 23 FT. EASTERLY OF THE CENTERLINE OF THE RAILWAY, 19.5 FT. SOUTHERLY OF THE CENTERLINE OF FRUIT STREET AND 14.3 FT. WEST OF A POWER POLE (#716815E"). ORANGE COUNTY SURVEYS, PUBLIC WORKS.

REGISTERED PROFESSIONAL ENGINEER
PETER T. ANASTOS
RCE NO. C36062
Exp. 06/30/2018
CIVIL
STATE OF CALIFORNIA

HNTB
The HNTB Companies
Infrastructure Solutions
200 E. Sandpointe Ave., Ste. 200
Santa Ana, CA 92707
Phone: 714-460-1600

PREPARED UNDER THE SUPERVISION OF:	P. T. ANASTOS		DATE
		RCE NO.: C36062	06/2018
DESIGNED: BAO TRAN	DRAWN: S. SCHUSTER	CHECKED: P. ANASTOS	10/2017

PUBLIC WORKS DEPARTMENT Green Government Leadership & Sustainability

OCTA

DOWNTOWN ORANGE COUNTY'S SANTA ANA

CU07

UTILITY PLAN
OCTA PE ROW

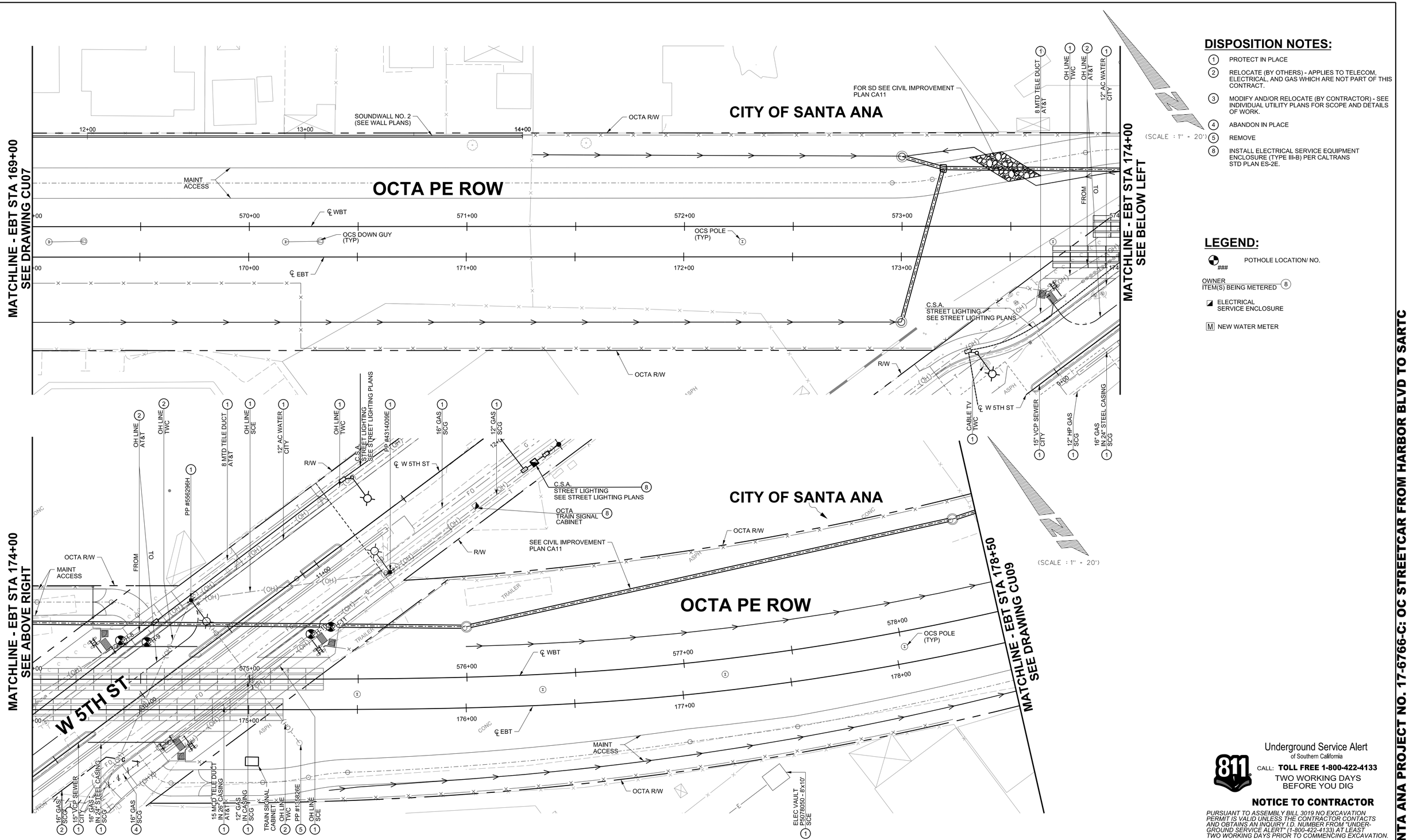
OC STREETCAR

EBT STA 159+00 - STA 169+00

ORANGE COUNTY TRANSPORTATION AUTHORITY

SHEET 358 of 1520

SHT-CU07-62481-R00.DGN 11/15/2017 7:20:38 AM SHT-CU07-62481-R00.dgn



DISPOSITION NOTES:

1. PROTECT IN PLACE
2. RELOCATE (BY OTHERS) - APPLIES TO TELECOM, ELECTRICAL, AND GAS WHICH ARE NOT PART OF THIS CONTRACT.
3. MODIFY AND/OR RELOCATE (BY CONTRACTOR) - SEE INDIVIDUAL UTILITY PLANS FOR SCOPE AND DETAILS OF WORK.
4. ABANDON IN PLACE
5. REMOVE
8. INSTALL ELECTRICAL SERVICE EQUIPMENT ENCLOSURE (TYPE III-B) PER CALTRANS STD PLAN ES-2E.

LEGEND:

- ### — POTHOLE LOCATION/ NO.
- OWNER ITEM(S) BEING METERED — 8
- ELECTRICAL SERVICE ENCLOSURE
- M — NEW WATER METER

Underground Service Alert
of Southern California
CALL: **TOLL FREE 1-800-422-4133**
TWO WORKING DAYS
BEFORE YOU DIG

NOTICE TO CONTRACTOR

PURSUANT TO ASSEMBLY BILL 3019 NO EXCAVATION PERMIT IS VALID UNLESS THE CONTRACTOR CONTACTS AND OBTAINS AN INQUIRY I.D. NUMBER FROM "UNDERGROUND SERVICE ALERT" (1-800-422-4133) AT LEAST TWO WORKING DAYS PRIOR TO COMMENCING EXCAVATION.

CITY OF SANTA ANA PROJECT NO. 17-6766-C: OC STREETCAR FROM HARBOR BLVD TO SARTC

FILE NO.: SNT-CU08-82481-R00.DGN 11/10/2017 7:30:05 AM SNT-CU08-82481-R00.dgn

REVISIONS

NUMBER	DATE	INITIALS	DESCRIPTION	APPROVED	INSTALLED
A	12/2017		ISSUED FOR BID		

REFERENCES

BENCHMARK NO.: 3B-98-85 (PT. 400) ELEV.: 140.19 (NAVD 88)

FOUND 3.75" OCS ALUMINUM BENCHMARK DISK STAMPED "3B-98-5", SET IN THE NORTHWESTERLY CORNER OF A 4 FT. BY 8 FT. CONCRETE CATCH BASIN. MONUMENT IS LOCATED IN THE SOUTHEASTERLY CORNER OF THE INTERSECTION OF FRUIT STREET AND THE ATCHINSON TOPEKA AND SANTA FE RAILROAD, 23 FT. EASTERLY OF THE CENTERLINE OF THE RAILWAY, 19.5 FT. SOUTHERLY OF THE CENTERLINE OF FRUIT STREET AND 14.3 FT. WEST OF A POWER POLE (#716815E"). ORANGE COUNTY SURVEYS. PUBLIC WORKS.

REGISTERED PROFESSIONAL ENGINEER — PETER T. ANASTOS — RCE NO. C36062 — Exp. 06/30/2018 — CIVIL — STATE OF CALIFORNIA

HNTB
The HNTB Companies
Infrastructure Solutions
200 E. Sandpointe Ave., Ste. 200
Santa Ana, CA 92707
Phone: 714-460-1600

PREPARED UNDER THE SUPERVISION OF:	P. T. ANASTOS		DATE
		RCE NO.: C36062	06/2018
DESIGNED: BAO TRAN	DRAWN: S. SCHUSTER	CHECKED: P. ANASTOS	10/2017

UTILITY PLAN
OCTA PE ROW
OC STREETCAR
EBT STA 169+00 - STA 178+50

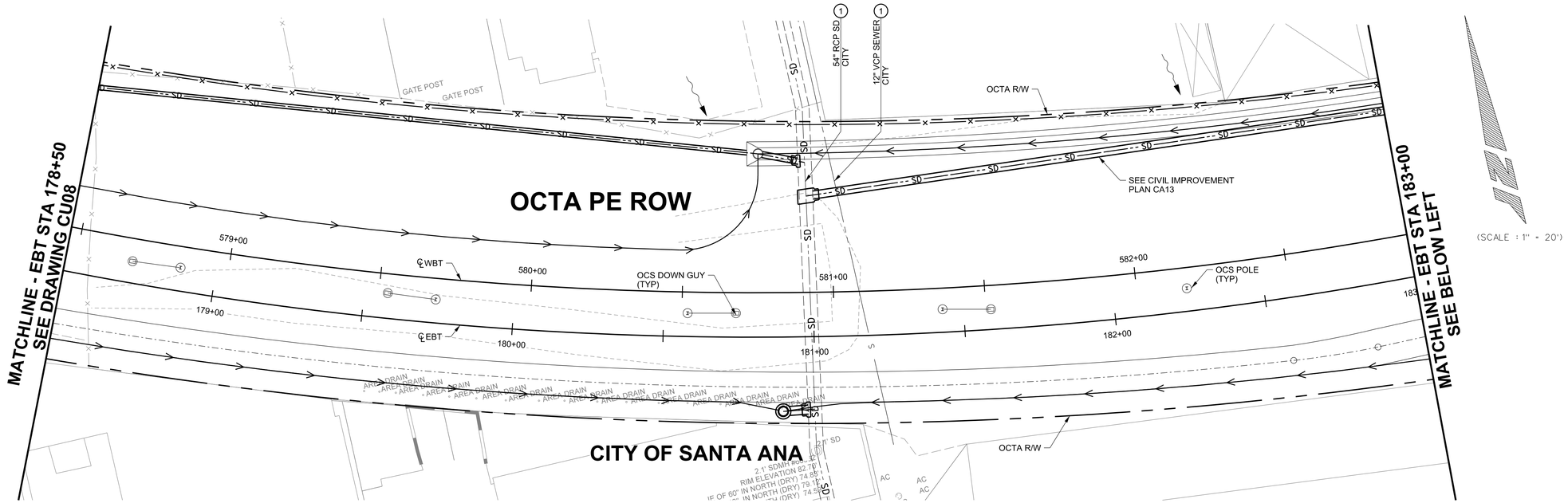
ORANGE COUNTY TRANSPORTATION AUTHORITY

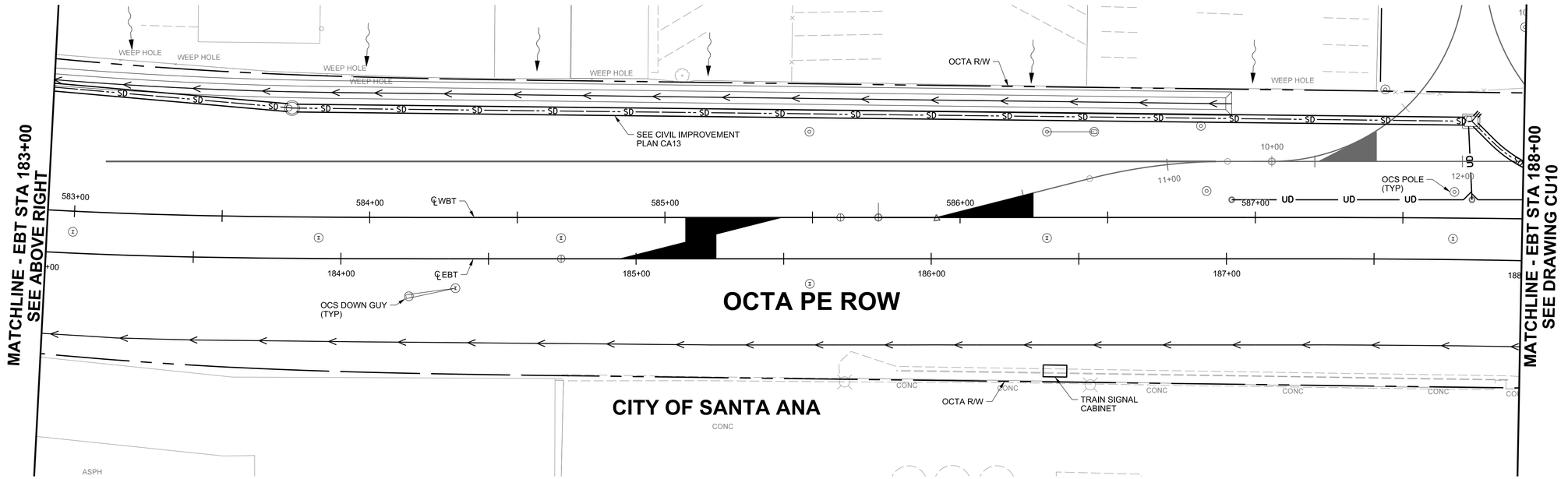
CU08

SHEET 359 of 1520

DISPOSITION NOTE:

(1) PROTECT IN PLACE





Underground Service Alert
of Southern California
811
CALL: **TOLL FREE 1-800-422-4133**
TWO WORKING DAYS
BEFORE YOU DIG

NOTICE TO CONTRACTOR

PURSUANT TO ASSEMBLY BILL 3019 NO EXCAVATION PERMIT IS VALID UNLESS THE CONTRACTOR CONTACTS AND OBTAINS AN INQUIRY I.D. NUMBER FROM "UNDERGROUND SERVICE ALERT" (1-800-422-4133) AT LEAST TWO WORKING DAYS PRIOR TO COMMENCING EXCAVATION.

CITY OF SANTA ANA PROJECT NO. 17-6766-C: OC STREETCAR FROM HARBOR BLVD TO SARTC

FILE NO.:

REVISIONS

NUMBER	DATE	INITIALS	DESCRIPTION	APPROVED	INSTALLED
A	12/2017		ISSUED FOR BID		

REFERENCES

BENCHMARK NO.: 3B-98-85 (PT. 400) ELEV.: 140.19 (NAVD 88)

FOUND 3.75" OCS ALUMINUM BENCHMARK DISK STAMPED "3B-98-5", SET IN THE NORTHWESTERLY CORNER OF A 4 FT. BY 8 FT. CONCRETE CATCH BASIN. MONUMENT IS LOCATED IN THE SOUTHEASTERLY CORNER OF THE INTERSECTION OF FRUIT STREET AND THE ATCHINSON TOPEKA AND SANTA FE RAILROAD, 23 FT. EASTERLY OF THE CENTERLINE OF THE RAILWAY, 19.5 FT. SOUTHERLY OF THE CENTERLINE OF FRUIT STREET AND 14.3 FT. WEST OF A POWER POLE (#716815E"). ORANGE COUNTY SURVEYS, PUBLIC WORKS.

