BID BOOKLET INVITATION FOR BID (IFB) 3-2279 BOOK 2 OF 2

SECURITY GATES INSTALLATION AT ANAHEIM, GARDEN GROVE, AND SANTA ANA BUS BASES



ORANGE COUNTY TRANSPORTATION AUTHORITY

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

Key IFB Dates

Issue Date: February 27, 2023

Pre-Bid Conference/Site Visit: March 9, 2023

Questions/Approved Equal Submittal: March 14, 2023

Bids Submittal Date: March 27, 2023

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SUBJECT: NOTICE INVITING SEALED BIDS

IFB 3-2279, "SECURITY GATES INSTALLATION AT ANAHEIM, GARDEN GROVE, AND SANTA ANA BUS BASES"

TO: ALL BIDDERS

FROM: ORANGE COUNTY TRANSPORTATION AUTHORITY

The Orange County Transportation Authority (Authority) invites sealed bids for SECURITY GATES INSTALLATION AT ANAHEIM, GARDEN GROVE, AND SANTA ANA BUS BASES.

Please note that by submitting a Bid, Bidder 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 Bid. In submitting a Bid, all Bidders agree to comply with all economic sanctions imposed by the State or U.S. Government.

The general description of this project is Security Gates Installation at Anaheim, Garden Grove, and Santa Ana bus bases and related work.

The estimated cost for this project is \$2,500,000.00. Bidders will be required to hold a valid State of California C-13 contractor license with specialty licensed subcontractor(s) for work outside specialty, or a Class A with specialty licensed subcontractor(s).

Bids must be submitted at or before 11:00 a.m., March 27, 2023.

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

Orange County Transportation Authority Contracts Administration and Materials Management 600 South Main Street, (Lobby Receptionist) Orange, California 92868

Attention: Marjorie Morris Threats, Principal Contract Administrator

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

Orange County Transportation Authority Contracts Administration and Materials Management 550 South Main Street P.O. Box 14184 Orange, California 92863-1584

Attention: Marjorie Morris Threats, Principal Contract Administrator

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

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

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

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

<u>Category:</u> <u>Commodity:</u>

Construction Construction (General) Electrical Contractor

Fencing Contractor General Contractor

A pre-bid conference will be held via teleconference on **March 9, 2023**, at 9:00 a.m. Prospective bidders may join or call-in using the following credentials:

Microsoft Teams meeting

Join on your computer, mobile app or room device

Click here to join the meeting

OR Call-in Number 916-550-9867

Conference ID: 141 068 275#

An on-site/in-person conference will not be held. A copy of the presentation slides and pre-bid conference registration sheet(s) will be issued via addendum prior to the date of the pre-bid conference. All prospective bidders are encouraged to attend the pre-bid conference and the job walk.

Immediately following the pre-bid conference, a job walk will be conducted at the Anaheim, Garden Grove and Santa Ana bus bases as follows:

Bus Bases	Time	Address
Anaheim	11:00am	1717 E. Via Burton,
		Anaheim, CA. 192806
Garden Grove	12:30pm	11790 Cardinal Circle,
		Garden Grove, CA
		92843
Santa Ana	2:00pm	4301 W. Macarthur
		Blvd., Santa Ana, CA
		91704

Please review "Bus Base Visit Protocol" following this notice.

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

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

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

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

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

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

Bus Base Visit Protocol

OCTA has a core value of Safety for all employees, visitors, and the public for all transit related operations, therefore Bus Base Rules are established to prevent incidents and injury.

OCTA Maintenance bases require proper personal protective equipment (PPE) while at the bus base maintenance areas.

Basic PPE includes;

- ANSI Class 2 Reflective Vest
- 2. Proper clothing foot ware (i.e., no open toe shoes, sandals, high heel shoes, etc.)
- 3. Proper eye protection as required

All Contractors (proposed bidders, visitors, etc.) upon arrival shall report into the base Maintenance Shift Supervisor, with the appropriate OCTA employee escort.

Each person shall:

- 1. Sign in
- 2. Obtain a briefing of potential hazards and emergency procedures
- 3. Cell Phones are only allowed inside a building

All job walk visitors shall stay within the group and be attentive to instructions for a safe visit.

Upon completion of the visit each person shall sign out with the Maintenance Shift Supervisor prior to leaving the property.

SECTION I: INSTRUCTIONS TO BIDDERS

SECTION I. INSTRUCTIONS TO BIDDERS

A. PRE-BID CONFERENCE/SITE VISIT

A pre-bid conference will be held via teleconference on **March 9, 2023**, at 9:00 a.m.. Prospective bidders may join or call-in using the following credentials:

Microsoft Teams meeting

Join on your computer, mobile app or room device

Click here to join the meeting

OR Call-in Number 916-550-9867

Conference ID: 141068275#

By investigation of the work site, bidder shall be satisfied as to the nature and location of the work and shall be fully informed as to the conditions and matters which can in any way affect the work or the cost thereof. Prospective bidders should familiarize themselves with Authority safety rules that require that pedestrians must wear approved safety vests.

An on-site/in-person conference will not be held. A copy of the presentation slides and pre-bid conference registration sheet(s) will be issued via addendum prior to the date of the pre-bid conference. All prospective bidders are encouraged to attend the pre-bid conference and the job walk.

Immediately following the pre-bid conference, a job walk will be conducted at the Anaheim, Garden Grove and Santa Ana bus bases as listed below. All prospective bidders are strongly encouraged to attend. Safety vests are required for the job walk. The job walks will be as follows:

Bus Bases	Time	Address
Anaheim	11:00am	1717 E. Via Burton, Anaheim, CA. 192806
Garden Grove	12:30pm	11790 Cardinal Circle, Garden Grove, CA 92843
Santa Ana	2:00pm	4301 W. Macarthur Blvd., Santa Ana, CA 91704

B. EXAMINATION OF DOCUMENTS

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

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

C. ADDENDA

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

D. AUTHORITY CONTACT

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

Marjorie Morris Threats, Principal Contract Administrator Contracts Administration and Materials Management Department 600 South Main Street

P.O. Box 14184

Orange, CA 92863-1584

Phone: 714.560. 5552, Fax: 714.560.5792

Email: mthreats@octa.net

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

E. CLARIFICATIONS OF SPECIFICATIONS AND APPROVED EQUALS

1. Specifications Review

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

2. Preference for Materials

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

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

3. Submitting Requests

- a. All requests for approved equals, clarification of specifications, or questions must be put in writing and must be received by the Authority no later than 5:00 p.m., on March 14, 2023.
- **b.** Requests for approved equals, clarifications, questions must be clearly labeled, "Written Questions". The Authority is not responsible for failure to respond to a request that has not been labeled as such.
- **c.** Any of the following methods of delivering written questions are acceptable as long as the questions are received no later than the date and time specified above:
 - 1. U.S. Mail: Orange County Transportation Authority, P.O. Box 14184, Orange, California 92863-1584.
 - Courier/Overnight: Orange County Transportation Authority, 600 South Main Street, Lobby Receptionist, Orange, California 92868

3. Facsimile: (714) 560-5792.

4. E-Mail: mthreats@octa.net

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

4. Authority Responses

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

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

<u>Category:</u> <u>Commodity:</u>

Construction Construction (General)

Electrical Contractor

Fencing Contractor

General Contractor

Inquiries received after 5:00 p.m. on March 14, 2023, will not be responded to.

F. SUBMISSION OF BIDS

1. Date and Time

Bids must be submitted at or before 11:00 a.m., March 27, 2023.

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

Bids will be publicly opened in the Authority's Administration Office, 600

South Main Street, Orange, California 92863 at the submission time indicated above.

2. Address

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

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

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

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

3. Bid Booklet and Identification of Bids

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

IFB 3-2279, "SECURITY GATES INSTALLATION AT ANAHEIM, GARDEN GROVE, AND SANTA ANA BUS BASES"

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

G. PRE-CONTRACTUAL EXPENSES

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

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

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

H. JOINT BIDS

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

I. TAXES

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

J. BID SECURITY FORMS

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

K. WITHDRAWAL OF BIDS

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

L. PREVAILING WAGES

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

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

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

This Agreement is subject to compliance monitoring and enforcement by the Department of Industrial Relations. The Department of Industrial Relations shall monitor and enforce compliance with applicable prevailing wage requirements for this Agreement. The reporting requirements may be found at https://www.dir.ca.gov/Public-Works/Contractors.html. Bidder is responsible for complying with all requirements of the Department of Industrial Relations, including filing electronic payroll reports.

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

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

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

M. SUBCONTRACTORS AND ASSIGNMENTS

The successful bidder shall perform work equivalent to at least ten percent (10%)

of the total amount of the construction work at the site; and, perform the work on the site with its own staff.

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

- 1. The name, business address, and California contractor license number of each subcontractor who will perform work or labor or render service to the bidder in or about the work in an amount in excess of one-half of one percent (1/2 of 1 %) of the bidder's total bid; and
- 2. The portion of the work that will be done by each subcontractor. The bidder shall list only one subcontractor for each portion of work as defined by the bidder in its bid.
- 3. The dollar amount of the work, which will be done by each such subcontractor.

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

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

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

- 1. Substitute any person, firm, or corporation as subcontractor in place of the subcontractor designed in the original bid; or
- 2. Permit any subcontract to be assigned or transferred; or
- 3. Allow it to be performed by anyone other than the original subcontractor listed in the bid.

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

Bidder shall not assign any interest it may have in any Agreement with the Authority, nor shall bidder assign any portion of the work under any such

Agreement with a value in excess of one-half of one percent (1/2 of 1%) of Agreement price to be sub-contracted to any one other than these subcontractors listed in Exhibit D in the "List of Subcontractors," except by prior written consent of Authority. Authority's consent to any assignment shall not be deemed to relieve bidder of its obligations to fully comply with its obligations under its Agreement with the Authority. Bidder with its own forces shall perform minimum of ten percent (10%) calculated as a percentage of the total cost of the project under this Agreement. Bidder shall also include in its subcontract agreements the provisions of its Agreement with Authority including the stipulation that each subcontractor shall maintain adequate insurance coverage compatible to the insurance coverage required of the bidder.