REGISTERED PROFESSIONAL ENGINEER
PETER T. ANASTOS
RCE NO. C36062
Exp. 06/30/2018
CIVIL
STATE OF CALIFORNIA

HNTB
The HNTB Companies
Infrastructure Solutions
200 E. Sandpointe Ave., Ste. 200
Santa Ana, CA 92707
Phone: 714-460-1600

PREPARED UNDER THE SUPERVISION OF:	P. T. ANASTOS		DATE
		RCE NO.: C36062	06/2018
DESIGNED: BAO TRAN	DRAWN: S. SCHUSTER	CHECKED: P. ANASTOS	10/2017

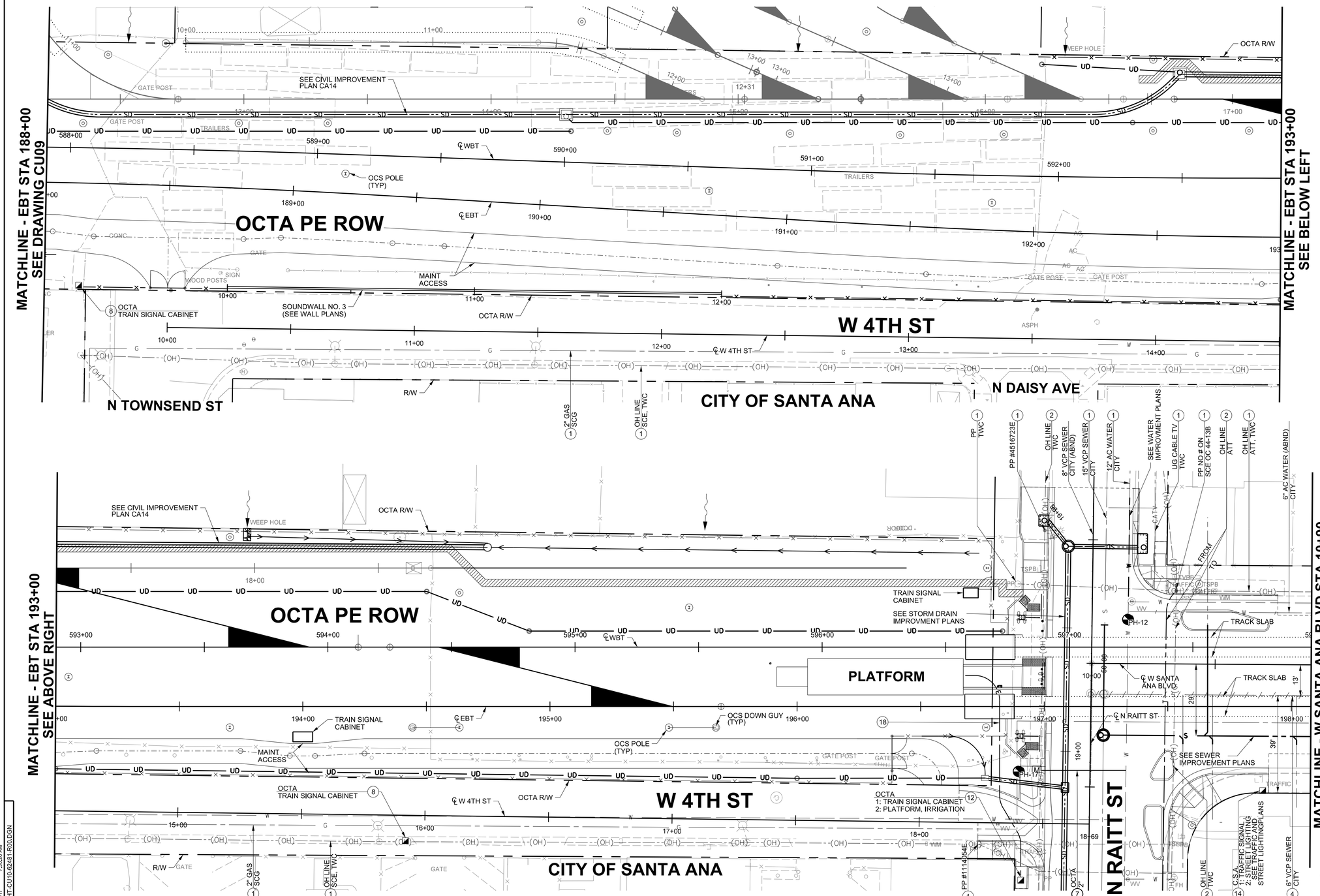
OCTA

UTILITY PLAN
OCTA PE ROW
OC STREETCAR
EBT STA 178+50 - STA 188+00

CU09

ORANGE COUNTY TRANSPORTATION AUTHORITY

SHT-CU09-62481-R00.dgn 11/15/2017 7:30:13 AM SHT-CU09-62481-R00.DGN



DISPOSITION NOTES:

1. PROTECT IN PLACE
2. RELOCATE (BY OTHERS) - APPLIES TO TELECOM, ELECTRICAL, AND GAS WHICH ARE NOT PART OF THIS CONTRACT.
4. ABANDON IN PLACE
5. REMOVE
7. PROVIDE NEW WATER SERVICE AND WATER METER PER C.S.A STD 1401, 1402 OR 1403 (AS APPLICABLE).
8. INSTALL ELECTRICAL SERVICE EQUIPMENT ENCLOSURE (TYPE III-B) PER CALTRANS STD PLAN ES-2E. (SINGLE)
12. INSTALL ELECTRICAL SERVICE EQUIPMENT ENCLOSURE (TYPE III-C) PER CALTRANS STD PLAN ES-2F. (DUAL)
14. INSTALL ELECTRICAL SERVICE EQUIPMENT ENCLOSURE, MYERS ME-IIBD-M100/M100 OR APPROVED EQUAL. (DUAL)
18. INSTALL 2" SCH 40 PVC IN CONCRETE ENCASEMENT AND CONNECT TO PLATFORM ELECTRICAL, SEE P-BN01 OR P-BN02 (AS APPLICABLE). FOR TRENCH DETAIL, SEE P-BD03.

LEGEND:

- ### POTHOLE LOCATION/ NO.
- OWNER ITEM(S) BEING METERED (8)
- ELECTRICAL SERVICE ENCLOSURE
- M NEW WATER METER

Underground Service Alert of Southern California
CALL: **TOLL FREE 1-800-422-4133**
TWO WORKING DAYS BEFORE YOU DIG

NOTICE TO CONTRACTOR

PURSUANT TO ASSEMBLY BILL 3019 NO EXCAVATION PERMIT IS VALID UNLESS THE CONTRACTOR CONTACTS AND OBTAINS AN INQUIRY I.D. NUMBER FROM "UNDER-GROUND SERVICE ALERT" (1-800-422-4133) AT LEAST TWO WORKING DAYS PRIOR TO COMMENCING EXCAVATION.

CITY OF SANTA ANA PROJECT NO. 17-6766-C; OC STREETCAR FROM HARBOR BLVD TO SARTC

FILE NO.:

SHT-CU10-82481-R00.DGN 7/30/20 AM
SHT-CU10-82481-R00.dgn 11/16/2017

REVISIONS

NUMBER	DATE	INITIALS	DESCRIPTION	APPROVED	INSTALLED
A	12/2017		ISSUED FOR BID		

REFERENCES

BENCHMARK NO.: 3B-98-85 (PT. 400) ELEV.: 140.19 (NAVD 88)

FOUND 3.75" OCS ALUMINUM BENCHMARK DISK STAMPED "3B-98-5", SET IN THE NORTHWESTERLY CORNER OF A 4 FT. BY 8 FT. CONCRETE CATCH BASIN. MONUMENT IS LOCATED IN THE SOUTHEASTERLY CORNER OF THE INTERSECTION OF FRUIT STREET AND THE ATCHINSON TOPEKA AND SANTA FE RAILROAD, 23 FT. EASTERLY OF THE CENTERLINE OF THE RAILWAY, 19.5 FT. SOUTHERLY OF THE CENTERLINE OF FRUIT STREET AND 14.3 FT. WEST OF A POWER POLE (#716815E"). ORANGE COUNTY SURVEYS, PUBLIC WORKS.

REGISTERED PROFESSIONAL ENGINEER PETER T. ANASTOS RCE NO. C36062 Exp. 06/30/2018 CIVIL STATE OF CALIFORNIA

HNTB
The HNTB Companies Infrastructure Solutions
200 E. Sandpointe Ave., Ste. 200
Santa Ana, CA 92707
Phone: 714-460-1600

PREPARED UNDER THE SUPERVISION OF:	P. T. ANASTOS	DATE
	RCE NO.: C36062	06/2018
DESIGNED: BAO TRAN DRAWN: S. SCHUSTER	CHECKED: P. ANASTOS	10/2017

CU10

UTILITY PLAN
OCTA PE ROW AND W SANTA ANA BLVD
OC STREETCAR
EBT STA 188+00 - W SANTA ANA BLVD STA 10+90

ORANGE COUNTY TRANSPORTATION AUTHORITY

SHEET 361 of 1520

ATTACHMENT C

AMERICAN PUBLIC TRANSPORTATION ASSOCIATION (APTA) STANDARD

APTA STANDARDS DEVELOPMENT PROGRAM

STANDARD

American Public Transportation Association
1300 I Street NW, Washington, DC, 20005

APTA RT-FS-S-001-02 Rev 1

First Published September 22, 2002
First Revision October 6, 2016

Rail Transit Fixed Structures Inspection and Maintenance Working Group

Rail Transit Fixed Structures Inspection and Maintenance

Abstract: This *Rail Standard* establishes a standard for inspecting and maintaining rail transit system fixed structures.

Keywords: ancillary structures, barrier walls, bridges, catenary structures, communication towers, crash walls, culverts, inspection, maintenance, periodic inspection and maintenance, retaining walls, safety, structures, transit structures, tunnels.

Summary: This standard provides general requirements for the periodic inspection of safety-critical components of rail transit structures. This standard defines the minimum means, methods and frequency of inspection and maintenance activities, and the qualifications that rail transit employees or contractors must have to perform these procedures. This standard provides both a rating system for safety-critical components and record-keeping requirements.

Scope and purpose: This standard applies to all fixed facilities that support or carry loads. This includes bridges, tunnels and ancillary structures; retaining walls; barrier (crash) walls; communication towers; catenary structures; and culverts. This standard applies to rail transit systems that operate light rail or heavy rail systems. It does not apply to commuter railroads that operate on the general railroad system regulated by the Federal Railroad Administration (FRA). The purpose of this standard is to establish, through broad-based industry participation and consensus, minimum requirements for inspections and maintenance of rail transit system structures to ensure the safety of the traveling public and transit system employees and to ensure the continued performance of rail transit infrastructure. This standard includes a listing of structure types to be inspected, the frequencies of such inspections, and the qualifications of rail transit system employees or contractors who perform these inspection and maintenance activities.

Participants

The American Public Transportation Association greatly appreciates the contributions of **Travis Jones – SWG Chair, Clay Bunting, Rich Hovde, Joni Korte, Greg O'Hare, Dan Schiffer, and Bong Vang** who provided the primary effort in revising this *Rail Standard*.

At the time this standard was completed, the working group included the following members:

Greg O'Hare, *Chair*
Clay Bunting, *Vice Chair*
Bong Vang, Secretary

Carlton Allen
Charles Anderson
Andrew Baker
Ray Blount
Brasfield, Steve
John Burkhard
Steve Brasfield
Antonio Cabrera
Rob Chappell
Arthur Douwes
Michael Esford
Robert Fiore
Holbrook, Michael
Brian Hooker
Rich Hovde
Travis Jones
Rick Kindig
Jeff King
Joni Korte
Austin Marshal
Michael Monestero
Bill Morehead
Will Mullet
Rotimi Ogunsuyi
Phil Olekszyk
Al Panuska
Balaje Ravichandran
Stephen Roberts
Carol Rose
Mark Rudnicki
Dan Schiffer
Glenn Shankle
Frederick Smith
Paul Swanson
Pumpane, Corey
Steven Thompson
Bong Vang
Carrie Wagener
Quirk, William

Project Team
Charles Joseph
American Public Transportation Association

Contents

Introduction

This introduction is not a part of APTA RT-FS-S-001-02 First Revision October 6, 2016, *Standard for Rail Transit Fixed Structures Inspection and Maintenance*.

APTA rail transit safety standards represent an industry consensus on safety practices for rail transit systems to help achieve a high level of safety for passengers, employees and the general public. This document was created by and for those parties concerned with its provisions, namely, rail transit systems (operating agencies), manufacturers, consultants, engineers and general interest groups. This standard provides procedures for inspecting and maintaining rail transit structures.

APTA recommends this standard for the following:

- individuals or organizations that inspect, maintain and/or operate rail transit systems
- individuals or organizations that contract with others for the inspection, maintenance and/or operation of rail transit systems
- individuals or organizations that influence how rail transit systems are inspected, maintained and/or operated (including but not limited to consultants, designers and contractors)

This standard intends to meet the following objectives:

- to ensure that special life/safety equipment is operational and reliable
- to help rail transit systems incorporate safety considerations during the inspection and maintenance process
- to identify inspection criteria and maintenance standards that provide a high level of passenger and personnel safety.

Note on alternate practices

Individual rail transit systems may modify the practices in this standard to accommodate their specific equipment and mode of operation. APTA recognizes that some rail transit systems may have unique operating environments that make strict compliance with every provision of this standard impossible. As a result, certain rail transit systems may need to implement the standards and practices herein in ways that are more or less restrictive than this document prescribes. A rail transit system may develop alternates to APTA standards provided the alternates are based on a safe operating history and are described and documented in the system's safety program plan (or another document that is referenced in the system safety program plan).

Documentation of alternate practices shall:

- Identify the specific APTA rail transit safety standard requirements that cannot be met.
- Provide justification for each requirement that cannot be followed.
- Describe the alternate methods used.
- Describe and substantiate how the alternate methods do not compromise safety and provide a level of safety equivalent to the practices in the APTA safety standard (operating histories or hazard analysis findings may be used to substantiate this claim).

Rail Transit Structure Inspection and Maintenance

This APTA standard has been established to provide general minimum requirements for transit agencies for inspecting and maintaining all fixed facility structures supporting rail transit system loads. This standard covers general inspection practices, inspection staff qualifications, inspection types and frequencies, and maintenance practices.

1. Inspection practices

1.1 Inspection manual

Rail transit systems shall develop or formally adopt existing structural inspection manuals with the following sections:

a) Inspection and Maintenance Organization
   - Job descriptions
   - Qualifications
   - Responsibilities

b) Policies
   - Personnel
   - Inspection
   - Maintenance
   - Safety
   - Reports, plans and files

c) Coordination
   - Internal interfaces
   - External interfaces

d) Quality assurance/quality control

e) Inspection procedures

f) Planning and scheduling

g) Inventory

h) Inspection type

i) Documentation

COMMENT: Each rail transit system shall obtain inspection manuals used by the state(s) in which it operates. These are necessary for inspecting/documenting "highway" grade separations that the rail transit system may own or maintain. A rail transit system with bridges that are regulated by FRA shall also ensure that their Bridge Safety Management Program conforms in accordance with 49 CFR part 237.

Transit Authorities are encouraged to verify if owners of overhead structures are inspecting and maintaining their overhead structures in accordance with the applicable laws and regulations. This is necessary for rail transit owners to assure a safe operating environment.

1.2 Condition ratings

Each transit system shall establish or formally adopt, a rating system pertaining to its structures that is both compatible with its maintenance planning and scheduling and with any outside agencies it must coordinate

with. If it has a computerized maintenance system, then the rating system must be structured to input into that system.

The inspectors must be trained to uniformly apply the rating system when performing the inspections. The rating system, at a minimum, shall cover the structures and components listed in Section 1.2.1 through Section 1.2.5. Agencies are encouraged to augment the rating system as necessary to complement their infrastructure inventory.

1.2.1 Bridges

a) Substructure:
- Material:
  - Timber
  - Concrete (cast in place/precast)
  - Masonry
  - Steel
- Other:
  - Slope protection
  - Coating System

b) Superstructure
- Type:
  - Truss
  - Multi-girder
  - Box girder
  - Arches
  - Slab
  - Movable
  - Rigid frame
  - Suspension
  - Cable stayed
- Material:
  - Steel
  - Timber
  - Concrete (cast in place/precast)
  - Pre-stressed concrete
  - Masonry
- Other:
  - Bearings Coating system
  - Special connections (pin-hangers)

c) Decks
- Material:
  - Concrete (cast in place/precast)
  - Steel
  - Timber:
    - Parapets
    - Railings
    - Walkways
    - Appendages
- Other:

- Drainage
- Lighting
- Utilities (hangers and connections)
- Noise suppression systems
- Joints
- Pedestrian walkways

d) Waterway:
- Scour
- Channel protection

1.2.2 Tunnels and ancillary structures

a) Materials:
- Steel
- Concrete (cast in place/precast)
- Masonry
- Unlined
- Other

b) Special subsystems:
- Drainage
- Floating slab
- Wall penetrations (doors, pipe, etc.)
- Ventilation shafts
- Other (standpipe, electrical, lighting, ventilation, etc.)

1.2.3 Culverts

a) Materials:
- Concrete (cast in place/pre-cast)Steel
- Masonry
- Other

b) Waterway:
- Scour
- Channel protection

1.2.4 Retaining walls and barrier walls

a) Materials:
- Concrete (cast in place/pre-cast)
- Steel
- Masonry
- Mechanically stabilized earth (MSE)

b) Waterway:
- Scour
- Channel protection

1.2.5 Special structures

a) Catenary structures
b) Communication towers
c) Passenger Emergency Exit Systems and Appurtenances

d) Other

2. Inspection implementation

2.1 Inspection procedures

Before beginning the inspection, the inspection team shall study the structure file and as-built plans carefully to determine locations and level of criticality for the inspection. In addition, an assessment of the following shall be made:

- the potential for fatigue damage based upon the loading history
- the fatigue-prone details
- records of damage or deficiencies
- records of past repairs

The following procedures shall be performed routinely but may be adjusted based on special requirements:

a) Verify dimensions and member sizes using thickness gauges to determine if there is section loss due to corrosion. If a bridge has been repainted, then corrosion-related section loss may not be obvious. Document deviations, modifications or repairs with an estimate of their age.

b) Concrete elements shall be sounded and checked for cracks, scaling, spalling or other deterioration that might indicate a loss in strength.

c) Check steel members for corrosion, cracking or deformities with particular emphasis on locations prone to fatigue, brittle fracture or stress corrosion. Perform dye-penetrant tests at suspicious locations.

d) Concrete decks shall be inspected and sounded, top and bottom, to identify delamination and moisture penetration.

e) Check devices that facilitate movement to ensure that they are functioning properly.

f) Bearings and deck joints are also to be checked. Document opening or position relative to ambient temperature. This data shall be used to identify excessive movement or frozen bearings.

g) Substructure units shall be sounded and checked for settlement. Probe foundations for scour and undermining.

Inspection safety is an important consideration. Procedures shall be carefully planned for each project. Inspectors shall be familiar with, and follow, OSHA regulations related to fall protection, underwater safety, confined-space restrictions and exposure to toxic materials around bridges, such as creosote and bird droppings, as well as other applicable regulations.

2.2 In-depth and fracture critical inspections

The inspection intensity is based on the criticality of the structural element. An in-depth inspection is a close-up, hands on inspection of one or more structural members above or below water level to detect any deficiencies not readily visible using routine inspection procedures.

A fracture critical inspection applies to steel bridge components or any special structure with steel components that meet the definition of fracture critical members. Per the National Bridge Inspection

Standards (NBIS), a fracture critical member is a steel member in tension, or with a tension element, whose failure would probably cause a portion of or the entire bridge to collapse.

The objective of a fracture critical inspection is to mitigate the potential for fatigue-related failures. Fracture critical inspections shall include the identification of fracture critical members and the development of a plan for inspecting these members. Inspectors shall understand the importance of redundancy in a structure in order to identify these members, and also take into account the age of the bridge and material characteristics at the time it was constructed. In addition, the fracture critical inspection procedure shall include the following items:

a) Each rail transit system shall identify all fracture critical members, as defined by the NBIS, and maintain a fracture critical member file for each structure. If possible, this inventory shall establish which fracture critical members were fabricated in compliance with AASHTO's applicable requirements.

b) The rail transit system shall identify all the fatigue sensitive details throughout the transit guideway. The identified details shall be classified as fatigue sensitive based on AASHTO requirements, which include an evaluation based on the actual stress range and estimated number of cycles that each detail has been subjected to. This inventory and classification of fatigue sensitive details will require careful consideration, recognizing that some susceptible details may be excluded from the fatigue sensitive classification because they are subjected to low levels of stress or a small number of cycles. Also, the fatigue-sensitive determination is time-dependent, meaning that, as cycles accumulate, additional details may be reclassified as fatigue sensitive.

c) Using the compiled inventory of fracture critical members and fatigue sensitive details, a detailed, close visual inspection in the field shall be performed on these members. The inspection shall focus on tension zones of fracture critical members and fracture critical connections. All details identified as "prone to cracking," such as details with a potential for fatigue damage, shall be checked very closely. The inspector's view shall be clear, unobstructed, well illuminated and within an arm's length of the structural member. The member shall be viewed from all exposed sides and all angles. Additional light, magnification and nondestructive testing equipment shall be used when needed. If special equipment or testing procedures are called for, then the inspectors shall be trained to use this equipment, or the inspection program shall include provisions to retain the services of certified specialists to perform the work.

d) Welded girders, insert plates, cover plate ends and unground welds are susceptible to fatigue crack initiation. Reentrant corners and web gaps can also initiate fatigue cracks. Inspectors shall recognize problems caused by secondary stresses such as out-of-plane bending at diaphragm and floor beam connections, particularly on skewed bridges. Other points of localized stress concentration and potential crack initiation are tack welds, intermittent nicks, scars and holes with rough edges.

e) Special attention shall be given to truss spans. Inspectors shall safely position themselves on truss spans so that members and connections may be examined from all angles. If debris is present, then the surface must be cleaned and scraped if necessary. Compression members shall be checked for buckling. Deformations, twisting or eccentricity is also to be documented. Tension members shall be checked for flaws, welding, tears, cracks or "necking down" of section. Each member and connection shall be checked for loose or missing bolts or rivets, for corrosion and section loss, and for collision damage. Inspector's shall verify and record gusset plate thicknesses by using a combination of visual and ultrasonic testing during each inspection interval once corrosion is evident. It is important that all measurement locations be identified and located from reference points that are readily reestablished. If a suspicious problem is identified, but its significance cannot be determined with the equipment at

the disposal of the inspector, then appropriate follow-up testing and consultation with the rail transit system inspection program manager is required.

f) The inspection findings for fracture critical members and fatigue sensitive details shall be included in the corresponding inspection reports, which shall be distributed according to established documentation procedures.

g) AREMA fatigue standards may be utilized in lieu of AASHTO standards at the option of the transit system.

2.3 Inspection staff qualifications

2.3.1 Program Manager

The Program Manager shall administer the rail transit system's inspection standard and assign the responsibilities for structure inspection, reporting, and inventory.

a) Be a registered Professional Engineer in the state the structure is located in, or have 10 years of bridge (tunnel) and other structure inspection experience in a responsible capacity; and

b) Successfully complete a Federal Department of Transportation-approved comprehensive bridge (tunnel) inspection training course. For example, NHI Course 130055 -- Safety Inspection of In-Service Bridges qualifies as an acceptable comprehensive training course.

To remain qualified as a Program Manager, successful completion of a Federal Department of Transportation-approved "refresher bridge inspection training course" must be completed every 5 years.

2.3.2 Structures inspection team leader

The Inspection Team Leader is the individual in charge of the structural inspection team and is responsible for planning, preparing for, and performing field inspections:

1) Have the qualifications specified for a Program Manager listed above; or

2) Have five years bridge and other structure inspection experience and have successfully completed a FHWA-approved comprehensive bridge inspection course; or

3) Be certified as a Level III or IV Bridge Safety Inspector under the National Society of Professional Engineer's program for National Institute of Certification in Engineering Technologies (NICET) and have successfully completed a Federal Department of Transportation-approved comprehensive bridge inspection training course; or

4) Have all of the following:
   i. Bachelor's degree in engineering from a college or university accredited by or determined as substantially equivalent by the Accreditation Board for Engineering and Technology; and
   ii. Successfully passed the National Council of Examiners for Engineering and Surveying Fundamentals of Engineering examination; and
   iii. Two years of bridge and other structure inspection experience; and
   iv. Successfully completed a Federal Department of Transportation-approved comprehensive bridge inspection training course; or

5) Have all of the following:
   i. An associate's degree in engineering or engineering technology from a college or university accredited by or determined as substantially equivalent by the Accreditation Board for Engineering and Technology; and

ii. Four years of bridge and other structure inspection experience; and
iii. Successfully completed a Federal Department of Transportation-approved comprehensive bridge inspection training course.

6) The Team Leader for tunnel inspections must, at a minimum, be a registered professional engineer (P.E.). Additionally, the Team Leader must also meet the requirements as set forth in the National Tunnel Inspection Standards (NTIS).

A qualified Inspection Team Leader must be at the structure during each initial, routine, in-depth, fracture critical, and underwater inspection.

2.3.3 Inspection team

The inspection team shall have at a minimum, one person qualified as an Inspection Team Leader. All other inspectors must have successfully completed a Federal Department of Transportation- approved comprehensive bridge inspection training course.

2.3.4 Underwater inspector

Divers performing underwater inspections and evaluations shall be fully qualified by training and experience in evaluating the types of degenerative underwater structural and streambed conditions that can exist at given bridge locations.

Underwater bridge inspection diver must successfully complete a Federal Department of Transportation-approved comprehensive bridge inspection training course or other Federal Department of Transportation-approved underwater diver bridge inspection course.

Inspections made by divers not fully qualified as an Inspection Team Leader shall be limited to bridge situations where measurements, verbal descriptions, underwater photography, etc. can provide conclusive evidence of underwater conditions to an on-site fully qualified Inspection Team Leader.

2.4 Load rating/scour analysis

Load ratings and scour analysis are not required as part of a scheduled inspection for guide way structures. However, existing load ratings and scour analysis must be on file for each structure owned by the rail transit system. In addition, a structural load rating or scour analysis shall be performed if any of the following conditions exist:

a) Significant deterioration of the primary structural members or channel bottom is discovered during a visual inspection.

b) Current live loads (axle weight or configuration) are substantially different from the original design live load.

c) Undocumented structural modifications are discovered during inspection, which may potentially alter or inadvertently reduce the load-carrying capacity of a guide way.

The Program Manager will determine the need for, and will be in charge of any mandated load ratings or scour analysis. If a determination is made that load ratings or scour analysis are needed, then the analysis shall be prepared using the latest version of the rail transit system's design criteria, AASHTO and /or AREMA as required. The completed load rating and scour analysis shall be referenced in the corresponding inspection report and shall be disseminated according to established documentation procedures.

2.5 Seismic

The requirements for seismic inspection are presented using an incremental two-step approach that, based on a rational assessment of seismic risk, shall accommodate the needs of each rail transit system.

Under the direction of the Program Manager, each agency shall perform an inventory in accordance with AREMA Guidelines, to determine the degree to which all the transit guide way structures are susceptible to seismic loads.

This inventory shall be compiled in a report that is disseminated according to the established documentation procedures.

Following the determinations made during the existing structure inventory, each owner shall prepare "Post-Seismic Event Operation Guidelines" in accordance with AREMA Guidelines. Once completed, this self-contained manual shall be readily available to the Program Manager, as well as operations and maintenance personnel, to be used as an immediate source of reference information.

2.6 Structural damage diagnosis techniques

The rail transit system shall have on staff, or contract for the services of, qualified personnel who perform routine visual inspections of structural elements. In the event that structural damage or failures are found through visual examination, additional testing may be required.

2.6.1 Nondestructive testing

Inspection teams shall routinely use nondestructive testing such as thickness measurement instruments to help determine loss of section and dye penetrants to help locate and define cracks in steel. All testing shall be performed per industry standards.

Other types of specialized nondestructive tests include use of specialized equipment, such as for ultrasonic or X-ray examination of steel members and welds.

2.6.2 Destructive testing

Destructive material testing may be required once a problem has been identified, and further study may be needed to determine its severity and extent. The Program Manager may direct destructive testing of structural components to predict or determine failure modes. Removing a sample of steel for lab tests to determine fatigue vulnerability or material properties would be an example of destructive testing. For concrete structures, destructive testing may include such tests as petrographic analysis or Windsor Probe testing.

2.7 Underwater inspection

If applicable, each rail transit system shall perform underwater structural inspection at no more than 60-month intervals or more frequently as determined by a condition of the substructure elements or scour vulnerability analysis outlined by applicable FHWA publications. Underwater inspections involve visually or tactually inspecting all the exposed underwater components of each bridge, utilizing appropriate tools and methods. This includes but is not limited to abutments, piers, footings, piles, fender systems and channel scour problems. This work shall be performed in conformance with applicable OSHA Regulations and as described in the FHWA "Bridge Inspector's Reference Manual" and the "Underwater Bridge Inspection Manual".

Underwater inspections shall be performed on any qualifying structure where the water depth around any of the substructure units is normally greater than 1 m and inspection using hip boots is impossible or impractical because of water depth, current, soft bottom conditions, etc.

Underwater inspection reports shall contain pertinent information as required by the FHWA "Bridge Inspector's Reference Manual" and the "Underwater Bridge Inspection Manual".

3. Inspection controls

3.1 Frequency

Inspections shall be performed at intervals as indicated for the following structures. Additionally, special inspections shall be performed as directed by the Program Manager following extraordinary events such as major flooding, collisions, fire and seismic occurrences.

3.1.1 Bridges

Each bridge shall be routinely inspected at regular intervals at least once every 24 months.

Fracture critical members and fatigue sensitive details shall also be inspected at least once every 24 months following the detailed, close visual inspection procedure for a fracture critical inspection.

Certain types or groups of bridges will require inspection at an interval more frequent than once every 24 months. The intensity and frequency to which a bridge shall be inspected will be determined by factors such as age, state of maintenance and known deficiencies. The evaluation of these factors will be the responsibility of the Program Manager.