N. BIDDER'S LICENSING REQUIREMENTS

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

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

O. PERMITS AND INSPECTION COSTS

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

P. LIQUIDATED DAMAGES

In the event bidder, after entering into an Agreement with the Authority, fails to complete the work within the time specified in the Agreement, the bidder will be required to pay the Authority the amount of \$300.00 per calendar day of delay as agreed to liquidated damages.

Q. PROTEST PROCEDURES

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

this IFB must be submitted in accordance with the Authority's written procedures.

R. CONTRACT AWARD

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

S. EXECUTION OF CONTRACT

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

T. AUTHORITY'S RIGHTS

- 1. The Authority reserves the right to accept or reject any and all bids, or any item or part thereof, or to waive any informalities or irregularities in bids.
- 2. The Authority reserves the right to withdraw or cancel this IFB at any time without prior notice. The Authority makes no representations that any contract will be awarded to any bidder responding to this IFB.
- 3. The Authority reserves the right to issue a new IFB for the project.
- 4. The Authority reserves the right to postpone the bid opening for its own convenience.
- 5. Each bid will be received with the understanding that acceptance by the Authority of the bid to provide the goods and services described herein shall constitute a contract between the bidder and Authority which shall bind the bidder on its part to furnish and deliver at the prices given and in accordance with conditions of said accepted bid and specifications.
- 6. The Authority reserves the right to investigate the qualifications of any bidder, and/or require additional evidence of qualifications to perform the work.
- 7. Submitted IFBs are not to be copyrighted.

U. PUBLIC RECORDS AND INFORMATION

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

V. CONFLICT OF INTEREST

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

W. CODE OF CONDUCT

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

X. SAFETY

The complete safety requirements for this IFB are included in Section IV: Agreement Exhibit H. The Contractor will be required to demonstrate compliance with all requirements of the Safety Specifications after Notice to Proceed but prior to mobilization. These requirements include, but are not limited to, an onsite Health Safety and Environmental (HSE) representative to be present at all times during construction. The representative must have a current Board of Certified Safety Professionals (BCSP) certification and a minimum of five years of experience enforcing HSE compliance. BCSP certification requirements may be found at: https://www.bcsp.org/Safety-Certifications.

SECTION II: INSTRUCTIONS TO BIDDING FORMS

SECTION II. INSTRUCTIONS TO BIDDING FORMS

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

A. BID FORM

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

B. BID SECURITY FORM - BID BOND

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

C. INFORMATION REQUIRED OF BIDDER

Bidder must provide all the information requested in this form.

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

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

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

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

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

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

G. LIST OF SUBCONTRACTORS FORM

Bidder shall complete Exhibit D, which lists all subcontractors performing work in excess of one-half of one percent (½ of 1%) of the bid amount per the instructions

set forth in Section I "Instructions to Bidders".

H. STATUS OF PAST AND PRESENT CONTRACTS FORM

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

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

I. CERTIFICATION OF NON-COLLUSION

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



BID FORM

The undersigned hereby proposes to perform all work for which a contract may be awarded and to furnish any and all plant, labor, services, material, tools, equipment, supplies, transportation, utilities, and all other items and facilities necessary therefore as required in the IFB 3-2279, "SECURITY GATES INSTALLATION AT ANAHEIM, GARDEN GROVE, AND SANTA ANA BUS BASES", and to do everything required therein; and further proposes that, if this bid is accepted, will contract in the form and manner stipulated to perform all the work in strict conformity therewith within the time limits set forth therein, and will accept as full payment therefore, the following price:

1	Bid Amount	\$
	Bid Amount Allowance: Unforeseen	* • • • • • • • • • • • • • • • • • • •
2	Interferences	\$ 60,000.00
	Total Lump Sum Bid Amount	\$

A cashier's check/certified check/bid bond (circle applicable term) properly made payable to Orange County Transportation Authority, hereinafter designated as the Owner, for the sum of

Dollars
(\$
which amount is not less than ten percent (10%) of the total amount of this
bid, is attached hereto and is given as a guarantee that the undersigned will
execute the Agreement and furnish the required bonds, "Guaranty" and
"Certificate of Insurance", if awarded the contract, and in case of failure to
do so within the time provided, (a) the proceeds of said check shall be
forfeited to the Authority; or (b) surety's liability to the Authority for forfeiture

of the face amount of the bond shall be considered as established [circle (a)

The undersigned hereby represents that:

or (b)].

BID FORM, PAGE 2

- Bidder has thoroughly examined and become familiar with the work required and documents included under this IFB. The bidder understands that the award of the contract, if it is awarded, will be based on the lowest total bid submitted by a responsive and responsible bidder, and further, that the amounts and the total on the Bid Form will be subject to verification by the Authority.
- 2. By investigation at the site of the work and otherwise, it is satisfied as to the nature and location of the work and is fully informed as to all conditions and matters, which can in any way affect the work or the cost thereof.
- 3. Bidder fully understands the scope of the work/specifications and has checked carefully all words and figures inserted in said Invitation For Bids (IFB) and further understands that the Authority will in no way be responsible for any errors or omissions in the preparation of this bid. Bidder further asserts that it is capable of performing quality work to meet Authority's requirements.
- 4. Bidder will execute the Agreement and furnish the required Performance and Payment Bonds, Guaranty and proof of insurance coverage within ten (10) calendar days after notice of acceptance of bid by the Authority; and further, that this bid may not be withdrawn for a period of 120 calendar days after the date set for the opening thereof, unless otherwise required by law. If any bidder shall withdraw its bid within said period, the bidder shall be liable under the provisions of the Bid Security, or the bidder and the surety shall be liable under the Bid Bond, as the case may be.
- 5. Bidder hereby certifies that this bid is genuine and not a sham or collusive or made in the interest or on behalf of any person not herein named, and the undersigned has not directly or indirectly induced or solicited any other bidder to put in a sham bid, or any other person, firm, or corporation to refrain from bidding; the undersigned has not in any manner sought by collusion to secure for himself an advantage over any other bidder.
- 6. In conformance with current statutory requirements of Section 1860, et. seq., of the Labor Code of the State of California, the Bidder shall execute the document included in this IFB entitled "Bidder's Certificate of Compliance Regarding Workers' Compensation Insurance."
- 7. Bidder hereby further certifies that each, and every representation made in this bid are true and correct and made under penalty of perjury.

BID FORM, PAGE 3

- 8. Bidder shall permit the authorized representative of the Authority to inspect and audit all data and records of bidder relating to this bid, and if awarded a contract resulting from this bid, shall permit such inspection and audit of all data and records of bidder related to bidder's performance of such contract.
- 9. Bidder does not employ anyone who is now, or for one (1) year immediately prior to the date of this offer was, a director, officer, member, or employee of the Orange County Transportation Authority. The undersigned has not agreed to pay a fee contingent upon the award of a contract resulting from this bid to anyone who is now, or for one (1) year immediately prior to the date of this bid was, a director, officer, member, or employee of the Orange County Transportation Authority. No member of or delegate to the Congress of the United States shall be admitted to any share of the contract or to any benefit arising therefrom.
- 10. If awarded a contract resulting from this bid, bidder shall not discriminate against any employee or applicant for employment because of race, religion, color, sex, age or national origin. The bidder shall take affirmative action to ensure that applicants are employed, and that employees are treated during their employment, without regard to their race, religion, color, sex, age or national origin. Such actions shall include, but not be limited to the following: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship.
- 11. Bid will be in effect for 120 calendar days after the bid closing date.

BID FORM, PAGE 4

Now: In compliance with the **Invitation For Bids 3-2279**, "SECURITY GATES **INSTALLATION AT ANAHEIM, GARDEN GROVE, AND SANTA ANA BUS BASES**", the undersigned, with full cognizance thereof, hereby proposes to perform the entire work in strict compliance with all of the said requirements and provisions for the prices set forth herein upon which award of contract is made. The undersigned affirms that the information provided herein is true and accurate and that any misrepresentations are made under penalty of perjury.

Bidder
Signature
Name
Title
the State of
(CORPORATE SEAL)

BID SECURITY FORM BID BOND

KNOW ALL MEN BY THESE PRESENTS:

That,		as principal
and Bidder and	as	Surety, are held
and firmly bound unto the Oran		
California, hereinafter referre	ed to as "Authority," in	the sum of
	Dollars (\$), to be paid to
the Authority, its successors, and		
made, bind themselves, their he	eirs, executors, administrators, s	successors, and
assigns, jointly and severally, fi	rmly by these presents, this an	nount being ten
percent (10%) of the total amoun	t of the Bid.	
THE CONDITION OF THIS OBL		ertain bid of the
above named bounden prin	cipal	
		
	at	
County T	ransportation	Authority's
	as specifical	
documents entitled IFB 3-227		
ANAHEIM, GARDEN GROVE,		
withdrawn within a period of 120		
of bids, (unless otherwise require	, , , , , , , , , , , , , , , , , , ,	
contract to another Bidder), and the		
action of its legally constitute	a contracting authorities and	If the above
bounden	veces and engine shall every	
executors, administrators, succe	•	
such construction and deliver the	•	
"Guaranty," and proof of insuran	` ,	
notification of contract award from	3 '	
null and void; otherwise it shall be	e and remain in full force and effe	ect.
IN WITNESS WHEREOF, we he	rounto set our hands and seals th	hie day
of		iis uay
OI	, 202	
		