Bridge pier protection shall be inspected at regular intervals of at least once every 60 months.

3.1.2 Tunnels

Each tunnel, including penetrations such as doors and pipes, shall be inspected at regular intervals of 24 months or as defined in the NTIS. Certain tunnels may be inspected at regular intervals up to 48 months based on inspection findings and analysis that justify an increased inspection interval. At a minimum, the following criteria shall be used to determine the level and frequency of inspection based on an assessed lower risk, tunnel age, time from last major rehabilitation, tunnel complexity, traffic characteristics, geotechnical conditions, functional systems, and known deficiencies. Conversely, certain types of structures, such as old tunnels or underwater tunnels, may require more frequent inspection intervals. Such intervals shall be determined by the Program Manager but shall not exceed the duration specified in NTIS.

Ventilation shafts shall be inspected at intervals of at least once every 24 months. However, certain safety elements such as stairs, gratings at street level, spalled concrete areas, etc. shall be inspected more frequently, as determined by the Program Manager.

3.1.3 Culverts

Culverts, not otherwise classified as bridges or tunnels, shall be inspected at regular intervals of at least once every 60 months. The condition of the structure may require a more frequent inspection interval.

3.1.4 Retaining walls and barrier walls

Retaining and barrier walls shall be inspected at regular intervals of at least once every 60 months.

3.1.5 Special structures

Special structures, such as catenary structures and communication towers, etc., shall be inspected at intervals determined by the Program Manager.

3.2 Documentation

3.2.1 Structure and defect database

A computerized database consisting of the structural inventory and the inspection frequency, dates and condition rating of all structural elements that make up the various structures included in Sections 1.2 and 2.1 shall be maintained.

3.2.2 Inspection report format

A structural inspection report, which identifies the asset and documents the inspection, date, name of inspector and conditions of structural elements shall be maintained. See Appendix A, example of condition rating codes; and Annex B, for example of documentation forms. For sample tunnel inspection forms, see *FWHA Highway and Rail Transit Tunnel Inspection Manual – Chapter 3.D.3*

3.2.3 Engineering review

Inspection reports shall be reviewed by the Program Manager for final determination of condition and recommendation for mitigation as necessary. The Program Manager will be responsible to ensure that inspection reports are complete and consistent with good inspection practices.

3.2.4 Document control

Permanent files shall be established for all structures. Each file shall contain all pertinent drawings, inspection records, records of maintenance and repair work. Each Agency shall also have on file Master Lists of the following:

a) All Agency owned structures

b) Structures requiring fractural critical, underwater or special inspections

c) Scour critical or reduced load ratings

3.2.5 Quality assurance/Quality control Program

A quality assurance/quality control program shall be provided to ensure that all structures are being adequately inspected at the required frequency and that complete documentation is being provided according to proper procedures.

4. Maintenance

4.1 Qualifications

4.1.1 General Qualifications

The transit system shall hire, or contract for service, individuals who are trained and competent to maintain structural systems at a level consistent with agency guidelines and performance criteria.

4.1.2 Safety

Individuals involved in the maintenance of structures shall be trained and qualified per the system safety plan of the rail transit system - minimally, as necessary, including but not limited to: fall protection provisions, confined space requirements, PPE, and Roadway Worker protection..

4.1.3 Welding

Welders, welding operators and tack welders shall be qualified based upon the certification requirements of ANSI/AWS D1.1 and D1.5 as required by application. Each transit system or contractor shall be responsible for the qualification of welders.

4.2 Maintenance Items

4.2.1 Coatings

The person in charge of structure maintenance shall establish a maintenance schedule for each type of coating system (paint, elastomeric membrane, etc.) based upon the life expectancy of the coating.

4.2.2 Drainage

Drainage system maintenance shall be performed on a schedule to ensure compliance with original design considerations and in response to deficiencies noted in inspection reports.

4.2.3 Joint sealing

Joint seals shall be maintained periodically to perform as designed and in response to deficiencies noted in inspection reports.

4.2.4 Bearings

Bearings shall be maintained per manufacturers' recommendations and in response to deficiencies noted in inspection reports.

4.2.5 Sealing concrete

Sealing of concrete shall be scheduled to prevent corrosion or deterioration associated with water penetration and in response to deficiencies noted in inspection reports.

4.2.6 Cleaning

Structures shall be cleaned to prevent corrosion and drainage problems. This shall be done in accordance with a schedule established by the individual in charge of structure maintenance. Cleaning of structures for aesthetic purposes shall be determined by the rail transit system.

4.2.7 Vegetation

Vegetation shall be removed from structures in order to provide a clear view for the inspection of structural elements.

4.2.8 Stray current control

See APTA RT-S-FS-005-03, "Traction Electrification Stray Current/Corrosion Control Equipment Inspection and Maintenance."

4.3 Frequency

A plan shall be established by the rail transit system for frequency of maintenance.

4.4 Documentation

When deteriorated structural elements are repaired or replaced, an entry indicating the new element condition shall be made in the inspection records called for in Section 3.2.1.

Each rail transit system shall establish policies to address routine maintenance needs identified in the inspection process.

Each rail transit system shall establish procedures to respond to the finding of critical conditions during an inspection that require immediate correction or note a significant change in condition.

4.5 Inspection/maintenance record review

Inspection records shall be reviewed periodically by the person in charge of structure maintenance to ensure compliance with the program and, in particular, that all high-priority defects have been addressed. Where possible, all records shall be maintained in an electronic database.

Related APTA Standards

- APTA RT-FS-S-005-03 "*Traction Electrification Stray Current/Corrosion Control Equipment Inspection & Maintenance"* (This document was previously numbered as APTA RT-S-FS-005-03)

References

This standard shall be used in conjunction with the most recent versions of the following publications:

Code of Federal Regulations:

- *23 CFR 650, Subpart C, National Highway Bridge Inspection Standards.*
- *23 CFR 650, Subpart E, National Tunnel Inspection Standards.*
- *29 CFR, OSHA Standards.*
- *29 CFR, OSHA Standards, Subpart T.*
- *49 CFR Part 237 Bridge Safety Standards*
- *49 CFR Part 659, Rail Fixed Guideway Systems; State Safety Oversight*

American Association of State Highway and Transportation Officials

- *"AASHTO Manual for Maintenance Inspection of Bridges," prepared by the Highway Subcommittee on Bridges and Structures, 1970.*
- *AASHTO Manual for Bridge Evaluation*

American National Standards Institute and American Welding Society:

- *ANSI/AWS D1.1.*
- *ANSI/AWS D1.5.*

American Railway Engineering and Maintenance Association:

- *AREMA Fatigue Standards.*
- *AREMA Manual for Railway Engineering, Chapter 9, Part 1, Section 1.2.*
- *AREMA Manual for Railway Engineering, Chapter 9, Part 1, Section 1.5.*

Federal Highway Administration:

- *"Inspection of Fracture Critical Bridge Members"*
- *"Manual for Moveable Bridge Inspection"*
- *"Manual on Uniform Traffic Control Devices"*
- *"Bridge Inspector's Reference Manual"*
- *"Underwater Bridge Inspection Manual"*
- *"Highway and Rail Transit Tunnel Inspection Manual"*
- *"Tunnel Operations, Maintenance, Inspection, and Evaluation (TOMIE) Manual"*
- *"Specifications for the National Tunnel Inventory"*

Transit Cooperative Research Program

- "TCRP Synthesis 23, Transportation Research Board (TRB) *"Inspection Policy and Procedures for Rail Transit Tunnels and Underground Structures."*

Definitions

bridge: A structure built to span physical obstacles including, but not limited to a body of water, a valley, a road, or railway, for the purpose of providing passage over the obstacle.

culvert: A structure that typically allows water to flow under a road, railroad, trail, or similar obstruction. Typically embedded so as to be surrounded by soil, a culvert may be made from a pipe, reinforced concrete or other material.

fixed structure: A structure used by rail transit systems for the purpose of providing transit services.

owner: The legal entity that retains the right to construct and operate a transit system.

program manager: The individual in charge of the RTS program that has been assigned or delegated the duties and responsibilities for inspection, reporting and inventory of fixed structures. A licensed professional engineer who is authorized by the RTS to exercise engineering judgment; to make technical decisions with regard to the fixed transit guideway structures; and to direct qualified staff, engineering consultants or other qualified specialists to perform work. The Program Manager does not have to be a direct employee of the owner.

NOTE: The term program manager as referenced herein refers to a function title in accordance with 23 CFR 650 and not a position title.

rail transit system: The organization or portion of an organization that operates rail transit service and related activities. Synonyms: operating agency, operating authority, transit agency, transit authority, transit system.

rail transit system engineer: See Program Manager.

scour: Erosion of streambed or bank material due to flowing water; often considered as being localized around piers and abutments of bridges.

spall: An area of concrete that has broken, chipped or become pitted.

team leader: Individual in charge of an inspection team responsible for planning, preparing and performing field inspection of the fixed structure.

tunnel: An underground passageway for automobiles, trains, pedestrians, etc., completely enclosed except for openings for entrance and exit, commonly at each end.

Abbreviations and acronyms

AASHTO American Association of State Highway and Transportation Officials
ANSI American National Standards Institute
APTA American Public Transportation Association
AREMA American Railway Engineering and Maintenance Association
AWS American Welding Society
CFR Code of Federal Regulations
FCM fracture critical members
FHWA Federal Highway Administration

FRA	Federal Railroad Administration
FTA	Federal Transit Administration
NATSA	North American Transit Services Association
NBIS	National Bridge Inspection Standards
NICET	National Institute of Certification in Engineering Technologies
NTIS	National Tunnel Inspection Standards
OSHA	Occupational Safety and Health Administration
RTA	Regional Transit Authority
RTS	Rail Transit System
TCRP	Transit Cooperative Research Program
TRB	Transportation Research Board

Summary of document changes

1. Document formatted to the new APTA standard format.
2. Sections have been moved and renumbered.
3. Definitions, abbreviations and acronyms have been moved to the back of the document.
4. Two new sections added: "Summary of document changes" and "Document history."
5. Some global changes to section headings and numberings resulted when sections dealing with references and acronyms were moved to the end of the document and other cosmetic changes, such as capitalization, punctuation, spelling, grammar and general flow of text.
6. Document was previously numbered as *APTA RT-S-FS-001-02* and changed to *APTA RT-FS-S-001-02 Rev1*.
7. Added catenary structures to the scope of the standard to ensure these critical structures are inspected and maintained properly.
8. Section 1.1 Added language to FRA regulations for those bridges that may apply.
9. Section 1.2.5 Expanded special structures to include passenger emergency exit systems and appurtenances
10. Section 1.3 'Load Rating' to Section 2.4 as 'Load Rating/Scour Analyses'.
11. Section 1.4 on 'Fatigue' deleted as a section and added to Section 2.2.(b) also because the topic appears in various other places.
12. Section 1.5 'Seismic' moved to a new Section 2.5.
13. Added 2.0 'Inspection Implementation' Section that incorporates and reorganizes inspection procedures, ratings, techniques etc.
14. New Section 2.2 'In-depth and fracture critical inspections' added.
15. Reorganized Inspection Practices Section and subsections into two separate Sections (Inspection Practices & Inspection Implementation) in order to segregate the inspection practices/program from the inspection implementation.
16. Reworded section on 3.1.2 Tunnels to accommodate current inspection concerns for tunnels and allow for the inclusion of upcoming National Tunnel Inspection Standards.
17. Section 4.1.2 Safety qualifications expanded listing minimum, as necessary, safety related training/qualifications.
18. Revised various wording and sections to correspond with most current contents of the National Bridge Inspection Standards.
19. Modified the frequency duration from the number of years to number of months required between inspections.
20. Added the following new references: 23CFR 650, Subpart E National Tunnel Inspection Standards, 49 CFR Part 237, Bridge Safety Standards, 49 CFR Part 659, Rail Fixed Guideway Systems; State

Safety Oversight, AASHTO Manual for Bridge Evaluation, Bridge Inspector's Reference Manual, Underwater Bridge Inspection Manual, Highway and the Rail Transit Tunnel Inspection Manual.

21. Added in definitions for bridge, culvert, Program Manager, Scour, Spall, Team Leader and Tunnel to conform to regulations and standard industry practice.
22. Miscellaneous minor editorial modifications for clarity.
23. Added example inspection forms as attachments.
24. Added standardized rating codes in Appendix A for structural elements conforming to the Bridge Inspection Standards.

Document history

Document Version	Working Group Vote	Public Comment/ Technical Oversight	Rail CEO Approval	Rail Policy & Planning Approval	Publish Date
First published	June 25, 2002	—	—	Sept. 22, 2002	September 2002
First revision	Nov 4, 2014	April 1, 2016	May 19, 2016	July 20, 2016	October 6, 2016

Annex A: (informative) - Example of condition rating codes

Description:

In order to promote uniformity between inspectors, these guidelines can be used to rate and code the structural elements. The condition ratings are used to describe the existing in-place structure as compared to the as-built condition. Condition codes should provide an overall condition of the entire component being rated. Coding shall not attempt to describe localized or normally occurring instances of deterioration or dis-repair.

The load carrying capacity will not be used in evaluating condition items. The fact that a bridge was designed for less than the current legal loads and may be posted shall have no influence upon condition ratings. Portions of bridges that are being supported or strengthened by temporary members will be rated based on their actual condition; that is, the temporary members are not considered in the rating of the item.

Completed bridges not yet open to traffic, if rated, shall be coded as if open to traffic. Even if the bridge is closed, rate each item without being influenced to the fact that the bridge is closed.

The determination of which of the following ratings apply to each of the items will be based on an evaluation of all the relevant factors and information included in the detailed inspection reports. The rating chosen for each of these items will, in effect, be a composite of all of the relevant factors.

NA	**Not Applicable**
9	**Excellent Condition**
8	**Very Good Condition** - No problems noted.
7	**Good Condition** - Some minor problems.
6	**Satisfactory Condition** - Structural elements show some minor deterioration.
5	**Fair Condition** - All primary structural elements are sound but may have minor section loss. Cracking, spalling or scour.
4	**Poor Condition** - Advanced section loss, deterioration, spalling or scour.
3	**Serious Condition** - Loss of section, deterioration, spalling, or scour may have seriously affected primary structural components. Local failures are possible. Fatigue cracks in steel or shear cracks in concrete may be present.
2	**Critical Condition** - Advanced deterioration of primary structural elements. Fatigue cracks in steel or shear
1	**"Imminent" Failure Condition** - Major deterioration or section loss present in critical structural components or
0	**Failed Condition** - Out of service - beyond corrective action.