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

BID SECURITY FORM CHECK TO ACCOMPANY BID

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

accompanying this bid is a Certified or Cashiers check (circle the appropriate one) ayable to the order of Orange County Transportation Authority, hereinafter referred to as "Authority" for
ollars (\$), this amount being ten percent (10%) of the total
mount of the bid submitted in response to II b 3-2279, Secontiff GATES
NSTALLATION AT ANAHEIM, GARDEN GROVE, AND SANTA ANA BUS BASES".
he proceeds of this check shall become the property of Authority provided this bid shall
e accepted by Authority through action of its legally constituted contracting authorities
nd the undersigned shall fail to execute a contract and furnish the required Guaranty orm, Performance and Payment Bonds and proof of insurance coverage within ten (10)
alendar days after date of notification of contract award from the Authority. The proceeds
f this check shall also become the property of the Authority if the undersigned bidder withdraws the bid within the period of 120 days after the date set for the opening thereof, nless otherwise required by law, and notwithstanding the award of the contract to nother bidder. Otherwise, the check shall be returned to the undersigned.
Bidder:
Signature:
Date:

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

INFORMATION REQUIRED OF BIDDER

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

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

INFORMATION REQUIRED OF BIDDER, PAGE 2

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

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

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

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

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

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

12. List the name	e, address and pho	one numb	per of Sup	erintendent for this	s project:
	truction projects vices as a Superin	\ I	•	,	perintendent has
Contract Type (Public or Private)	Project Description	Dates of Service	Total Cost	Name and Address of Owner	Contact Name and Phone Number
Bidder hereby ce	ertifies that it:	<u> </u>	<u> </u>		
	is a certified Disa	ndvantag	ed Busines	ss Enterprise as d	efined herein.
	is not a Disadvar	ntaged Bu	usiness En	terprise as define	d herein.
financial data, or	sted by the Author other information s current financial	and ref	erences su	nish a certified fin ufficiently compre	ancial statement, hensive to permit
I hereby certify the	ne above is true a	nd correc	ct to the be	est of my belief.	
				_	
Signature					
Name				_	
Title				_	
Company	Name			_	
Telephone	e Number			_	
Fax Numb	per			_	
Email Add	dress			_	

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

- 1. The Bidders' attention is called to the "Equal Opportunity Clause" and the "Standard Federal Equal Employment Opportunity Construction Contract Specifications" set forth herein.
- 2. The goals and timetables for minority and female participation, expressed in percentage terms for the Contractor's aggregate <u>work force</u> in each trade on all construction work in the covered area, are as follows:

Timetable Goals for Minority Participation for Each Trade (11.9)

Goals for Female Participation in Each Trade (6.9)

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

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

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

BIDDER'S CERTIFICATE OF COMPLIANCE REGARDING WORKERS' COMPENSATION INSURANCE

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

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

Name of Bidder/Contractor:	
Signature:	
Title:	
Date:	

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

ontractor License Number:
xpiration Date of Contractor's License:
ach, every and all of the representations made by Bidder in the attached bid are truend correct.
Name of Bidder/Contractor:
Signed:
Title:
ubscribed to and sworn before me, a Notary Public in and for the State of alifornia, on, 202
Notary Public
My commission expires on:
, 202_
(NOTARY SEAL

LIST OF SUBCONTRACTORS (EXHIBIT D)

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

Name & Address Under Which Subcontractor is Licensed	License Number	DIR Registration No.	Specific Description of Work to be Rendered	Small Business Y/N	Туре	Dollar Amount
						\$
						\$
						\$
						\$
						\$
						\$
	TOTAL VA	ALUE OF SUBCONTRAC	CTED WORK			\$

Bidder's Name _____

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: O	riginal Contract Value:
Term of Contract:	
(1) Litigation, claims, settlements, arbitra	ations, or investigations associated with contract:
(2) Summary and Status of contract:	
(3) Summary and Status of action identified	ed in (1):
(4) Reason for termination, if applicable:	
By signing this Form entitled "Status of Pas information provided is true and accurate.	t and Present Contracts," I am affirming that all of the
Name	Signature
Title	Date

Revised. 03/16/2018

Non-Collusion Affidavit

To the Orange County Transportation Authority

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

Name of Bidder:		
Signature:	 	
Date:		

SECTION III: ADDITIONAL CONTRACTUAL EXHIBITS

SECTION III. ADDITIONAL CONTRACTUAL EXHIBITS

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

A. PERFORMANCE BOND

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

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

B. PAYMENT BOND

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

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

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

C. GUARANTY

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

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

D. CONTRACT CHANGE ORDER

The Authority's Contract Change Order form (Exhibit I) will be attached to and incorporated into the signed Agreement resulting from this IFB.

PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS:	
That we,	Orange County Transportation Authority,
The condition of the foregoing obligation is sucl	h that,
WHEREAS, said Contractor has been awarde Agreement with the Orange County Transp "SECURITY GATES INSTALLATION AT ANA ANA BUS BASES," as specified in said Agree bond by reference, and is required under the to in connection with the execution thereof;	portation Authority for the IFB 3-2279, AHEIM, GARDEN GROVE, AND SANTA ment, which is incorporated herein to this
NOW THEREFORE, if the said Contractor shat covenants and obligations of said Agreement of times and in the manner specified herein, the otherwise it shall be and remain in full force an fails to fully perform all requirements in accordated Agreement, then surety shall enforce perform Orange County Transportation Authority for the amount specified in this bond; and, further, if ir then said surety shall pay the Orange County attorneys' fees to be fixed by the court;	n his part to be done and performed at the en this obligation shall be null and void, d effect; and in the event said Contractor ance with the terms and conditions of said ance by the Contractor or shall pay the e same in an amount not exceeding the of the event suit is brought upon this bond
PROVIDED , that any changes in the work to whether or not made pursuant to the terms of seither the Contractor or the surety there under, under the provisions of said contract release notice of such changes or extensions of the con	said contract, shall not in any way release nor shall any extensions of time granted either the Contractor or the surety, and
WITNESS our hands this day of	, 202
(SEAL)	(Contractor) By
Approved:	(Title)
(SEAL)	(Surety)

PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS:

That we,	
hereinafter referred to as "Contractor"	
as surety, are held and firmly bound	unto the Orange County Transportation Authority
State of California, in the sum	
Dollars, (\$)	, lawful money of the United States of America, for
	truly to be made, we bind ourselves, jointly and

The Condition of the foregoing obligation is such that,

WHEREAS, said Contractor has been awarded and is about to enter into the annexed Agreement with the ORANGE COUNTY TRANSPORTATION AUTHORITY for the IFB 3-2279, "SECURITY GATES INSTALLATION AT ANAHEIM, GARDEN GROVE, AND SANTA ANA BUS BASES," as specified in said Agreement, which is incorporated herein to this bond by reference, and is required under the terms of said Agreement to give this bond in connection with the execution thereof:

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

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

PAYMENT BOND, PAGE 2

WITNESS our hands this	day of	, 202
(SEAL)	(Contractor)	
	Ву	
	(Title)	
Approved:	(Surety)	
(SEAL)	By	

GUARANTY

The undersigned, as "Contractor," guarantees to the Orange County Transportation Authority that the materials furnished and the completed installation work, and the related work performed by the Contractor pursuant to Agreement No. C-3-2279, "SECURITY GATES INSTALLATION AT ANAHEIM, GARDEN GROVE, AND SANTA ANA BUS BASES".

- A. For a period of one (1) year from the date of completion, as evidenced by the date of final acceptance of the work by the Authority, the Contractor warrants to the Authority that work performed and materials furnished under this Contract conforms to the Contract requirements and shall be free from any defect in design, material or workmanship performed by the Contractor or its subcontractors or suppliers. Notwithstanding the foregoing, Contractor shall not be liable for any defects of design, material or equipment provided by Authority.
- B. Under this guaranty, the Contractor shall remedy at its own expense any such failure to conform or any such defect.
- C. Nothing in the above intends or implies that this warranty shall apply to work, which has been abused or neglected by the Authority.
- D. This guaranty shall be in addition to the other guarantees and warranties specified in the Agreement and shall be enforceable concurrently with, or in lieu of, said other guarantees.

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

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

GUARANTY, PAGE 2

Subscribed and sworn to before me	
	Name
this day of, 202_	
•	Title
Seal of Notary	
•	Signature
Notary Public	Date



IFB 3-2279 EXHIBIT I

TITLE

	OCTA NO	CONTRACT NO.	SUPPL NO.	CHANGE REQU	JESTED BY:
			N/A	□ OWNER	□ CONTRACTOR
TO:	L	ACCOUNT CODE		OTHER ID	
TITLE:					
You are hereby directed to make the herein desc change order is not effective until approved by the of \$210,000.00 the Orange County Transportation at contract price, agreed price, and force account	e Orange County Transport n Authority's Chief Executiv	ation Authority's Manager of Contra e Officer. Describe work to be perfo	cts Administration and Materia ormed, estimate of quantities, a	als Management or in th and prices to be paid. S	e case of change orders in excess Segregate between additional work
Change Work Description:					
MODIFICATIONS DUE TO THIS CHANGE	ORDER:				
TIME: 0 CALENDER DAYS			PRICE: \$0.0)0	☐ INCREASE ☐ DECREASE
					INCREAGE BECKEAGE
APPROVAL RECOMMENDED BY:		DESIDENT ENGINEED			
APPROVAL RECOMMENDED BY:		RESIDENT ENGINEER			DATE
APPROVAL RECOMMENDED BY: APPROVAL RECOMMENDED BY:					DATE
		RESIDENT ENGINEER PROJECT MANAGER			
APPROVAL RECOMMENDED BY:					DATE
			MS		DATE
APPROVAL RECOMMENDED BY: APPROVAL RECOMMENDED BY:		PROJECT MANAGER	MS		DATE
APPROVAL RECOMMENDED BY:		PROJECT MANAGER			DATE
APPROVAL RECOMMENDED BY: APPROVAL RECOMMENDED BY:		PROJECT MANAGER DIRECTOR OF RAIL PROGRA			DATE DATE
APPROVAL RECOMMENDED BY: APPROVAL RECOMMENDED BY:		PROJECT MANAGER DIRECTOR OF RAIL PROGRA VE DIRECTOR OF CAPITAL F			DATE DATE DATE DATE
APPROVAL RECOMMENDED BY: APPROVAL RECOMMENDED BY: APPROVAL RECOMMENDED BY:		PROJECT MANAGER DIRECTOR OF RAIL PROGRA			DATE DATE
APPROVAL RECOMMENDED BY: APPROVAL RECOMMENDED BY: APPROVAL RECOMMENDED BY:	EXECUTI	PROJECT MANAGER DIRECTOR OF RAIL PROGRA VE DIRECTOR OF CAPITAL F	PROGRAMS		DATE DATE DATE DATE
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If the Contractor does not sign acceptance of this order, their attention is directed to the requirements of the specifications as to proceeding with the ordered work and filing a written protest within the time therein specified.

NAME

FORM-CM101 REV (7/19) Page 1 of 1

SECTION IV: AGREEMENT

AGREEMENT NO. C-3-2279

BETWEEN

ORANGE COUNTY TRANSPORTATION AUTHORITY

AND

THIS AGREEMENT is effective this _____ day of _______, 2023 ("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 "CONTRACTOR").

WITNESSETH:

WHEREAS, AUTHORITY has determined that it requires Security Gates Installation at Anaheim, Garden Grove, and Santa Ana Bus Bases at the AUTHORITY's Base(s); and

WHEREAS, said work cannot be performed by the regular employees of AUTHORITY; and WHEREAS. CONTRACTOR has represented that it has the requisite personnel, experience.

material, and equipment and is otherwise qualified to perform such services; and

WHEREAS, CONTRACTOR wishes to perform these services; and

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

ARTICLE 1. COMPLETE AGREEMENT

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

B. AUTHORITY's failure to insist in any one or more instances upon the performance of any terms or conditions of this Agreement shall not be construed as a waiver or relinquishment of

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

- C. AUTHORITY assumes no responsibility for any understanding or representations concerning conditions made by any of its officers, employees or agents prior to the execution of this Agreement, unless such understanding or representations by AUTHORITY are expressly stated in this Agreement.
- D. Time shall be of the essence hereunder; but CONTRACTOR shall perform work hereunder only to the minimum extent consistent with requirements herein.
- E. Changes to any portion of this Agreement shall not be binding upon AUTHORITY except when specifically confirmed in writing by an authorized representative of AUTHORITY and issued in accordance with the provisions of this Agreement.

ARTICLE 2. AUTHORITY DESIGNEE

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

ARTICLE 3. SCOPE OF WORK

CONTRACTOR shall provide all labor, equipment, materials and facilities necessary for all work related to Security Gates Installation at Anaheim, Garden Grove, and Santa Ana Bus Bases at the AUTHORITY's in strict compliance with all the requirements specified herein and in:

Exhibit A, entitled "General Provisions";

Addendum No's ;

Exhibit B, entitled "Specifications";

Exhibit C, entitled "List of Drawings";

Exhibit D, entitled "List of Subcontractors";

Exhibit E, entitled "Performance Bond";

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Exhibit F, entitled "Payment Bond";

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Exhibit G, entitled "Guaranty";

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Exhibit H, entitled "Safety Specifications" and

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

DELIVERY / RECOVERY SCHEDULE ARTICLE 4.

A. CONTRACTOR shall fully complete the herein above described work within (365) calendar days from the effective date of written Notice to Proceed (NTP) issued by AUTHORITY. CONTRACTOR shall give AUTHORITY not less than seventy-two (72) hours advance notice of the start of any work. Within five (5) calendar days after said notice, CONTRACTOR shall provide any construction schedules as may be requested by AUTHORITY.

B. If at any time, the critical path schedule reflects -30 or a greater negative number of days of total float, then CONTRACTOR, within ten days after CONTRACTOR first becomes aware of such schedule delay, shall prepare and submit to AUTHORITY for review and approval a Recovery Schedule demonstrating CONTRACTOR's proposed plan to regain lost schedule progress and to achieve the original contractual milestones in accordance with the Contract. AUTHORITY shall notify CONTRACTOR within ten days after receipt of each such Recovery Schedule whether the schedule is deemed accepted or rejected. Within five days after AUTHORITY's rejection of the schedule, CONTRACTOR will resubmit a revised Recovery Schedule incorporating AUTHORITY's comments. When AUTHORITY accepts CONTRACTOR's Recovery Schedule, CONTRACTOR shall, within five days after AUTHORITY's acceptance, incorporate and fully include such schedule into the Project

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Schedule and deliver it to AUTHORITY.

- C. All costs incurred by CONTRACTOR in preparing, implementing and achieving the Recovery Schedule shall be borne by CONTRACTOR and shall not result in a change to the contract price.
- D. In the event that CONTRACTOR fails to provide an acceptable Recovery Schedule within 30 days of CONTRACTOR's receipt of a notice to do so, CONTRACTOR shall have no right to receive progress payments until CONTRACTOR has prepared and AUTHORITY has approved such Recovery Schedule.

ARTICLE 5. START OF WORK

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

ARTICLE 6. PAYMENT

- A. For CONTRACTOR's full and complete performance of its obligations under this Agreement, and subject to the maximum cumulative payment obligation provision set forth in Article 7, AUTHORITY shall pay CONTRACTOR the firm fixed sum of _____ Dollars (\$.00).
- B. Progress payments and the final payment will be made by AUTHORITY to CONTRACTOR in accordance with the terms as set forth in Exhibit A, "General Provisions," under the "Progress Payments" and "Final Payment and Claims" sections therein. The acceptance by CONTRACTOR of AUTHORITY's final payment hereunder shall constitute a waiver of all claims against AUTHORITY under or arising out of this herein Agreement, as such may from time to time be amended.

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

D. Allowances are to be paid for based on Force Account. No work under allowance category shall commence unless authorized in writing by the Engineer. Any costs which exceed, or are less than the bid allowance amount, shall require an adjustment to the maximum cumulative payment obligation amount by Contract Change Order.

ARTICLE 7. MAXIMUM OBLIGATION

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

ARTICLE 8. 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 CONTRACTOR: To AUTHORITY:

Orange County Transportation Authority

550 South Main Street

P.O. Box 14184

Orange, CA 92863-1584

ATTENTION: ATTENTION: Marjorie Morris-Threats

Title: Principal Contracts Administrator

Phone: Phone: (714) 560 - 5552

Email: mthreats@octa.net

Cc: George Olivo, Project Manager

Phone: (714) 560-5872

Email: golivo@octa.net

ARTICLE 9. INDEPENDENT CONTRACTOR

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

B. Should CONTRACTOR'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, CONTRACTOR shall defend and indemnify AUTHORITY in relation to any allegations made.

ARTICLE 10. INSURANCE

- A. CONTRACTOR shall procure and continuously maintain in full force and affect through contract completion, insurance coverages specified herein. Coverages shall not be subject to self-insurance provisions. CONTRACTOR shall provide the following insurance coverage:
- 1. Commercial General Liability, to include Products/Completed Operations, Independent Contractors', Contractual Liability, and Personal Injury, and Property Damage with a minimum limit of \$1,000,000 per occurrence and \$2,000,000 general aggregate.

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25 26 2. Automobile Liability to include owned, hired and non-owned autos with a combined single limit of \$1,000,000 each accident;

- 3. Workers' Compensation with limits as required by the State of California, including waiver of subrogation, in favor of AUTHORITY, its officers, directors, employees and agents.
- 4. Builders All Risk policy or course of construction including earthquake and flood coverage with minimum limits of \$2,500,000.
 - 5. Employers' Liability with minimum limits of \$1,000,000.
- B. Prior to commencement of any work hereof, CONTRACTOR shall furnish to AUTHORITY's Contract Administrator broker-issued insurance certificate showing the required insurance coverages and further providing that:
- AUTHORITY, its officers, directors, employees and agents must be named as additional insured on Commercial General Liability and Automobile Liability policy with respect to performance hereunder; and
- 2. The coverage shall be primary and noncontributory as to any other insurance with respect to performance hereunder; and
- 3. Thirty (30) days prior written notice of cancellation or material change be given to AUTHORITY.

In addition, CONTRACTOR shall provide insurance policy blanket endorsement.

- C. "Occurrence," as used herein, means any event or related exposure to conditions, which result in bodily injury or property damage.
- D. The Certificate of Insurance shall reference Agreement Number C- 3-2279and, the Contract Administrator's Name, Marjorie Morris-Threats.
- E. Upon AUTHORITY's request, certified, true and exact copies of each of the insurance policies shall be provided to AUTHORITY.
- F. AUTHORITY shall notify CONTRACTOR in writing of any changes in the requirements to insurance required to be provided by CONTRACTOR. Except as set forth in this Article, any additional

cost from such change shall be paid by AUTHORITY and any reduction in cost shall reduce the contract price pursuant to a change order.

- G. CONTRACTOR shall also include in each subcontract the stipulation that subcontractors shall maintain coverage in the amounts required as provided in this Agreement.
- H. CONTRACTOR shall be required to immediately notify AUTHORITY of any modifications or cancellation of any required insurance policies.

ARTICLE 11. BONDS

- A. By submitting Exhibit E, entitled "Performance Bond," and Exhibit F, entitled "Payment Bond," CONTRACTOR shall satisfy AUTHORITY's requirements that CONTRACTOR deposit with AUTHORITY bonds with values in the sum of 100 percent of this Agreement's price to cover CONTRACTOR's failure to fully perform hereunder and CONTRACTOR's failure to pay its labor, material or failure to comply with Article 32 of this Agreement, in performing hereunder. If the contract price is increased in connection with a Change Order, the AUTHORITY may, in its sole discretion, require a corresponding increase in the amount of the Performance and Payment bonds or new bonds covering the Change Order work.
- B. Notwithstanding any other provision set forth in this Agreement, performance by a Surety or Guarantor of any obligations of CONTRACTOR shall not relieve CONTRACTOR of any of its obligations thereunder.