Annex B: (informative) - Example of documentation forms

The following forms were developed by the Pennsylvania Department of Transportation (Penn DOT) and later adopted by the rail transit agency of the Port Authority of Allegheny County. These forms contain the minimum elements and is intended to provide guidance to rail transit agencies when developing their own forms.

a. Site Data
b. Bridge 1 Data
c. Abutment Data
d. Pier Data
e. Bridge 2 Data
f. Maintenance Needs Data
g. Retaining Wall Inspection Report Sheet 1
h. Retaining Wall Inspection report Sheet 2
i. Scour/Underwater Inspection Report Sheet 1
j. Scour/Underwater Inspection Report Sheet 2

Site Data Form

PAT Form D-450A (2001) **Site Data** **BRIDGE MANAGEMENT SYSTEM** *Bridge Inspection Report* BMS Updated by _____ Date _____

A01 _____ E06 Inspection Date _____

A06 _____ over _____ E07 Inspection Type _____

E12 Name of Consultant _____ E08 Inspected by _____

C05 Structure Type _____ E13 Hired by _____

Bridge Signing Verification — Check boxes if Maintenance Activities are needed > x

BMS Item	Type of Sign	Required Sign	SIGNING IN FIELD Near Advance	Bridge Site Near	Bridge Site Far	Far Advance	Comments	
D15	Bridge Weight Limit	T						
D15	Except Combination	T						
D14	One Truck at a Time	Yes/No						
B22/B23	Vert. Clearance-On						See Sketch	
B22/B23	Vert. Clearance-Und						See Sketch	
	One Lane Bridge	Yes/No				(Opt)		
	Narrow Bridge	Yes/No				(Opt)		
	Hazard Clearance	Yes/No						
	Other							
(Opt)	Other							

Key > OK: Signs propoerly installed M: Signs Missing D: Signs damaged

Notes _____

Vertical Clearance Sign **On Feature:** < B01 = _____ B31 = _____ **Under Feature:** < B01 = _____ B31 = _____

E26 Underclearance Appraisal _____ Controlling: Lateral _____ Vertical _____

E28-A Traffic Safety Features (Subfields show n vertically) Posted Speed Limit _____ mph

_____ Bridge Railing _____

_____ Transition _____

_____ Approach Guiderail _____

_____ Approach Rail Ends _____

E28 Approach Alignment _____

E15 Approach Roadw ay _____

Pavement _____

Drainage _____

Shoulders _____

E14 Approach Slab _____

Bump at Bridge Yes _____ No _____ _____

C19 Pavement Relief Joint _____

Bridge 1 Data Form

PAT Form D-450B **Bridge 1 Data** A01 E06 Inspection Date
(2001)

For PAT Roadways B01 Ref B27 ADT B28 ADT Year B30A ADTT %

Deck

E25 Deck Geometry Table Controlling Values: B27/B34/B22 A31/B18
Design Exception granted?

E16 Deck Wearing Surface

E17 Deck Estimated Spall of Delamination % Est. Chloride Content
Top

Underside

Expansion Joints C22 Expansion Joint Types

Deck Drainage

Superstructure

E18 Superstructure See Sheet for Additional Details. Form 491-J attached for FCM details Yes/No

Girders/Beams

Floorbeams

Stringers

Diaphragms

Truss Members

Portals/Bracing

Bearings (Type/Condition)
Abutment No. 1
Abutment No. 2
Piers
Piers

Drainage System (Below Deck)

Abutment Data Form

PAT Form D-450C (2001) **Abutment Data** A01 E06 Inspection Date

E20 Substructure Details on Sheet

NAB - Near Abutment (Use same notation as W09)

Backwall

Bridge Seats

Cheekwalls

Stem

Wings

Footing

Piles

Scour/Undermine Yes No See Details on Form Sheet

Settlement

Embankment-Slope/Wall

Wall Drainage

FAB - Far Abutment (Use same notation as W09)

Backwall

Bridge Seats

Cheekwalls

Stem

Wings

Footing

Piles

Scour/Undermine Yes No See Details on Form Sheet

Settlement

Embankment-Slope/Wall

Wall Drainage

Pier Data Form

PAT Form D-450D **Pier Data** A01 E06 Inspection Date
(2001)

Substructure (Cont.)
Pier/Bent Number (Use same notation as W09)
Bridge Seats
Caps
Cheekwalls
Columns/Stems
Footings
Piles
Scour/Undermine Yes No See Details on Form Sheet
Settlement

Pier/Bent Number (Use same notation as W09)
Bridge Seats
Caps
Cheekwalls
Columns/Stems
Footings
Piles
Scour/Undermine Yes No See Details on Form Sheet
Settlement

Bridge 2 Data Form

PAT Form D-450K **Bridge 2 Data** A01 E05 Inspection Date
(2001)

E17 Paint Condition New Paint Y/N If Yes: Spot Zone Full
Revise item G01-G10

Interior Beam/Girder

Fascias

Splash Zone:Truss/Girder
Truss
Bearings
Other

E21 Estimated Remaining Life (Super + Sub + Deck)

Recaluate IR/OR: Yes Due to: Deterioration New Wearing Surface Other
No Previous Ratings Dated are still valid

E28 Inventory Rating								
E29 Operating Rating	H	HS	ML-80	TK527	COMP SNGL LRV	SD SNGL LRV	COMP DBL LRV	SD DBL LRV

E32 Rate Method E33 Type Member AASHTO E37 Spec E38 Manual

E30 Bridge Post Controlling: H HS ML80 Engineering Judgement

E22 Structural Condition Appraisal Based Upon Table 1 B27-ADT B30- IR
or E16-Super E18-Sub E20- Culvert

E01 Next Insp. Freq. E02 Equip. Next Insp.

E03 Spec. Insp. Type E07 By Insp.

Is bridge over water? Yes E20 = N Complete Forms D-450E through G
No E20 = N E19 = N E25 = N E31 = N

Notes:

Signature and Date:

Maintenance Needs Data Form

PAT Form D-450M **Maintenance Needs Data**
(2001) A01 _____ E06 Inspection Date _____

Approach Roadway Work	Item #	H01 Location		H05 Qty	H05 PR	H09 D/C
Pavement (Patch/Raise)	RDPAVMT	L N R L F R	SY			
Pavement Relief Jt (Rep/Repl)	RDRLFJT	L N R L F R	SY			
Shoulders (Repair/Reconstr)	RDSHLDR	L N R L F R	SY			
Drainage-Off Bridge (Improve)	RDDRAIN	L N R L F R	EA			
GR/Trans/End (Rep/Repl/Imp)	RDGDERL	L N R L F R	EA			
Load Limit Signs (Replace)	RDLDSGN	L N R L F R	EA			
Clearance Signs (Replace)	RDCLSGN	L N R L F R	EA			
Cut Brush to Clear Signs	RDBRUSH	L N R L F R	EA			
Approach Slab (Replace)	A744201	L N R L F R	SY			
Cleaning - Flushing						
Deck	A743101	- -	EB			
Scupper/Down Spouting	B743101	1 2 3 4 5 O	EB			
Bearing/Bearing Seat	C743102	1 2 3 4 5 O	EB			
Steel-Horizontal Surfaces	D743102	1 2 3 4 5 O	EB			
Deck						
Bitum Deck W Surf (Rep/Repl)	BITWRGS	1 2 3 4 5 O	SY			
Timber Deck (Rep/Repl)	B744301	1 2 3 4 5 O	SY			
Open Steel Grid (Rep/Repl)	C744302	1 2 3 4 5 O	SY			
Concrete Deck (Repair)	D744303	1 2 3 4 5 O	SY			
Concrete Sidewalk (Repair)	E744303	1 2 3 4 5 O	SY			
Concrete Curb/Parapet (Rep)	F744303	1 2 3 4 5 O	SY			
Deck Joints - Expansion Joints						
Reseal	A743301	N 1 2 3 O F	LF			
Repair/Reseal	A744101	N 1 2 3 O F	LF			
Compression Seal (Rep/Rehab)	B744102	N 1 2 3 O F	LF			
Modular Dam (Rep/Rehab)	C744102	N 1 2 3 O F	LF			
Steel Dams (Rep/Rehab)	D744102	N 1 2 3 O F	LF			
Other Types (Rep/Rehab)	E744102	N 1 2 3 O F	LF			
Bridge Railings - Parapets						
Bridge Parapet (rep/Repl)	RLGBRPR	N 1 2 3 O F	LF			
Struct Mount GR (Rep/Repl)	RLGSTRM	N 1 2 3 O F	LF			
Pedestrian (Rep/Repl)	RLGPEDN	N 1 2 3 O F	LF			
Median Barrier (Rep/Repl)	RLGMEDB	1 2 3 4 5 O	LF			
Deck Drainage						
Scupper Grate (Replace)	DRNGRAT	1 2 3 4 5 O	EA			
Drain/Scupper (Install)	B744401	1 2 3 4 5 O	EA			
Downspouting (Rep/Repl)	C744402	N 1 2 3 O F	EA			
Bearings						
Lubricate	A743501	N 1 2 3 O F	EA			
Steel (Rep/Repl)	A744501	N 1 2 3 O F	EA			
Steel (Replace)	B744501	N 1 2 3 O F	EA			
Expansion (Reset)	C744502	N 1 2 3 O F	EA			
Pedestal/Seat (Reconstruct)	D744503	N 1 2 3 O F	EA			
Timber						
Stringer (Rep/Repl)	A744601	1 2 3 4 5 O	EA			
Other Members (Rep/Repl)	B744601	1 2 3 4 5 O	EA			

Steel	Item #	H01 Location		H05 Qty	H05 PR	H09 D/C
Stringer (Rep/Repl)	A744602	1 2 3 4 5 O	EA			
Floorbeam (Rep/Repl)	B744602	1 2 3 4 5 O	EA			
Girder (Repair)	C744602	1 2 3 4 5 O	EA			
Diaph/Lat. Bracing (Rep/Repl)	D744602	1 2 3 4 5 O	EA			
Reinforced, PS, PC, and PT Concrete						
Stringer (Rep/Repl)	A744603	1 2 3 4 5 O	EA			
Diaphragm (Rep/Repl)	B744603	1 2 3 4 5 O	EA			
Other Members(Rep/Repl))	C744603	1 2 3 4 5 O	EA			
Truss						
Members (Strengthen/Rep/Repl)	A744701	1 2 3 4 5 O	EA			
Portal (Modify)	B744701	1 2 3 4 5 O	EA			
Members(Tighten/Flameshorten)	C744702	1 2 3 4 5 O	EA			
Painting						
Superstructure - Spot	A743201	1 2 3 4 5 O	EB			
Substructure - Spot	B743201	N 1 2 3 O F	EB			
Superstructure - Full	C743201	1 2 3 4 5 O	EB			
Substructure - Full	D743201	N 1 2 3 O F	EB			
Abutment - Wings - Piers						
Backwall (Rep/Repl)	A744801	L N R L F R	CY			
Abutments (Repair)	B744802	L N R L F R	CY			
Wing (Rep/Repl)	C744802	L N R L F R	CY			
Piers (Repair)	D744802	1 2 3 4 5 O	CY			
Footing (Underpin)	E744803	N 1 2 3 O F	CY			
Masonry (Repoint)	F744804	N 1 2 3 O F	LF			
Abut Slopewall (Rep/Repl)	A745101	L N R L F R	SY			
Abut Slopewall (Construct New)	B745102	L N R L F R	SY			
Pile Repair	A745901	N 1 2 3 O F	EA			
Scour - Erosion Control						
Streambed Paving (Rep/Constr)	A745301	UP UN DN	CY			
Rock Protection	B745301	UP UN DN	CY			
Scour Hole (Backfill)	C745301	UP UN DN	CY			
Stream Deflector (Rep/Constr)	D745302	UP UN DN	CY			
Vegetation/Debris	ECREMVG	UP UN DN	CY			
Deposition (Remove)	ECREMDP	UP UN DN	CY			
Culvert						
Headwall/Wings (Rep/Repl)	A745201	IN OUT	SY			
Apron/Cutoff Wall (Rep/Repl)	B745202	IN OUT	SY			
Barrel (Repair)	C745203	- -	SY			
FOR COMPLETION BY REVIEW ENGINEER						
Apply Protective Coating						
Deck/Parapet/Sidewalk	A743401	DK PARA SW	SY			
Substructure	B743401	N 1 2 3 O F	SY			
Construct Temporary						
Support Pier	A745401	N 1 2 3 O F	EA			
Pipe/Culvert Crossing	B745401	LT CL RT	EB			
Bridge	C745401	LT CL RT	EB			

REP… Repair REPL … Replace IMP ….. Improve
N …. Near UP ….. Upstream LNR …. Near Left/Right
F …. Far DN …… Downstream LFR ….. Far Left/Right
O … Other UN …… Under 1,2,3,etc.. Span/Pier No.
IN … Inlet OUT … Outlet EB…. Each Bridge (site)

PR-PRIORITY CODE
0 - Prompt action required. (Inform Bridge Engineer before updating BMS)
1 - High Priority, as soon as work can be scheduled.
2 - Priority, review work plan, adjust schedule if needed.
3 - Add to scheduled work.
4 - Routine structural, can be delayed until funds are available.
5 - Routine non-structural, can be delayed until proggrammed.

MAJOR IMPROVEMENT NEEDS
[ ] Year Needed _____ F04 Improvement Length _____
F02 Type Work _____ F06 Bridge Width _____
F10 Future ADT _____ F11 Future ADT Year _____

Retaining Wall Inspection Report Sheet 1

PAT Form D-488T1 (2001)

BRIDGE MANAGEMENT SYSTEM
RETAINING WALL INSPECTION REPORT

BMS Updated by _____ Date _____

Retaining Wall Inspection Form D-488T1	Structure Identification Number A01	Structure Type T08
Inspection By:	Weather Conditions:	

T10 **Wall Use** _____ T09 **Insp Man Hours** _____

T13 **Backfill - Condition Rating** _____ Details on pages _____

Slope Stability/Settlement _____

Surface Drainage/Erosion _____

Vegetative Cover/Erosion Control _____

T14 **Wall Condition Rating** _____ Details on pages _____

Structural Wall, Soldier Beams, etc.: _____

Facing Panels, cribbing, etc.: _____

Bulging or Horizontal Displacement: _____

Wall Joints _____

Stub Abutment _____

T15 **Drainage - Condition Rating** _____ Details on pages _____

Weep Holes: Number _____ Condition _____

Roadway Drainage Control: Adequate _____ Inadequate _____

(Comment on Inlets/Outlets) _____

T16 **Foundation - Condition Rating** _____ Details on pages _____

Wall Base/Footing: _____

Wall Settlement/Stability/Tilting: _____

Tie Backs/Anchors: _____

T17 **Overall Condition** _____

Retaining Wall Inspection Report Sheet 2

PAT Form D-488T2 (2001)

BRIDGE MANAGEMENT SYSTEM
RETAINING WALL INSPECTION REPORT

BMS Updated by _____ Date _____

Retaining Wall Inspection Form D-488T2	Structure Identification Number A01 _____	Inspected By: _____ Date: _____

MAINTENANCE ITEMS

	H02	H04		H06	H08	H09
Maintenance Items	Item No.	Location	Unit	Est. Quantity	PR	D/C
Retaining Wall (REP/REPL)	RTWALLR		L.F.			
Facing (REP/REPL)	RTFACNG		S.Y			
Regrading	RTGRADE	L FW BW R	C.Y.			
Drainage (REP/REPL)	RTDRAIN	RW WH	E.A.			
Tie Back Conn. (REP/REPL)	RTTIEBK		E.A.			

NOTES:

Scour/Underwater Inspection Report Sheet 1

PAT Form D-488W1
(2001)

BRIDGE MANAGEMENT SYSTEM
Scour/Underwater Inspection Report

BMS Updated
by _____ Date ______

Scour/Underwater Inspection Report **Form D-488W1**	Structure Identification Number A01	W01 Insp. Date A01-A UW Insp. Date
Inspection By:	Weather Conditions:	

W02 Insp. Type
W02-A U.W. Insp. Type
W03 Reg. Freq.
W04 Int. Freq.