ARTICLE 12. ORDER OF PRECEDENCE

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

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ARTICLE 13. CHANGES

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

- B. No claims by CONTRACTOR for equitable adjustment hereunder shall be allowed if asserted after final payment under this Agreement.
- C. Any work done beyond the technical provisions specified in this Agreement, or any extra work done without AUTHORITY's written authority, will be considered unauthorized work and will not be paid for. Upon order of AUTHORITY's Engineer or its designee, unauthorized work shall be remedied, removed or replaced at CONTRACTOR's expense.

ARTICLE 14. MODIFICATION PROPOSALS-PRICE BREAKDOWN

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

ARTICLE 15. DISPUTES

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

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

ARTICLE 16. TERMINATION FOR CONVENIENCE

A. AUTHORITY may terminate this Agreement for its convenience at any time in whole or in part, by giving CONTRACTOR written notice thereof. AUTHORITY shall terminate by delivering to CONTRACTOR a written Notice of Termination for Convenience specifying the extent of termination and its effective date. Upon termination, AUTHORITY shall pay CONTRACTOR its allowable costs incurred to date of that portion terminated. The rights, duties and obligations of the parties shall be construed in accordance with the applicable provisions of CFR Title 48, Chapter 1, Part 49, of the Federal Acquisition Regulation (FAR) and specific subparts and other provisions thereof applicable to termination for convenience. If AUTHORITY sees fit to terminate this Agreement for convenience, said notice shall be given to CONTRACTOR in accordance with the provisions of the FAR referenced above and Article 8, herein. Upon receipt of said notification, CONTRACTOR shall immediately proceed with all obligations, regardless of any delay in determining or adjusting any amounts due under this Article, and agrees to comply with all applicable provisions of the FAR pertaining to termination for convenience.

ARTICLE 17. TERMINATION FOR DEFAULT-DAMAGES FOR DELAY-TIME EXTENSIONS

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

- B. If AUTHORITY so terminates CONTRACTOR's right to proceed, the resulting damage will consist of such liquidated damages as set forth in the Article 31 in this Agreement entitled "Liquidated Damages," until such reasonable time as may be required for final completion of the work together with any increased costs occasioned AUTHORITY in completing the work. If AUTHORITY does not so terminate CONTRACTOR's right to proceed, the resulting damage will consist of such liquidated damages until the work is completed or accepted.
- C. CONTRACTOR's right to proceed shall not be so terminated nor the CONTRACTOR charged with resulting damage if:
- 1. The delay in completing the work arises from unforeseeable causes beyond the control and without the fault or negligence of CONTRACTOR, including but not restricted to, acts of God, acts of the public enemy, acts or omissions of AUTHORITY, acts of another CONTRACTOR in the performance of an Agreement with AUTHORITY, fires, floods, epidemics, quarantine restrictions, freight embargoes, unusually severe weather, or delays of subcontractors or suppliers arising from unforeseeable causes beyond the control and without the fault or negligence of both CONTRACTOR and such subcontractors or suppliers; and

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2. CONTRACTOR, within ten (10) calendar days from the beginning of any such delay, notifies AUTHORITY in writing of the causes of delay. AUTHORITY shall ascertain the facts and the extent of the delay and extend the time for completing the work when, in its judgment, the findings of fact justify such an extension, and its findings of fact shall be final and conclusive on the parties, subject only to appeal as provided in the "Disputes" clause of this Agreement. Any such time extensions will not become effective until approved by AUTHORITY's Engineer in writing. AUTHORITY's Engineer will furnish CONTRACTOR a weekly statement showing the number of calendar days charged to the Agreement for the preceding week, the number of calendar days of time extensions being considered or approved, the number of calendar days originally specified for the completion of this Agreement and the number of calendar days remaining to complete this Agreement, and the extended date for completion thereof.

- 3. Should at any time extensions be included by AUTHORITY'S Engineer on the Weekly Statement of Contract Calendar Days, a change order covering the sum total of the time extensions will be issued to CONTRACTOR at periodic intervals during the project.
- D. If, after notice of termination of CONTRACTOR's right to proceed under the provisions of this clause, it is determined for any reason that CONTRACTOR was not in default under the provisions of this clause, or that the delay was excusable under the provisions of this clause, the rights and obligations of the parties shall be the same as if the notice of termination had been issued pursuant to Article 16, entitled "Termination for Convenience."
- E. The rights and remedies of AUTHORITY provided in this clause are in addition to any other rights and remedies provided by law or under this Agreement.
- F. As used in paragraph C.1 of this Article, the term "subcontractors or suppliers," means subcontractors or suppliers at any tier.

ARTICLE 18. INDEMNIFICATION

CONTRACTOR shall indemnify, defend, and hold harmless AUTHORITY, its officers, directors, employees and agents from and against any and all claims (including attorneys' fees and reasonable

expenses for litigation or settlement) for any loss, costs, penalties, fines, damages, bodily injuries, including death, damage to or loss of use of property, arising out of, resulting from, or in connection with the performance of CONTRACTOR, its officers, directors, employees, agents, subcontractors or suppliers under the Agreement. Notwithstanding the foregoing, such obligation to defend, hold harmless, and indemnify AUTHORITY, its officers, directors, employees and agents shall not apply to such claims or liabilities arising from the sole or active negligence or willful misconduct of AUTHORITY.

ARTICLE 19. ASSIGNMENTS AND SUBCONTRACTS

- A. Neither this Agreement nor any interest herein nor claim hereunder may be assigned by CONTRACTOR either voluntarily or by operation of law. CONTRACTOR shall not have the right to make any substitutions of any subcontractor listed in Exhibit D, entitled "List of Subcontractors," except in accordance with the provisions of the Subletting and Subcontractors Fair Practices Act, Public Contract Code section 4100 et. seq. AUTHORITY's consent shall not be deemed to relieve CONTRACTOR of its obligation to fully comply with the requirements of this Agreement.
- B. CONTRACTOR shall be fully responsible to AUTHORITY for all acts and omissions of its own employees, and of subcontractors and their employees. CONTRACTOR shall coordinate the work performed by subcontractor.
- C. AUTHORITY shall have the right, but not the obligation, to review the form of subcontract used by CONTRACTOR for the project and to require modifications thereto to conform to the requirements set forth herein.

ARTICLE 20. AUDIT AND INSPECTION OF RECORDS

CONTRACTOR shall provide AUTHORITY, or other agents of the AUTHORITY, such access to CONTRACTOR's accounting books, records, payroll documents and facilities of the CONTRACTOR which are directly pertinent to this Agreement for the purposes of examining, auditing and inspecting all accounting books, records, work data, documents and activities related hereto. CONTRACTOR shall maintain such books, records, data and documents in accordance with generally accepted accounting principles and shall clearly identify and make such items readily accessible to such parties during

CONTRACTOR's performance hereunder and for a period of four (4) years from the date of final payment by AUTHORITY, except in the event of litigation or settlement of claims arising from the performance of this Agreement, in which case CONTRACTOR agrees to maintain same until AUTHORITY, or any of their duly authorized representatives, have disposed of all such litigation, appeals, claims or exceptions related thereto. AUTHORITY's right to audit books and records directly related to this Agreement shall also extend to all first-tier subcontractors. CONTRACTOR shall permit any of the foregoing parties to reproduce documents by any means whatsoever or to copy excerpts and transcriptions as reasonably necessary.

ARTICLE 21. CONFLICT OF INTEREST

CONTRACTOR agrees to avoid organizational conflicts of interest. An organizational conflict of interest means that due to other activities, relationships or contracts, the CONTRACTOR is unable, or potentially unable to render impartial assistance or advice to the AUTHORITY; CONTRACTOR's objectivity in performing the work identified in the Scope of Work is or might be otherwise impaired; or the CONTRACTOR has an unfair competitive advantage. CONTRACTOR is obligated to fully disclose to the AUTHORITY in writing Conflict of Interest issues as soon as they are known to the CONTRACTOR. All disclosures must be submitted in writing to AUTHORITY pursuant to the Notice provision herein. This disclosure requirement is for the entire term of this Agreement.

ARTICLE 22. CODE OF CONDUCT

CONTRACTOR 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. CONTRACTOR agrees to include these requirements in all of its subcontracts.

ARTICLE 23. 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 24. FEDERAL, STATE AND LOCAL LAWS

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

ARTICLE 25. EQUAL EMPLOYMENT OPPORTUNITY

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

ARTICLE 26. FINISHED AND PRELIMINARY DATA

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

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

 AUTHORITY if CONTRACTOR causes AUTHORITY to exercise Article 17, and a price shall be negotiated for all preliminary data.

ARTICLE 27. PRIVACY ACT

CONTRACTOR shall comply with, and assures the compliance of its employees with, the information restrictions and other applicable requirements of the Privacy Act of 1974, 5 U.S.C. §552a. Among other things, CONTRACTOR agrees to obtain the express consent of the Federal Government before CONTRACTOR or its employees operate a system of records on behalf of the Federal Government. CONTRACTOR understands the requirements of the Privacy Act, including the civil and criminal penalties for violation of that Act, apply to those individuals involved, and that failure to comply with the terms of the Privacy Act may result in termination of the underlying Agreement.

ARTICLE 28. OWNERSHIP OF REPORTS AND DOCUMENTS

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

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

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

ARTICLE 29. CONVICT LABOR

In connection with the performance of work under this Agreement, CONTRACTOR agrees not to employ any person undergoing sentence of imprisonment at hard labor. This does not include convicts who are on parole or probation.

ARTICLE 30. NOTICE OF LABOR DISPUTE

Whenever CONTRACTOR has knowledge that any actual or potential labor dispute may delay its performance under this Agreement, CONTRACTOR shall immediately notify and submit all relevant information to AUTHORITY. CONTRACTOR shall insert the substance of this entire clause in any subcontract hereunder as to which a labor dispute may delay performance under this Agreement. However, any subcontractor need give notice and information only to its next higher-tier subcontractor.

ARTICLE 31. LIQUIDATED DAMAGES

If CONTRACTOR fails to complete the work within the time specified in Article 4 of this Agreement, or any AUTHORITY authorized extension thereof, the actual damage to AUTHORITY for the delay will be difficult or impossible to determine. Therefore, in lieu of actual damages, CONTRACTOR shall pay to AUTHORITY as fixed, agreed-to liquidated damages for each calendar day of delay the sum of Three Hundred Dollars (\$ \$300.00). Alternatively, AUTHORITY may terminate this Agreement in whole or in part as provided in Article 16 of this Agreement, and in that event, CONTRACTOR shall be liable, in addition to the excess costs provided in Article 16 of this Agreement, for such liquidated damages accruing until such time as AUTHORITY may reasonably obtain delivery or performance of similar supplies or services from a different source. CONTRACTOR shall not be charged with liquidated damages when the delay is determined to be excusable in accordance with Article 44 hereunder.

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ARTICLE 32. WARRANTY

A. In addition to any other warranties set forth in this Agreement, whether expressed or implied, CONTRACTOR warrants that (1) all work performed and all equipment and material provided under this Agreement by CONTRACTOR or any of its subcontractors or suppliers at any tier, conforms to the requirements herein and is free of any defects; (2) equipment furnished by CONTRACTOR or any of its subcontractors or suppliers at any tier, shall be of modern design, in good working condition and fit for use of its intended purpose; and (3) all work shall meet all of the requirements of this Agreement. Such warranty shall continue for a period of one (1) year from AUTHORITY's acceptance as shown in Article 34 hereunder. Under this warranty, CONTRACTOR shall remedy at its own expense any such failure to conform or correct any such defect. In addition, CONTRACTOR shall remedy at its own expense any damage to AUTHORITY owned or controlled real or personal property, when that damage is the result of CONTRACTOR's failure to conform to Agreement requirements or any such defect of equipment, material, workmanship or design. CONTRACTOR shall also restore any work damaged in fulfilling the terms of this clause. CONTRACTOR's warranty with respect to work repaired or replaced hereunder will run for one year from the date of such repair or replacement.

B. AUTHORITY shall notify CONTRACTOR in writing within a reasonable time after the discovery of any failure, defect or damage. CONTRACTOR has seven days from receipt of notice from AUTHORITY to respond to AUTHORITY's notification and indicate how CONTRACTOR will remedy the failure, defect, or damage. If AUTHORITY is not satisfied with the remedy proposed by CONTRACTOR, CONTRACTOR and AUTHORITY shall meet and mutually agree when and how CONTRACTOR shall remedy such violation. In the case of an emergency requiring immediate corrective action, CONTRACTOR shall implement such action, as it deems necessary and shall notify AUTHORITY in writing of the urgency of a decision and action taken. CONTRACTOR and AUTHORITY shall, then promptly meet in order to agree on a remedy. If CONTRACTOR and AUTHORITY fail to agree on the

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remedy within a five-day period, AUTHORITY, after notice to CONTRACTOR, shall have the right to perform or have performed by third parties the necessary remedy, and the costs thereof shall be borne by CONTRACTOR.

- C. Should CONTRACTOR fail to remedy any failure, defect or damage described in paragraph A above within a reasonable time after receipt of notice thereof, AUTHORITY shall have the right to replace, repair or otherwise remedy such failure, defect or damage at CONTRACTOR's expense and CONTRACTOR shall be liable for all damages, including, but not limited to, actual or consequential damages and cost of any suit to enforce AUTHORITY's rights hereunder, including reasonable attorney's fees.
- D. In addition to the other rights and remedies provided by this clause, all subcontractors, manufacturers, and suppliers' warranties, expressed or implied, respecting any work and materials furnished hereunder, shall, at the direction of AUTHORITY, be enforced by CONTRACTOR for the benefit of AUTHORITY. In such case if CONTRACTOR's warranty under paragraph A above has expired, any suit directed by AUTHORITY shall be at the expense of AUTHORITY. CONTRACTOR shall obtain any warranties, which the subcontractors, manufacturers or suppliers would give in normal commercial practice and shall cause all subcontractor or supplier warranties to be extend to AUTHORITY.
- E. If directed by AUTHORITY, CONTRACTOR shall require any such warranties to be executed in writing to AUTHORITY.
- F. Notwithstanding any other provision of this clause, unless such a defect is caused by the negligence of CONTRACTOR or its subcontractors or suppliers at any tier, CONTRACTOR shall not be liable for the repair of any defects of material or design furnished by AUTHORITY nor for the repair of any damage which results from any such defect in AUTHORITY furnished material or design.
- G. The warranty specified herein shall not limit AUTHORITY's rights under the Inspection and Acceptance clause of this Agreement with respect to latent defects, gross mistakes or fraud.
- H. Defects in design or manufacture of equipment specified by AUTHORITY on a "brand name and model" basis shall not be included in this warranty. CONTRACTOR shall require any subcontractors,

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manufacturers or suppliers thereof to execute their warranties in writing directly to AUTHORITY.

I. Any disagreement between AUTHORITY and CONTRACTOR relating to this section shall be subject to dispute resolution in accordance with Article 16.

ARTICLE 33. GENERAL WAGE RATES

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

B. In addition to the foregoing, CONTRACTOR agrees to comply with all other provisions of the Labor Code of the State of California, which are 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. CONTRACTOR 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 34. INSPECTION AND ACCEPTANCE

A. All work (which term includes but is not restricted to materials, equipment, workmanship, and manufacture and fabrication of components) shall be subject to inspection and test by AUTHORITY at all reasonable times and at all places prior to acceptance. Any such inspection and test is for the sole benefit of AUTHORITY and shall not relieve CONTRACTOR of the responsibility of providing quality control measures to assure that the work strictly complies with requirements of this Agreement. No inspection or test by AUTHORITY or its representative shall be construed as constituting or implying acceptance. Inspection or test shall not relieve CONTRACTOR of responsibility for damage to or loss of the material prior to acceptance, nor in any way affect the continuing rights of AUTHORITY after acceptance of the completed work under the terms of paragraph F of this Article, except as herein above provided.

B. CONTRACTOR shall, without charge, replace any material or correct any workmanship found by AUTHORITY not to conform to the requirements of this Agreement, unless in the public interest AUTHORITY consents to accept such material or workmanship with an appropriate adjustment in the price of this Agreement. CONTRACTOR shall promptly segregate and remove rejected material from the premises.

C. CONTRACTOR shall furnish promptly, without additional charge, all facilities, labor, equipment and material reasonably needed for performing such safe and convenient inspection and test as may be required by AUTHORITY. All inspections and tests by AUTHORITY shall be performed in such manner as to not unnecessarily delay the work. AUTHORITY reserves the right to charge to CONTRACTOR any additional cost of inspection or test when material or workmanship is not ready at the time specified by CONTRACTOR for inspection or test or when reinspection or retest is necessitated by prior rejection.

D. If CONTRACTOR does not promptly replace rejected material or correct rejected workmanship, AUTHORITY (1) may, by Agreement or otherwise, replace such material or correct such workmanship and charge the cost thereof to CONTRACTOR, or (2) may terminate CONTRACTOR's right to proceed in accordance with the clause of this Agreement entitled "Termination for Default."

E. Should it be considered necessary or advisable by AUTHORITY at any time before acceptance of the entire work to make an examination of work already completed, by removing or tearing out same, CONTRACTOR shall, on request, promptly furnish all necessary facilities, labor and material. If such work is found to be defective or nonconforming in any material respect, due to the fault of CONTRACTOR or its subcontractors, CONTRACTOR shall pay all costs of such examination and of satisfactory reconstruction. If, however, such work is found to meet the requirements of this Agreement, an equitable adjustment shall be made in the Agreement price to compensate CONTRACTOR for the additional services involved in such examination and reconstruction and, if completion of the work has been delayed thereby, it shall in addition, be granted a suitable extension of time.

F. Unless otherwise provided in this Agreement, acceptance by AUTHORITY shall be made as promptly as practicable after completion and inspection of all work required by this Agreement, or that portion of the work that AUTHORITY determines can be accepted separately. Acceptance shall be final and conclusive except as regards latent defects, fraud, or such gross mistakes as may amount to fraud or as regards AUTHORITY's rights under the warranty provisions set forth herein.

ARTICLE 35. MATERIAL AND WORKMANSHIP

A. Unless otherwise specifically provided in this Agreement, all equipment, material, and articles incorporated in the work covered by this Agreement are to be new and of the most suitable grade for the purpose intended. Unless otherwise specifically provided in this Agreement, reference to any equipment, material, article or patented process, by trade name, make or catalog number, shall be regarded as establishing a standard of quality and shall not be construed as limiting competition, and CONTRACTOR may, at its option, use any equipment, material, article or process which, in the judgment of AUTHORITY, is equal to that named. CONTRACTOR shall furnish to AUTHORITY for its approval the name of the manufacturer, the model number and other identifying data and information respecting the performance, capacity, nature and rating of the machinery and mechanical and other equipment, which CONTRACTOR contemplates incorporating in the work. When required by this Agreement or when called for by AUTHORITY, CONTRACTOR shall furnish AUTHORITY, for approval, full information concerning the

 material or articles, which it contemplates incorporating in the work. When so directed, samples shall be submitted for approval at CONTRACTOR's expense, with all shipping charges prepaid. Machinery, equipment, material and articles installed or used without required approval shall be at the risk of subsequent rejection.

B. All work under this Agreement shall be performed in a skillful and workmanlike manner. Notwithstanding the provisions of Article 3 hereof, AUTHORITY may, in writing, require CONTRACTOR to remove from the work any employee AUTHORITY deems incompetent, careless or otherwise objectionable.