W07 Stream Bed Material
Description

W06 Scour Crit. Br. Ind.
W14 No. of Units Insp.
W15 Insp. Cost $.

W16 Name of Consultant
W17 Hired by

Substructure Units Inspection Findings (Use Additional Sheets as Required)

W09	W10	W11	W11-A	W11-B	W11-C	W11-F
Sub Unit	Found. Type	Water Depth	Observed Rating	U.I. Req.	Observed Depth	Counter-Measures

W12 Inspection Findings

W09	W10	W11	W11-A	W11-B	W11-C	W11-F
Sub Unit	Found. Type	Water Depth	Observed Rating	U.I. Req.	Observed Depth	Counter-Measures

W12 Inspection Findings

W09	W10	W11	W11-A	W11-B	W11-C	W11-F
Sub Unit	Found. Type	Water Depth	Observed Rating	U.I. Req.	Observed Depth	Counter-Measures

W12 Inspection Findings

W09	W10	W11	W11-A	W11-B	W11-C	W11-F
Sub Unit	Found. Type	Water Depth	Observed Rating	U.I. Req.	Observed Depth	Counter-Measures

W12 Inspection Findings

Scour/Underwater Inspection Report Sheet 2

PAT Form D-488W2 (2001) | **BRIDGE MANAGEMENT SYSTEM** *Scour/Underwater Inspection Report* | BMS Updated by _____ Date _____

Scour/Underwater Inspection Report Form D-488W2	Structure Identification Number A01 _____	W01 Insp. Date
		A01-A UW Insp. Date

OBSERVED SCOUR RATING GUIDE

Rating	Item Number 1 Change Since Last Insp.	2 Scour Hole	3 Debris Potential	4 Scourability	5 Opening Adequacy/ Channel	6 Sediment	7 Alignment	8 Velocity/ Stream Slope	Rating
9	None	None	None	Rock/P	Good	None	Good	Low	9
8	None	Minor	None	Rock/P/C	Good	Minor	Good	Low	8
7	Minor	Minor	Minor	Rock/C	Fair	Minor	Good	Medium	7
6	Minor	Advanced	Medium*	Stable	Fair	Medium	Medium	Medium	6
5	Medium*	Advanced	High*	Stable	Fair	High	Medium	High	5
4	Medium*	Serious	High*	Alluvium*	Poor*	High	Poor*+	High	4
3	High	Serious	Present*	Alluvium	Overtop*	High	Poor*	High	3
2	Bridge is scour critical, IMMEDIATE action is required*								2
1	Bridge is scour critical, bridge is CLOSED*								1
0	Bridge has failed due to scour*								0

NOTES:

Rating considerations given in highest to lowest level of importance from left to right.

* If an item is so marked, it cannot be given a higher ranking.

+ A higher ranking may be given if the unit is founded on component rock and no problems

DETERMINATION OF RATING FOR BMS ITEM W11-A

Substructure Unit	1 Change Since Last Insp.	2 Scour Hole	3 Debris Potential	4 Scourability	5 Opening Adequacy/ Channel	6 Sediment	7 Alignment	8 Velocity/ Stream Slope	W11-A Overall Observed Scour Rating

EXHIBIT B: PROPOSED AGREEMENT

PROPOSED AGREEMENT NO. C-3-3028

BETWEEN

ORANGE COUNTY TRANSPORTATION AUTHORITY

AND

_____

THIS AGREEMENT is effective as of this _____ day of _____, 20__ ("Effective Date"), by and between the Orange County Transportation Authority, 550 South Main Street, P.O. Box 14184, Orange, CA 92863-1584, a public corporation of the State of California (hereinafter referred to as "AUTHORITY"), and , , , (hereinafter referred to as "CONSULTANT").

WITNESSETH:

WHEREAS, AUTHORITY requires assistance from CONSULTANT to provide Bridge and Drainage Facility Inspection Services on OC Streetcar Project; and

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

WHEREAS, CONSULTANT has represented that it has the requisite personnel and experience, and is capable of performing such services; and

WHEREAS, CONSULTANT wishes to perform these services;

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

ARTICLE 1. COMPLETE AGREEMENT

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

/

B. AUTHORITY's failure to insist in any one or more instances upon the performance of any

terms or conditions of this Agreement shall not be construed as a waiver or relinquishment of AUTHORITY's right to such performance by CONSULTANT or to future performance of such terms or conditions and CONSULTANT obligation in respect thereto shall continue in full force and effect. Changes to any portion of this Agreement shall not be binding upon AUTHORITY except when specifically confirmed in writing by an authorized representative of AUTHORITY by way of a written Amendment to this Agreement and issued in accordance with the provisions of this Agreement.

ARTICLE 2. AUTHORITY DESIGNEE

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

ARTICLE 3. SCOPE OF WORK

A. CONSULTANT shall perform the work necessary to complete in a manner satisfactory to AUTHORITY the services set forth in Exhibit A, entitled "Scope of Work," which is attached to and, by this reference, incorporated in and made a part of this Agreement. All services shall be provided at the times and places designated by AUTHORITY.

B. CONSULTANT shall provide the personnel listed below to perform the above-specified services, which persons are hereby designated as key personnel under this Agreement.

Names	Functions

C. No person named in paragraph B of this Article, or his/her successor approved by AUTHORITY, shall be removed or replaced by CONSULTANT, nor shall his/her agreed-upon function or level of commitment hereunder be changed, without the prior written consent of AUTHORITY. Should the services of any key person become no longer available to CONSULTANT, the resume and qualifications of the proposed replacement shall be submitted to AUTHORITY for approval as soon as

possible, but in no event later than seven (7) calendar days prior to the departure of the incumbent key person, unless CONSULTANT is not provided with such notice by the departing employee. AUTHORITY shall respond to CONSULTANT within seven (7) calendar days following receipt of these qualifications concerning acceptance of the candidate for replacement.

ARTICLE 4. TERM OF AGREEMENT

This Agreement shall commence upon the effective date of this Agreement, and shall continue in full force and effect through _____ , unless earlier terminated or extended as provided in this Agreement..

ARTICLE 5. PAYMENT

A. For CONSULTANT's full and complete performance of its obligations under this Agreement and subject to the maximum cumulative payment obligation provision set forth in Article 6, AUTHORITY shall pay CONSULTANT on a firm fixed price basis in accordance with the following provisions.

B. The following schedule shall establish the firm fixed payment to CONSULTANT by AUTHORITY for each work task set forth in the Scope of Work.

Task	Description	Firm Fixed Price
		.00
		.00
		.00
TOTAL FIRM FIXED PRICE PAYMENT		**.00**

C. CONSULTANT shall invoice AUTHORITY on a monthly basis for payments corresponding to the work actually completed by CONSULTANT. Percentage of work completed shall be documented in a monthly progress report prepared by CONSULTANT, which shall accompany each invoice submitted by CONSULTANT. CONSULTANT shall also furnish such other information as may be requested by AUTHORITY to substantiate the validity of an invoice. At its sole discretion, AUTHORITY may decline to make full payment for any task listed in paragraph B of this Article until such time as CONSULTANT has documented to AUTHORITY's satisfaction, that CONSULTANT has fully completed all work required

under the task. AUTHORITY's payment in full for any task completed shall not constitute AUTHORITY's final acceptance of CONSULTANT's work under such task; final acceptance shall occur only when AUTHORITY's release of the retention described in paragraph D.

D. As partial security against CONSULTANT's failure to satisfactorily fulfill all of its obligations under this Agreement, AUTHORITY shall retain ten percent (10%) of the amount of each invoice submitted for payment by CONSULTANT. All retained funds shall be released by AUTHORITY and shall be paid to CONSULTANT within sixty (60) calendar days of payment of final invoice, unless AUTHORITY elects to audit CONSULTANT's records in accordance with Article 16 of this Agreement. If AUTHORITY elects to audit, retained funds shall be paid to CONSULTANT within thirty (30) calendar days of completion of such audit in an amount reflecting any adjustment required by such audit. During the term of the Agreement, at its sole discretion, AUTHORITY reserves the right to release all or a portion of the retained amount based on CONSULTANT's satisfactory completion of certain milestones. CONSULTANT shall invoice AUTHORITY for the release of the retention in accordance with Article 5.

E. Invoices shall be submitted by CONSULTANT on a monthly basis and shall be submitted in duplicate to AUTHORITY's Accounts Payable office. CONSULTANT may also submit invoices electronically to AUTHORITY's Accounts Payable Department at vendorinvoices@octa.net. Each invoice shall be accompanied by the monthly progress report specified in paragraph C of this Article. AUTHORITY shall remit payment within thirty (30) calendar days of the receipt and approval of each invoice. Each invoice shall include the following information:

1. Agreement No. C-3-3028;
2. Specify the task number for which payment is being requested;
3. The time period covered by the invoice;
4. Total monthly invoice (including project-to-date cumulative invoice amount); and retention;
5. Monthly Progress Report;
6. Weekly certified payroll for personnel subject to prevailing wage requirements;

7. Certificate signed by the CONSULTANT or his/her designated alternate that a) The invoice is a true, complete and correct statement of reimbursable costs and progress; b) The invoice is a true, complete and correct statement of reimbursable costs; c) The backup information included with the invoice is true, complete and correct in all material respects; d) All payments due and owing to subcontractors and suppliers have been made; e) Timely payments will be made to subcontractors and suppliers from the proceeds of the payments covered by the certification and; f) The invoice does not include any amount which CONSULTANT intends to withhold or retain from a subcontractor or supplier unless so identified on the invoice.

8. Any other information as agreed or otherwise requested by AUTHORITY to substantiate the validity of an invoice.

ARTICLE 6. MAXIMUM OBLIGATION

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

/

/

/

ARTICLE 7. NOTICES

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

To CONSULTANT:	To AUTHORITY:
	Orange County Transportation Authority

		550 South Main Street	
		P.O. Box 14184	
,		Orange, CA 92863-1584	
ATTENTION: Title:		ATTENTION: Title:	Aaron Delgado Associate Contracts Administrator
Phone: Email:		Phone: (714) 560 - 5443 Email: adelgado@octa.net	

ARTICLE 8. INDEPENDENT CONTRACTOR

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

B. Should CONSULTANT's personnel or a state or federal agency allege claims against AUTHORITY involving the status of AUTHORITY as employer, joint or otherwise, of said personnel, or allegations involving any other independent contractor misclassification issues, CONSULTANT shall defend and indemnify AUTHORITY in relation to any allegations made.

/

ARTICLE 9. INSURANCE

A. CONSULTANT shall procure and maintain insurance coverage in full force and effect during the entire term of the Agreement. Coverage shall be full coverage and not subject to self-insurance provisions. CONSULTANT shall provide the following insurance coverage:

1. Commercial General Liability, to include Products/Completed Operations, Independent Contractors', Contractual Liability, Advertising (if applicable to Scope of Work) and Personal

Injury Liability, and Property Damage with a minimum limit of $1,000,000 per occurrence, $2,000,000 general aggregate and $2,000,000 Products/Completed Operations aggregate;

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

3. Workers' Compensation with limits as required by the State of California including a Waiver of Subrogation in favor of AUTHORITY, its officers, directors and employees; and

4. Employers' Liability with minimum limits of $1,000,000 per accident, $1,000,000 policy limit-disease, and $1,000,000 policy limit employee-disease.

5. Professional Liability with minimum limits of $1,000,000 only if the CONSULTANT is required by contract or law to be licensed or specially certified and AUTHORITY is relying on performance based on that specialty license or certification.

6. RR Protective Liability with minimum limits of $2,000,000 with a $6,000,000 aggregate per claim.

B. Proof of such coverage, in the form of a certificate of insurance and an insurance policy blanket additional insured endorsement, designating the AUTHORITY, its officers, directors and employees as additional insureds on general liability and automobile liability, as required by Agreement. Proof of insurance coverage must be received by AUTHORITY within ten (10) calendar days from the effective date of the Agreement and prior to commencement of any work. Such insurance shall be primary and non-contributive to any insurance or self-insurance maintained by the AUTHORITY. Furthermore, AUTHORITY reserves the right to request certified copies or review all related insurance policies, in response to a related loss.

C. CONSULTANT shall include on the face of the certificate of insurance the Agreement Number C-3-3028 and, the Contract Administrator's Name, Aaron Delgado.

D. CONSULTANT shall also include in each subcontract, the stipulation that subconsultants shall maintain insurance coverage in the amounts required of CONSULTANT as provided in the Agreement. Subconsultants will be required to include AUTHORITY as additional insureds on the Commercial

General Liability, and Auto Liability insurance policies.

E. Insurer must provide AUTHORITY with at least thirty (30) days' prior notice of cancellation or material modification of coverage, and ten (10) days' prior notice for non-payment of premium.

ARTICLE 10. ORDER OF PRECEDENCE

Conflicting provisions hereof, if any, shall prevail in the following descending order of precedence: (1) the provisions of this Agreement, including all exhibits; (2) the provisions of RFP 3-3028; (3) CONSULTANT's technical proposal dated _____, CONSULTANT's initial cost proposal dated _____, and final cost proposal dated _____(4) all other documents, if any, cited herein or incorporated by reference.

ARTICLE 11. CHANGES

A. By written notice or order, AUTHORITY may, from time to time, order work suspension and/or make changes in the general scope of this Agreement, including, but not limited to, the services furnished to AUTHORITY by CONSULTANT as described in the Scope of Work. If any such work suspension or change causes an increase or decrease in the price of this Agreement or in the time required for its performance, CONSULTANT shall promptly notify AUTHORITY thereof and assert its claim for adjustment within ten (10) calendar days after the change or work suspension is ordered, and an equitable adjustment shall be negotiated. However, nothing in this clause shall excuse CONSULTANT from proceeding immediately with the Agreement as changed.

B. CONSULTANT shall only commence work covered by an amendment after the amendment is executed by AUTHORITY.

ARTICLE 12. DISPUTES

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

final and conclusive administrative decision.

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

ARTICLE 13. TERMINATION

A. AUTHORITY may terminate this Agreement for its convenience at any time, in whole or part, by giving CONSULTANT written notice thereof. Upon said notice, AUTHORITY shall pay CONSULTANT its allowable costs incurred to date of termination and those allowable costs determined by AUTHORITY to be reasonably necessary to effect such termination. Thereafter, CONSULTANT shall have no further claims against AUTHORITY under this Agreement.

B. In the event either Party defaults in the performance of any of their obligations under this Agreement or breaches any of the provisions of this Agreement, the non-defaulting Party shall have the option to terminate this Agreement upon thirty (30) days' prior written notice to the other Party. Upon receipt of such notice, CONSULTANT shall immediately cease work, unless the notice from AUTHORITY provides otherwise. Upon receipt of the notice from AUTHORITY, CONSULTANT shall submit an invoice for work and/or services performed prior to the date of termination. AUTHORITY shall pay CONSULTANT for work and/or services satisfactorily provided to the date of termination in compliance with this Agreement. Thereafter, CONSULTANT shall have no further claims against AUTHORITY under this Agreement. AUTHORITY shall not be liable for any claim of lost profits or damages for such termination.