ARTICLE 36. NON-CONFORMING WORK

A. Nonconforming work rejected by AUTHORITY shall be removed and replaced so as to conform to the requirements of this Agreement, at CONTRACTOR's cost and without a time extension; and CONTRACTOR shall promptly take all action necessary to prevent similar deficiencies from occurring in the future. The fact that AUTHORITY may not have discovered the nonconforming Work shall not constitute an acceptance of such nonconforming Work. If CONTRACTOR fails to correct any nonconforming work within ten days of receipt of notice from AUTHORITY requesting correction, or if such nonconforming work cannot be corrected within ten days, and CONTRACTOR fails to (1) provide to AUTHORITY a schedule for correcting any such nonconforming work acceptable to AUTHORITY within such ten-day period, (2) commence such corrective work within such ten-day period and (3) thereafter diligently prosecute such correction in accordance with such approved schedule to completion, then AUTHORITY may cause the nonconforming work to be remedied or removed and replaced and may deduct the cost of doing so from any moneys due or to become due CONTRACTOR and/or obtain reimbursement from CONTRACTOR for such cost.

B. If AUTHORITY agrees to accept any Nonconforming Work without requiring it to be fully corrected, AUTHORITY shall be entitled to reimbursement of a portion of the Contract Price in an amount equal to the greater of the amount deemed appropriate by AUTHORITY to provide compensation for future maintenance and/or other costs relating to the Nonconforming Work, or 100% of CONTRACTOR's

cost savings associated with its failure to perform the Work in accordance with Contract requirements. Such reimbursement shall be payable to AUTHORITY within ten days after CONTRACTOR's receipt of an invoice thereof. CONTRACTOR acknowledges and agrees that AUTHORITY shall have sole discretion regarding acceptance or rejection of Nonconforming Work and that AUTHORITY shall have sole discretion with regard to the amount payable in connection therewith.

ARTICLE 37. CONTRACTOR INSPECTION SYSTEM

CONTRACTOR shall maintain an adequate inspection system and perform such inspections as will assure that the work performed under this Agreement conforms to the specified requirements, and shall maintain and make available to AUTHORITY adequate records of such inspections.

ARTICLE 38. SUPERINTENDENCE BY CONTRACTOR

CONTRACTOR, at all times during performance and until the work is completed and accepted, shall give its personal superintendence to the work or have on the work a competent superintendent, satisfactory to AUTHORITY and with authority to act for and on behalf of CONTRACTOR.

ARTICLE 39. OTHER CONTRACTS

AUTHORITY may undertake or award other agreements for additional work, and CONTRACTOR shall fully cooperate with such other CONTRACTOR's and AUTHORITY's employees and carefully fit its own work to such additional work as may be directed by AUTHORITY. CONTRACTOR shall not commit or permit any act, which will interfere with the performance of work by any other CONTRACTOR or by AUTHORITY.

ARTICLE 40. INSPECTION OF SITE

CONTRACTOR acknowledges that it has investigated and satisfied itself as to the conditions affecting the work including, but not restricted to, those bearing upon transportation, disposal, handling and storage of materials, availability of labor, water, electric power and roads and uncertainties of weather, river stages, tides or similar physical conditions at the site, the conformation and conditions of the ground, the character of equipment and facilities needed preliminary to and during prosecution of the work. CONTRACTOR further acknowledges that it has satisfied itself as to the character, quality and

quantity of surface and subsurface materials or obstacles to be encountered insofar as this information is reasonably ascertainable from an inspection of the site, including all exploratory work done by AUTHORITY, as well as from information presented by the drawings and specifications made a part of this Agreement. Any failure by CONTRACTOR to acquaint itself with the available information will not relieve it from responsibility for the difficulty or cost of successfully performing the work. AUTHORITY assumes no responsibility for any conclusions or interpretations made by CONTRACTOR on the basis of the information made available by AUTHORITY.

ARTICLE 41. DIFFERING SITE CONDITIONS

A. CONTRACTOR shall immediately, and before such conditions are disturbed, notify AUTHORITY in writing of: (1) subsurface or latent physical conditions at the site which differ materially from those indicated in this Agreement, or (2) unknown physical conditions at the site, of an unusual nature, which differ materially from those ordinarily encountered and generally recognized as inherent in work of the character provided for in this Agreement. AUTHORITY will investigate the conditions within three business days of receipt of notification, and if it finds that such conditions do materially so differ and cause an increase or decrease in CONTRACTOR's cost of, or the time required for, performance of any part of the work under this Agreement, whether or not changed as a result of such conditions, an equitable adjustment shall be made and the Agreement modified in writing accordingly.

B. No claim of CONTRACTOR under this Article shall be allowed unless CONTRACTOR has given the written notice required above; no claim by CONTRACTOR for an equitable adjustment hereunder shall be allowed if asserted after final payment under this Agreement.

ARTICLE 42. OPERATIONS AND STORAGE AREAS

A. All operations of CONTRACTOR (including storage of materials and equipment) on AUTHORITY owned premises shall be confined to areas authorized or approved by AUTHORITY. CONTRACTOR shall hold AUTHORITY and its officers and agents free and harmless from liability of any nature occasioned by CONTRACTOR's operations.

B. Temporary building (storage sheds, shops, offices, etc.) may be erected by CONTRACTOR

with the written consent of AUTHORITY, and shall be built with labor and materials furnished by CONTRACTOR without expense to AUTHORITY. Such temporary buildings and utilities shall remain the property of CONTRACTOR and shall be removed by CONTRACTOR at its expense upon the completion of the work. With the written consent of AUTHORITY, such buildings and utilities may be abandoned and need not be removed.

C. CONTRACTOR shall, under regulations prescribed by AUTHORITY, use only established roadways or construct and use such temporary roadways as may be authorized by AUTHORITY. Where materials are transported in the prosecution of work, vehicles shall not be loaded beyond the loading capacity recommended by the manufacturer of the vehicle or prescribed by any federal, state or local law or regulation. When it is necessary to cross curbing or sidewalks, protection against damage shall be provided by CONTRACTOR and any damaged roads, curbing or sidewalks shall be repaired by, or at the expense of, CONTRACTOR.

ARTICLE 43. PROTECTION OF VEGETATION, UTILITIES, IMPROVEMENTS

A. CONTRACTOR shall preserve and protect all existing vegetation such as trees, shrubs and grass on or adjacent to the site of work which is not to be removed and which does not unreasonably interfere with the construction work. Care will be taken in removing trees authorized for removal to avoid damage to vegetation to remain in place. Any limbs or branches of trees broken during such operations or by the careless operation of equipment, or by workmen, shall be trimmed with a clean cut and painted with an approved tree pruning compound as directed by AUTHORITY.

B. CONTRACTOR shall protect from damage all existing improvements or utilities at or near the site of the work, the location of which is made known to it, and will repair or restore any damage to such facilities resulting from failure to comply with the requirements of this Agreement or the failure to exercise reasonable care in the performance of the work. If CONTRACTOR fails or refuses to repair any such damage promptly, AUTHORITY may have the necessary work performed and charge the cost to CONTRACTOR.

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ARTICLE 44. CLEANING UP

A. CONTRACTOR shall at all times keep the construction area, including storage areas used by it, free from accumulations of waste material or rubbish, and prior to completion of the work remove any rubbish from AUTHORITY owned premises and all tools, scaffolding, equipment and materials not the property of AUTHORITY. Upon completion of the construction, CONTRACTOR shall leave the work and premises in a clean, neat and workmanlike condition satisfactory to AUTHORITY.

B. After completion of all work on the project, and before making application for acceptance of the work, CONTRACTOR shall clean the construction site, including all areas under the control of AUTHORITY, that have been used by CONTRACTOR in connection with the work on the project and remove all debris, surplus material and equipment, and all temporary construction or facilities of whatever nature, unless otherwise approved by AUTHORITY. Final acceptance of the work by AUTHORITY will be withheld until CONTRACTOR has satisfactorily complied with the foregoing requirements for final cleanup of the project site.

C. Full compensation for conforming to the provisions in this Article, not otherwise provided for, shall be considered as included in price of this Agreement and no additional compensation will be allowed therefore.

ARTICLE 45. USE AND POSSESSION TO COMPLETION

AUTHORITY shall have the right to take possession of or use any completed or partially completed part of the work. Prior to such possession or use, AUTHORITY shall furnish CONTRACTOR an itemized list of work remaining to be performed or corrected on such portions of the project as are to be possessed or used by AUTHORITY, provided that failure to list any item of work shall not relieve CONTRACTOR of responsibility for compliance with the terms of this Agreement. Such possession or use shall not be deemed an acceptance of any work under this Agreement. While AUTHORITY has such possession or use, CONTRACTOR shall be relieved of the responsibility for the loss or damage to the work resulting from AUTHORITY's possession or use. If such prior possession or use by AUTHORITY delays the progress of the work or causes additional expense to CONTRACTOR, an equitable adjustment

in the Agreement price or the time of completion will be made and the Agreement shall be modified in writing accordingly.

ARTICLE 46. PROHIBITED INTERESTS

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

ARTICLE 47. CONTRACTOR PURCHASED EQUIPMENT

- A. If during the course of this Agreement, additional equipment is required, which will be paid for by the AUTHORITY, CONTRACTOR must request prior written authorization from the AUTHORITY's project manager before making any purchase. As part of this purchase request, CONTRACTOR shall provide a justification for the necessity of the equipment or supply and submit copies of three (3) competitive quotations. If competitive quotations are not obtained, CONTRACTOR must provide the justification for the sole source.
- B. CONTRACTOR 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, CONTRACTOR may keep the equipment and credit AUTHORITY in an amount equal to its fair market value. Fair market value shall be determined, at CONTRACTOR's expense, on the basis of an independent appraisal. CONTRACTOR may sell the equipment at the best price obtainable and credit AUTHORITY in an amount equal to the sales price. If the equipment is to be sold, then the terms and conditions of the sale must be approved in advance by AUTHORITY's project manager.
- D. Any subcontractor agreement entered into as a result of this Agreement shall contain all provisions of this clause.