ARTICLE 14. INDEMNIFICATION

A. CONSULTANT shall indemnify, defend and hold harmless AUTHORITY, its officers, directors, employees and agents (indemnities) from and against any and all claims (including attorneys' fees and reasonable expenses for litigation or settlement) for any loss or

damages, bodily injuries, including death, damage to or loss of use of property caused by the negligent acts, omissions or willful misconduct by CONSULTANT, its officers, directors, employees, agents, subconsultants or suppliers in connection with or arising out of the performance of this Agreement.

B. Notwithstanding the foregoing, to the extent that CONSULTANT'S duty to indemnify arises out of a claim to which Civil Code section 2782.8 would apply, CONSULTANT shall indemnify and defend the Indemnitees to the maximum extent permitted by Civil Code section 2782.8.

ARTICLE 15. ASSIGNMENTS AND SUBCONTRACTS

A. Neither this Agreement nor any interest herein nor claim hereunder may be assigned by CONSULTANT either voluntarily or by operation of law, nor may all or any part of this Agreement be subcontracted by CONSULTANT, without the prior written consent of AUTHORITY. Consent by AUTHORITY shall not be deemed to relieve CONSULTANT of its obligations to comply fully with all terms and conditions of this Agreement.

B. AUTHORITY hereby consents to CONSULTANT's subcontracting of portions of the Scope of Work to the parties identified below for the functions described in CONSULTANT's proposal. CONSULTANT shall include in the subcontract agreement the stipulation that CONSULTANT, not AUTHORITY, is solely responsible for payment to the subcontractor for the amounts owing and that the subcontractor shall have no claim, and shall take no action, against AUTHORITY, its officers, directors, employees or sureties for nonpayment by CONSULTANT.

Subcontractor Name/Address	**Subcontractor Amounts**
1.	.00
2.	.00

/

/

/

ARTICLE 16. AUDIT AND INSPECTION OF RECORDS

CONSULTANT shall provide AUTHORITY, or other agents of AUTHORITY, such access to CONSULTANT's accounting books, records, work data, documents and facilities, as AUTHORITY deems necessary. CONSULTANT shall maintain such books, records, data and documents in accordance with generally accepted accounting principles and shall clearly identify and make such items readily accessible to such parties during CONSULTANT's performance hereunder and for a period of four (4) years from the date of final payment by AUTHORITY. AUTHORITY's right to audit books and records directly related to this Agreement shall also extend to all first-tier subcontractors identified in Article 15 of this Agreement. CONSULTANT shall permit any of the foregoing parties to reproduce documents by any means whatsoever or to copy excerpts and transcriptions as reasonably necessary.

ARTICLE 17. FEDERAL, STATE AND LOCAL LAWS

CONSULTANT warrants that in the performance of this Agreement, it shall comply with all applicable federal, state and local laws, statutes and ordinances and all lawful orders, rules and regulations promulgated thereunder.

ARTICLE 18. EQUAL EMPLOYMENT OPPORTUNITY

In connection with its performance under this Agreement, CONSULTANT shall not discriminate against any employee or applicant for employment because of race, religion, color, sex, age or national origin. CONSULTANT shall take affirmative action to ensure that applicants are employed, and that employees are treated during their employment, without regard to their race, religion, color, sex, age or national origin. Such actions shall include, but not be limited to, the following: employment, upgrading, demotion or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship.

ARTICLE 19. PROHIBITED INTERESTS

CONSULTANT covenants that, for the term of this Agreement, no director, member, officer or employee of AUTHORITY during his/her tenure in office/employment or for one (1) year thereafter shall have any interest, direct or indirect, in this Agreement or the proceeds thereof.

ARTICLE 20. OWNERSHIP OF REPORTS AND DOCUMENTS

A. The originals of all letters, documents, reports and other products and data produced under this Agreement shall be delivered to, and become the property of AUTHORITY. Copies may be made for CONSULTANT's records but shall not be furnished to others without written authorization from AUTHORITY. Such deliverables shall be deemed works made for hire and all rights in copyright therein shall be retained by AUTHORITY.

B. All ideas, memoranda, specifications, plans, manufacturing, procedures, drawings, descriptions, and all other written information submitted to CONSULTANT in connection with the performance of this Agreement shall not, without prior written approval of AUTHORITY, be used for any purposes other than the performance for this project, nor be disclosed to an entity not connected with the performance of the project. CONSULTANT shall comply with AUTHORITY's policies regarding such material. Nothing furnished to CONSULTANT, which is otherwise known to CONSULTANT or becomes generally known to the related industry shall be deemed confidential. CONSULTANT shall not use AUTHORITY's name, photographs of the project, or any other publicity pertaining to the project in any professional publication, magazine, trade paper, newspaper, seminar or other medium without the express written consent of AUTHORITY.

C. No copies, sketches, computer graphics or graphs, including graphic art work, are to be released by CONSULTANT to any other person or agency except after prior written approval by AUTHORITY, except as necessary for the performance of services under this Agreement. All press releases, including graphic display information to be published in newspapers, magazines, etc., are to be handled only by AUTHORITY unless otherwise agreed to by CONSULTANT and AUTHORITY.

ARTICLE 21. PATENT AND COPYRIGHT INFRINGEMENT

A. In lieu of any other warranty by AUTHORITY or CONSULTANT against patent or copyright infringement, statutory or otherwise, it is agreed that CONSULTANT shall defend at its expense any claim or suit against AUTHORITY on account of any allegation that any item furnished under this Agreement or the normal use or sale thereof arising out of the performance of this Agreement, infringes upon any

presently existing U.S. letters patent or copyright and CONSULTANT shall pay all costs and damages finally awarded in any such suit or claim, provided that CONSULTANT is promptly notified in writing of the suit or claim and given authority, information and assistance at CONSULTANT's expense for the defense of same. However, CONSULTANT will not indemnify AUTHORITY if the suit or claim results from: (1) AUTHORITY's alteration of a deliverable, such that said deliverable in its altered form infringes upon any presently existing U.S. letters patent or copyright; or (2) the use of a deliverable in combination with other material not provided by CONSULTANT when such use in combination infringes upon an existing U.S. letters patent or copyright.

B. CONSULTANT shall have sole control of the defense of any such claim or suit and all negotiations for settlement thereof. CONSULTANT shall not be obligated to indemnify AUTHORITY under any settlement made without CONSULTANT's consent or in the event AUTHORITY fails to cooperate fully in the defense of any suit or claim, provided, however, that said defense shall be at CONSULTANT's expense. If the use or sale of said item is enjoined as a result of such suit or claim, CONSULTANT, at no expense to AUTHORITY, shall obtain for AUTHORITY the right to use and sell said item, or shall substitute an equivalent item acceptable to AUTHORITY and extend this patent and copyright indemnity thereto.

ARTICLE 22. DESIGN WITHIN FUNDING LIMITATIONS

A. In order to ensure the accuracy of the construction budget for the benefit of the public works bidders and AUTHORITY's budget process, CONSULTANT shall accomplish the design services required under this Agreement so as to permit the award of a contract, for the construction of the facilities designed at a price that does not exceed the estimated construction contract price as set forth by AUTHORITY. When bids or proposals for the construction contract are received that exceed the estimated price, CONSULTANT shall perform such redesign and other services as are necessary to permit contract award within the funding limitation. These additional services shall be performed at no increase in the price for which the services were specified. However, CONSULTANT shall not be required to perform such additional services at no cost to AUTHORITY if the unfavorable bids or proposals are the

result of conditions beyond its reasonable control.

B. CONSULTANT will promptly advise AUTHORITY if it finds that the project being designed will exceed or is likely to exceed the funding limitations and it is unable to design a usable facility within these limitations. Upon receipt of such information, AUTHORITY will review CONSULTANT's revised estimate of construction cost. AUTHORITY may, if it determines that the estimated construction contract price is so low that award of a construction contract not in excess of such estimate is improbable, authorize a change in scope or materials as required to reduce the estimated construction cost to an amount within the estimated construction contract price set forth by AUTHORITY, or AUTHORITY may adjust such estimated construction contract price. When bids or proposals are not solicited or are unreasonably delayed, AUTHORITY shall prepare an estimate of constructing the design submitted and such estimate shall be used in lieu of bids or proposals to determine compliance within the funding limitation.

ARTICLE 23. REQUIREMENTS FOR REGISTRATION OF DESIGNERS

All design and engineering work furnished by CONSULTANT shall be performed by or under the supervision of persons licensed to practice architecture, engineering or surveying (as applicable) in the State of California, by personnel who are careful, skilled, experienced and competent in their respective trades or professions, who are professionally qualified to perform the work in accordance with the contract documents and who shall assume professional responsibility for the accuracy and completeness of the design documents and construction documents prepared or checked by them.

ARTICLE 24. FINISHED AND PRELIMINARY DATA

A. All of CONSULTANT’s finished technical data, including but not limited to illustrations, photographs, tapes, software, software design documents, including without limitation source code, binary code, all media, technical documentation and user documentation, photoprints and other graphic information required to be furnished under this Agreement, shall be AUTHORITY’s property upon payment and shall be furnished with unlimited rights and, as such, shall be free from proprietary restriction except as elsewhere authorized in this Agreement. CONSULTANT further agrees that it shall have no interest or claim to such finished, AUTHORITY-owned, technical data; furthermore, said data is subject

to the provisions of the Freedom of Information Act, 5 USC 552.

B. It is expressly understood that any title to preliminary technical data is not passed to AUTHORITY but is retained by CONSULTANT. Preliminary data includes roughs, visualizations, software design documents, layouts and comprehensives prepared by CONSULTANT solely for the purpose of demonstrating an idea or message for AUTHORITY's acceptance before approval is given for preparation of finished artwork. Preliminary data title and right thereto shall be made available to AUTHORITY if CONSULTANT causes AUTHORITY to exercise ARTICLE 11, and a price shall be negotiated for all preliminary data.

ARTICLE 25. GENERAL WAGE RATES

A. CONSULTANT warrants that all mechanics, laborers, journeypersons, workpersons, craftspersons or apprentices employed by CONSULTANT or subcontractor at any tier for any work hereunder, shall be paid unconditionally and not less often than once a week and without any subsequent deduction or rebate on any account (except such payroll deductions as are permitted or required by federal, state or local law, regulation or ordinance), the full amounts due at the time of payment, computed at a wage rate and per diem rate not less than the aggregate of the highest of the two basic hourly rates and rates of payments, contributions or costs for any fringe benefits contained in the current general prevailing wage rate(s) and per diem rate(s), established by the Director of the Department of Industrial Relations of the State of California, (as set forth in the Labor Code of the State of California, commencing at Section 1770 et. seq.), or as established by the Secretary of Labor (as set forth in Davis-Bacon Act, 40 U.S.C. 267a, et. seq.), regardless of any contractual relationship which may be alleged to exist between CONSULTANT or subcontractor and their respective mechanics, laborers, journeypersons, workpersons, craftspersons or apprentices. Copies of the current General Prevailing Wage Determinations and Per Diem Rates are on file at AUTHORITY's offices and will be made available to CONSULTANT upon request. CONSULTANT shall post a copy thereof at each job site at which work hereunder is performed.

B. In addition to the foregoing, CONSULTANT agrees to comply with all other provisions of the Labor Code of the State of California, which is incorporated herein by reference, pertaining to workers

performing work hereunder including, but not limited to, those provisions for work hours, payroll records and apprenticeship employment and regulation program. CONSULTANT agrees to insert or cause to be inserted the preceding clause in all subcontracts which provide for workers to perform work hereunder regardless of the subcontractor tier.

ARTICLE 26. CONTRACTOR PURCHASED EQUIPMENT

A. If during the course of this Agreement, additional equipment is required, which will be paid for by the AUTHORITY, CONSULTANT must request prior written authorization from the AUTHORITY's project manager before making any purchase. As part of this purchase request, CONSULTANT shall provide a justification for the necessity of the equipment or supply and submit copies of three (3) competitive quotations. If competitive quotations are not obtained, CONSULTANT must provide the justification for the sole source.

B. CONSULTANT shall maintain an inventory record for each piece of equipment purchased that will be paid for by the AUTHORITY. The inventory record shall include the date acquired, total cost, serial number, model identification, and any other information or description necessary to identify said equipment or supply. A copy of the inventory record shall be submitted to the AUTHORITY upon request.

C. At the expiration or termination of this Agreement, CONSULTANT may keep the equipment and credit AUTHORITY in an amount equal to its fair market value. Fair market value shall be determined, at CONSULTANT's expense, on the basis of an independent appraisal. CONSULTANT may sell the equipment at the best price obtainable and credit AUTHORITY in an amount equal to the sales price. If the equipment is to be sold, then the terms and conditions of the sale must be approved in advance by AUTHORITY's project manager.

D. Any subconsultant agreement entered into as a result of this Agreement shall contain all provisions of this clause.

ARTICLE 27. CONFLICT OF INTEREST

A. CONSULTANT agrees to avoid organizational conflicts of interest. An organizational conflict of interest means that due to other activities, relationships or contracts, the CONSULTANT is unable, or

potentially unable to render impartial assistance or advice to the AUTHORITY; CONSULTANT's objectivity in performing the work identified in the Scope of Work is or might be otherwise impaired; or the CONSULTANT has an unfair competitive advantage. CONSULTANT is obligated to fully disclose to the AUTHORITY in writing Conflict of Interest issues as soon as they are known to the CONSULTANT. All disclosures must be submitted in writing to AUTHORITY pursuant to the Notice provision herein. This disclosure requirement is for the entire term of this Agreement.

B. If the AUTHORITY determines that CONSULTANT, its employees, or subconsultants are subject to disclosure requirements under the Political Reform Act (Government Code section 81000 et seq.), CONSULTANT and its required employees and subconsultants shall complete and file Statements of Economic Interest (Form 700) with the AUTHORITY's Clerk of the Board disclosing all required financial interests.

ARTICLE 28. CODE OF CONDUCT

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

ARTICLE 29. PROHIBITION ON PROVIDING ADVOCACY SERVICES

CONSULTANT and all subconsultants performing work under this Agreement, shall be prohibited from concurrently representing or lobbying for any other party competing for a contract with AUTHORITY, either as a prime consultant or subconsultant. Failure to refrain from such representation may result in termination of this Agreement.

ARTICLE 30. HEALTH AND SAFETY REQUIREMENTS

CONSULTANT shall comply with all the requirements set forth in EXHIBIT D, Level 2 SAFETY SPECIFICATIONS. As used therein, "Contractor" shall mean "Consultant," and "Subcontractor" shall mean "Sub-consultant."

ARTICLE 31. LIMITATION ON GOVERNMENTAL DECISIONS

CONSULTANT shall not make, participate in making, or use its position to influence any governmental decisions as defined by the Political Reform Act, Government Code section 8100 et seq., and the implementing regulations in Title 2 of the California Code of Regulations section 18110 et seq. CONSULTANT's personnel performing services under this Agreement shall not authorize or direct any actions, votes, appoint any person, obligate, or commit AUTHORITY to any course of action or enter into any contractual agreement on behalf of AUTHORITY. In addition, CONSULTANT's personnel shall not provide information, an opinion, or a recommendation for the purpose of affecting a decision without significant intervening substantive review by AUTHORITY personnel, counsel, and management.

ARTICLE 32. FORCE MAJEURE

Either party shall be excused from performing its obligations under this Agreement during the time and to the extent that it is prevented from performing by an unforeseeable cause beyond its control, including but not limited to: any incidence of fire, flood; acts of God; commandeering of material, products, plants or facilities by the federal, state or local government; national fuel shortage; or a material act or omission by the other party; when satisfactory evidence of such cause is presented to the other party, and provided further that such nonperformance is unforeseeable, beyond the control and is not due to the fault or negligence of the party not performing.

/

/

/

/

/

IN WITNESS WHEREOF, the parties hereto have caused this Agreement No. C-3-3028 to be executed as of the date of the last signature below.

ORANGE COUNTY TRANSPORTATION AUTHORITY

By: _____

By: _____
Lydia Bilynsky
Department Manager, Capital Projects

APPROVED AS TO FORM:

By: _____
James M. Donich
General Counsel

EXHIBIT C: FORM

STATUS OF PAST AND PRESENT CONTRACTS FORM

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

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

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

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

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

Name	Signature
Title	Date

Revised. 03/16/2018

PROPOSAL EXCEPTIONS AND/OR DEVIATIONS

The following form shall be completed for each technical and/or contractual exception or deviation that is submitted by Offeror for review and consideration by Authority. The exception and/or deviation must be clearly stated along with the rationale for requesting the exception and/or deviation. If no technical or contractual exceptions or deviations are submitted as part of the original proposal, Offerors are deemed to have accepted Authority's technical requirements and contractual terms and conditions set forth in the Scope of Work (Exhibit A) and Proposed Agreement (Exhibit B). Offerors will not be allowed to submit this form or any contractual exceptions and/or deviation after the proposal submittal date identified in the RFP. Exceptions and/or deviations submitted after the proposal submittal date will not be reviewed by Authority.

Offeror:_____

RFP No.:_____ RFP Title: _____

Deviation or Exception No. : _____

Check one:

- Scope of Work (Technical) _____
- Proposed Agreement (Contractual) _____

Reference Section/Exhibit: _____ Page/Article No._____

Complete Description of Deviation or Exception:

_____
_____
_____
_____
_____
_____
_____
_____

Rationale for Requesting Deviation or Exception:

_____
_____
_____
_____
_____
_____

Area Below Reserved for Authority Use Only:

_____
_____
_____

EXHIBIT D: SAFETY SPECIFICATION

LEVEL 2 STANDARD HEALTH, SAFETY AND ENVIRONMENTAL SPECIFICATIONS

PART I – GENERAL

1.1 GENERAL HEALTH, SAFETY & ENVIRONMENTAL REQUIREMENTS

A. The Contractor, its subcontractors, suppliers, and employees have the obligation to comply with all Authority health, safety and environmental compliance department (HSEC), requirements of this safety specification, project site requirements, and bus yard safety rules as well as all federal, state, and local regulations pertaining to scope of work or agreements with the Authority. Additionally, manufacturer requirements are considered incorporated by reference as applicable to this scope of work.

B. Observance of repeated unsafe acts or conditions, serious violation of safety standards, non-conformance of Authority health, safety and environmental compliance department (HSEC) requirements, or disregard for the intent of these safety specifications to protect people and property, by Contractor or its subcontractors may be reason for termination of scope or agreements with the Authority, at the sole discretion of the Authority.

C. INJURY AND ILLNESS PREVENTION PROGRAM

The Contractor shall comply with CCR Title 8, Section with California Code of Regulations (CCR) Title 8, Section 3203. The intent and elements of the IIPP shall be implemented and enforced by the Contractor and its sub-tier contractors, suppliers, and vendors. The program shall be provided to the Authority's Project Manager, upon request, within 72 hours.

D. SUBSTANCE ABUSE PREVENTION PROGRAM

Contractor shall comply with the Policy or Program of the Company's Substance Abuse Prevention Policy that complies with the most recent Drug Free Workplace Act. The program shall be provided to the Authority's Project Manager, upon request, within 72 hours.

E. HAZARD COMMUNICATION PROGRAM

1. Contractor shall comply with CCR Title 8, Section 5194 Hazard Communication Standard. Prior to use on Authority property and/or project work areas Contractor shall provide the Authority Project Manager copies of SDS for all applicable products used, if any. The program shall be provided to the Authority's Project Manager, upon request, within 72 hours.

2. All chemicals including paint, solvents, detergents and similar substances shall comply with South Coast Air Quality Management District (SCAQMD) rules 103, 1113, and 1171.

F. STORM WATER POLLUTION PREVENTION PLAN

1. The Contractor shall protect property and water resources from fuels and similar products throughout the duration of the contract. Contractor shall comply with Storm Water Pollution Prevention Plan (SWPPP) requirements. The program or plan if required by scope shall be provided to the Authority's Project Manager, upon request, within 72 hours.

G. DESIGNATED HEALTH, SAFETY, ENVIRONMENTAL (HSE) REPRESENTATIVE

1. Upon contract award, the contractor within 10 business days shall designate a health and safety representative and provide a resume and qualifications to the Authority project manager, upon request, within 72 hours.

2. This person shall be a Competent or Qualified Individual as defined by the Occupational, Safety, and Health Administration (OSHA), familiar with applicable CCR Title 8 Standards, and has the authority to affect changes in work procedures that may have associated cost, schedule and budget impacts.

3. The Contractor's HSE Representative is subject to acceptance by the Authority Project Manager, and the HSEC Department. All contact information of the HSE Representative (name, phone, and fax and pager/cell phone number) shall be provided to the Authority Project Manager, upon request, within 72 hours.

4. The Contractor's HSE Representative shall hold a current certification from the Board of Certified Safety Professionals (BCSP) and have five years of demonstrated construction/scope experience enforcing HSE compliance on construction, industrial or similar project scopes. The designated HSE Representative shall participate in any required HSE related submittals. The Authority reserves the right to allow for an exception and to modify these minimum qualification requirements for unforeseen circumstances, at the sole discretion of the Authority Project Manager and HSEC Department Manager.

5. A Job Hazard Analysis (JHA) shall be prepared for the field activities scheduled and signed/dated by the Contractor's project manager and the Contractor's HSE Representative and all employees of the work crew prior to beginning scheduled task.

6. Competent Individual means an individual who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees and/or property, and who has authorization to take prompt corrective measures to eliminate them.

7. Qualified Individual means an individual who by possession of a recognized degree, certificate, certification or professional standing, or

who by extensive knowledge, training, and experience, has successfully demonstrated his/her ability to solve or resolve problems relating to the subject matter, the work, or the Project.

H. SCOPE PLANNING

Prior to any scope work activity or task, the Contractor shall evaluate the hazards of the scope of work and the work environment to ensure proper control measures are identified for employee public and property protection measures to prevent incidents. This evaluation shall be implemented by developing a written site specific Job Hazard Analysis (JHA) or similar tool designed for planning the work to prevent incidents. The plan shall be provided to the Authority's Project Manager, upon request, within 72 hours.

I. ORIENTATION

1. The Contractor shall conduct and document a project site safety orientation for all Contractor personnel, subcontractors, suppliers, vendors, and new employees assigned to the project prior to performing any work on Authority projects. The safety orientation at a minimum shall include, as applicable, Personal Protection Equipment (PPE) requirements, eye protection, ANSI class 2 or 3 reflective vests, designated smoking, eating, and parking areas, traffic speed limit and routing, cell phone policy, and barricade requirements. When required by scope, additional orientation shall include fall protection, energy isolation/lock-out/tag-out (LOTO), confined space, hot work permit, security requirements, and similar project safety requirements.

2. Copies of orientation documents shall be provided to the Authority Project Manager within 72 hours upon request.

J. TRAFFIC & PARKING

The Contractor shall ensure that all Contractor vehicles, including those of their subcontractors, suppliers, vendors and employees are parked in designated parking areas, personal vehicles shall be parked in the employee parking lot, work vehicles required in the maintenance area of a bus base shall be identified by company name and/or logo, covered by the company insurance, and comply with traffic routes, and posted traffic signs in areas other than the employee parking lots. Vehicles without appropriate company name and logo are considered personal vehicles and not allowed in the maintenance area of the bus base.

K. GENERAL PROVISIONS

1. The Contractor shall provide all necessary tools, equipment, and related safety protective devices to execute the scope of work in compliance with Authority's HSEC requirements, CCR Title 8 Standards, and recognized safe work practices.

2. The Contractor shall immediately notify the Authority's Project Manager whenever local, state or federal regulatory agency personnel are identified as being onsite.

3. The Authority HSEC requirements, and references contained within this scope of work shall not be considered all-inclusive as to the hazards that might be encountered. Safe work practices shall be pre-planned and performed, and safe conditions shall be maintained during the course of this work scope.

4. The Contractor shall specifically acknowledge that it has primary responsibility to prevent and correct all health, safety and environmental hazards for which it and its employees, or its subcontractors (and their employees) are responsible. The Contractor shall further acknowledge their expertise in recognition and prevention of hazards in the operations for which they are responsible, that the Authority may not have such expertise, and is relying upon the Contractor for such expertise. The Authority retains the right to notify the Contractor of potential hazards and request the Contractor to evaluate and, as necessary, to eliminate those hazards.

5. The Contractor shall instruct all its employees, and all associated sub-contractors under contract with the Contractor who work on Authority property in the recognition, identification, and avoidance of unsafe acts and/or conditions applicable to its work.

6. California Code of Regulations (CCR) Title 8 Standards are minimum requirements, and each Contractor is encouraged to exceed minimum requirements. When the Contractor safety requirements exceed statutory standards, the more stringent requirements shall be achieved for the safeguard of the public and workers.

1.2 ENVIROMENTAL REQUIREMENTS

A. The Contractor shall comply with Federal, State, county, municipal, and other local laws and regulations pertaining to the environment, including noise, aesthetics, air quality, water quality, contaminated soils, hazardous waste, storm water, and resources of archaeological significance. Expense of compliance with these laws and regulations is considered included in the agreement. Contractor shall provide water used for dust control, or for pre-wetting areas to be paved, as required; no payment will be made by OCTA for this water.

B. The Contractor shall prevent pollution of storm drains, rivers, streams, irrigation ditches, and reservoirs with sediment or other harmful materials. Fuels, oils, bitumen, calcium chloride, cement, or other contaminants that would contribute to water pollution shall not be dumped into or placed where they will leach into storm drains, rivers, streams, irrigation ditches, or reservoirs. If operating equipment in streambeds or in and around open waters, protect the quality of ground water, wetlands, and surface waters.

C. The Contractor shall protect adjacent properties and water resources from erosion and sediment damage throughout the duration of the contract. Contractor shall comply with applicable NPDES permits and Storm Water Pollution Prevention Plan (SWPPP) requirements.

D. Contractor shall comply with all applicable EPA, Cal EPA, Cal Recycle, DTSC, SCAQMD, local, state, county and city standards, rules and regulations for hazardous and special waste handling, recycling and/ disposal. At a minimum, Contractor shall ensure compliance where applicable with SCAQMD Rule 1166, CCR Title 8, Section 5192, 29 CFR Subpart 1910.120, 49 CFR Part 172, Subpart H, 40 CFR Subpart 265.16 and CCR Title 22 Section 6625.16. Contractor shall provide OCTA a schedule of all hazardous waste and special or industrial waste disposal dates in advance of transport date. Only authorized OCTA personnel shall sign manifests for OCTA generated wastes. Contractor shall ensure that only current registered transporters are used for disposal of hazardous waste and industrial wastes. The Contractor shall obtain approval from OCTA for the disposal site locations in advance of scheduled transport date.

1.3 INCIDENT NOTIFICATION AND INVESTIGATION

A. The Authority shall be promptly notified of any of the following types of incidents including but not limited to:

1. Damage incidents of property (incidents involving third party, contractor or Authority property damage);

2. Reportable and/or Recordable injuries (as defined by the U. S. Occupational Safety and Health Administration), a minor injury, and near miss incidents;

3. Incidents impacting the environment, i.e. spills or releases on Authority property.

B. Notifications shall be made to Authority representatives, employees and/or agents. This includes incidents occurring to contractors, vendors, visitors, or members of the public that arise from the performance of Authority contract work. An immediate verbal notice followed by a written incident investigation report shall be submitted to Authority's Project Manager within 24 hours of the incident.

C. A final written incident investigative report shall be submitted within seven (7) calendar days and include the following information. The Current Status of anyone injured, photos of the incident area, detailed description of what happened, Investigative photos of the existing conditions and area around the injury/incident scene, the contributing factors that lead to the incident occurrence, a copy of the company policy or procedure associated with the incident and evaluation of effectiveness, copy of task planning documentation, copy of the Physician's first report of injury, copy of Cal/OSHA 300 log of work related injuries and illnesses, the Cal/OSHA 301 Injury Illness Incident Report, and corrective actions initiated to prevent

recurrence. This information shall be considered the minimum elements required for a comprehensive incident report provided to OCTA.

D. A Serious Injury, Serious Incident, OSHA Recordable Injury/Illness, or a Significant Near Miss shall require a formal incident review at the discretion of the Authority's Project Manager. The incident review shall be conducted within seven (7) calendar days of the incident. This review shall require a company senior executive, company program or project manager from the Contractors' organization to participate and present the incident review as determined by the OCTA Project Manager. The serious incident presentation shall include action taken for the welfare of the injured, a status report of the injured, causation factors that lead to the incident, a root cause analysis (using 5 whys and fishbone methods), and a detailed recovery plan that identifies corrective actions to prevent a similar incident, and actions to enhance safety awareness.

1. Serious Injury: includes an injury or illness to one or more employees, occurring in a place of employment or in connection with any employment, which requires inpatient hospitalization for a period in excess of twenty-four hours for other than medical observation, or in which an employee suffers the loss of any member of the body, or suffers any serious degree of physical disfigurement. A serious injury also includes a lost workday or reassignment or restricted injury case as determined by the Physician's first report of injury or Cal/OSHA definitions.

2. Serious Incident: includes but not limited to property damage of $500.00 or more, an incident requiring emergency services (local fire, paramedics and ambulance response), news media or OCTA media relations response, and/or incidents involving other agencies (Cal/OSHA, EPA, AQMD, DTSC, Metrolink, FTA, FRA etc.) notification or representation.

3. OSHA Recordable Injury / Illness: includes and injury / illness resulting in medical treatment beyond First Aid, an injury / illness which requires restricted duty, or an injury / illness resulting in days away from work.

4. Significant Near Miss Incident; includes incidents where no property was damaged and no personal injury sustained, but where, given a slight shift in time or position, damage and/or injury easily could have occurred.

1.4 PERSONAL PROTECTIVE EQUIPMENT

Contractors, and all associated subcontractors, vendors and suppliers are required to provide their own personal protective equipment (PPE), including eye, head, foot, and hand protection, respirators, reflective safety vests, and all other PPE required to perform their work safely on Authority projects.

1.5 LANGUAGE REQUIREMENTS

The Contractor for safety reasons shall ensure employees that do not read, or understand English, shall have a bilingual supervisor or foreman when on the Authority property or projects.

1.6 WARNING SIGNS AND DEVICES

The Contractor shall provide signs, signals, and/or warning devices to be visible when and where a hazard exists. Signs, signals, and/or warning devices shall be removed when the hazard no longer exists.

1.7 REFERENCES

A. CCR Title 8 Standards (Cal/OSHA)
B. FCR Including 1910 and 1926 Standards
C. NFPA, NEC, ANSI, NIOSH Standards
D. Construction Industry Institute (CII)
E. Board of Certified Safety Professionals (BCSP)
F. OCTA Yard Safety Rules

END OF SECTION