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ARTICLE 48. HEALTH AND SAFETY SPECIFICATIONS

CONTRACTOR shall comply with all requirements set forth in Exhibit H, Level 3 Safety Specifications.

ARTICLE 49. FORCE MAJEURE

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

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AGREEMENT NO. C- 3-2279

1	IN WITNESS WHEREOF, the parties hereto have caused this Agreement No. C- 3-2279 to be		
2	executed as of the date of the last signature below.		
3		ORANGE COUNTY TRANSPORTATION AUTHORITY	
4			
5	By:	By: Darrell E. Johnson	
6	License No:	Chief Executive Officer	
7			
8			
9		APPROVED AS TO FORM:	
10			
11		By:	
12		James M. Donich General Counsel	
13			
14			
15		APPROVED:	
16			
17		By:	
18		James G. Beil Executive Director, Capital Programs	
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SECTION V: GENERAL PROVISIONS - EXHIBIT A

SECTION V: GENERAL PROVISIONS

A. COST BREAKDOWN

Within 15 calendar days after "Notice to Proceed," the Contractor shall, upon request by the Authority, submit a cost breakdown of the lump sum Bid entered on the Bid Form for all construction work. This cost breakdown will form the basis for progress payments in accordance with these Specifications and shall show all of the major categories and subcategories of work and equipment requested by the Authority. Additionally, all cost shall be segregated between off-site and on-site costs. Mobilization costs shall not exceed 10% of total construction costs. Bonds and insurance costs will be identified as a separate line item. Such cost breakdown shall not be required if the Authority, at its sole discretion, elects to pay the Contractor in lump sum within thirty (30) calendar days of receipt of proper invoice following the Contractor's satisfactory completion and the Authority's acceptance of all work.

B. PROGRESS PAYMENTS

- The Authority, no later than the 25th day of each month, shall prepare a
 progress payment estimate based on the estimated percentage of completion
 of each Bid Item and on the Contractor's actually incurred allowable expenses
 on such Bid Items. The Authority will issue the progress payment, in the
 amount it deems appropriate, by approximately the 15th day of the following
 month.
- 2. For purposes of calculating the progress payments, Authority will use the cost breakdown submitted by the Contractor for each Bid Item at the start of this Agreement. In no event will the Authority make a progress payment that, when added to the prior progress payments, amounts to a sum more than the Contractor's actual aggregate incurred expenses, adjusted to include Contractor's overhead and profit as allocated to such incurred expenses.
- 3. The Authority will pay only 95% of each progress payment amount as determined above, retaining 5% as part security for the fulfillment of this Agreement by the Contractor.
- 4. The amount retained in accordance with paragraph B.3., hereinabove from the progress payments will be paid in full to the Contractor as part of the final payment upon Contractor's full completion of this Agreement, except that ½ of 1% of this Agreement's total price shall be retained for one (1) year beyond the date of the Notice of Completion filed for this Agreement as partial security for fulfillment of the warranty obligations by the Contractor under this Agreement.
- 5. No progress payments will be made for materials not installed.
- 6. Progress payments made by Authority in no way shall be deemed or construed as acceptance by the Authority of work or waiver by the Authority of any rights

hereunder.

- 7. The Contractor shall pay subcontractors, promptly upon receipt of each Authority progress payment; the respective amounts allowed the Contractor on account of the work performed by subcontractors, to the extent of each such subcontractor's interest therein. Such payments to subcontractors shall be based on estimates made pursuant to this Agreement. Any diversion by the Contractor of payments received for prosecution of a contract, or failure to reasonably account for the application or use of such payments, constitutes ground for termination of the Contractor's control over the work and for taking over the work, in addition to disciplinary action by the Contractor's State License Board. The subcontractor shall notify, in writing, the Contractor's State License Board and the Authority of any payment less than the amount or percentage approved for the class or item of work as set forth in this Agreement.
- 8. In addition to other amounts properly withheld under this Agreement, the Authority shall withhold all legally required sums for, but not necessarily limited to, stop notices, labor and tax liens, etc.

C. FINAL INSPECTION AND ACCEPTANCE

Promptly after Substantial Completion has occurred, Contractor shall perform all Punch List Work, if any, which was deferred for purposes of Project Completion, and shall satisfy all of its other contractual obligations under the contract documents.

When the Contractor determines that the work is fully completed, including satisfactory completion of all inspections, tests, and required documentation, Punch List and clean-up items, Contractor shall give the Authority a written request for Final Acceptance within ten (10) days thereafter, specifying that the work is completed and the date on which it was completed.

Within thirty (30) days after receipt of the request for Final Acceptance from Contractor, Authority will make a final inspection of the work and will either:

- 1. Reject the request for Final Acceptance, specifying the defective or uncompleted work; or
- 2. Issue a written Final Acceptance and record Notice of Completion with County Recorder.

Substantial Completion is defined herein as; In the opinion of the Authority, that Work or portion thereof that is sufficiently complete and in accordance with the Contract, that it can be utilized by the Authority for the purpose for which it was intended. A determination of Substantial Completion does not waive, but may not require the prior completion of minor items, which do not impair the Authority's ability to safely occupy and utilize the Work for its intended purpose.

D. CLAIMS

Contractor is required to submit a written claim within ten (10) days after the event or occurrence first giving rise to the potential claim, or in the event of a denial of a request for change by the Authority. All claims shall include a detailed factual statement; including names, dates and specific events that took place. In addition, all claims shall include supporting documents in support of the claim, a detailed analysis of a request for a time extension, if applicable, and a detailed breakdown of a request for additional compensation. A revised construction schedule shall also be included identifying the impact of the delays, including proposals to minimize any of the impacts.

Authority shall respond in writing to a claim within forty-five (45) days of receipt of claim. Within thirty (30) days of receipt of claim, Authority, if necessary, may request additional documentation in support of said claim. If additional documentation is requested, Authority shall respond in writing to the claim within fifteen (15) days after receipt of additional documentation.

Claims filed by the Contractor shall be in sufficient detail to enable the Authority to ascertain the basis and amount of said claims. The Authority will consider and determine the Contractor's claims, and it will be the responsibility of the Contractor to furnish within a reasonable time such further information and details as may be required by the Authority to determine the facts or contentions involved in its claims. Failure to submit such information and details will be sufficient cause for denying the claim.

Claims submitted by the Contractor shall be accompanied by a notarized certificate containing the language listed below. Failure to submit the notarized certificate will be cause for denying the claim.

Certificate

Under the penalty of law for perjury or falsification with specific reference to the California False Claims Act, Government Code Section 12650 et. Seq., the undersigned,

7)	lame)	_
(Title)	_
(Co	mpany)	_
herby certifies that the claim for the add herein for the work on this Contract is a and time sough, and is fully docume between the parties	a true statement of th	e actual cost incurred
Dated:		
Signature:		
Subscribed and sworn before this	day of	, 202
	Notary Public	
My Commission Expires:		

E. FINAL PAYMENT

- 1. After the filing of the Notice of Completion, the Authority will make a proposed final estimate, in writing, of the total amount payable to the Contractor, including therein an itemization of said amount, segregated as to contract item quantities, extra work and any other basis for payment, and shall also show therein all deductions made or to be made for prior payments and amounts to be kept or retained under the provisions of the contract. All prior estimates and payments shall be subject to correction in the proposed final estimate. Within 15 days after proposed final estimate has been submitted, Contractor shall submit to the Authority written approval of proposed final estimate and/or a written statement of all claims of the contract. No claim will be considered that was not included in written statement of claims, nor will any claim be allowed unless the Contractor has previously complied with the notice and protest requirements.
- 2. On the Contractor's approval, or if he files no claim within stated period,

Authority will issue a final written estimate, in accordance with the proposed final estimate submitted to the Contractor; and 35 days after the date of filing the Notice of Completion Authority will pay the entire sum found to be due. Such final estimate and payment thereon shall be conclusive and binding against the Contractor on all questions relating to the amount of work done and the compensation payable therefore, except as otherwise provided.

- 3. If the Contractor within said period of 15 days files claims, Authority will issue a semi-final estimate in lieu of the final estimate submitted to the Contractor; and 35 days after the date of filing of the Notice of Completion, the Authority will pay the sum found to be due. Such semi-final estimate and payment thereon shall be conclusive and binding against the Contractor on all questions relating to the amount of work done and the compensation payable therefore, except insofar as affected by the claims filed within the time and in the manner required hereunder and except as otherwise provided.
- 4. Upon final determination of any outstanding claims, the Authority shall then make and issue a final estimate in writing and within 30 days thereafter, the Authority will pay the entire sum, if any, found due. Such final estimate shall be conclusive and binding against the Contractor on all questions relating to the amount of work done and the compensation payable therefore, except as otherwise provided.

F. EXTRA WORK AND CHANGES

- 1. New and unforeseen work, which in the judgment of the Authority is found necessary or desirable for the satisfactory completion of the work, will be classified as extra work, as well as work specifically designated as such in the plans or specifications. The Contractor shall do such extra work and furnish material and equipment therefore as directed by the Engineer in writing by a change order. No extra work will be paid for or allowed unless the same was done upon written change order of the Engineer and after all legal requirements have been complied with. The Contractor agrees that he will accept as full compensation for extra work, so ordered, an amount to be determined by one of the following methods:
 - a. A price mutually agreed upon in writing by the Engineer and Contractor (hereafter Agreed Price).
 - b. Force Account as hereafter provided.
- 2. It is mutually agreed that on the agreed price, the Contractor and subcontractor(s) shall add not more than a total markup of 20% to be divided between the Contractor and subcontractor(s) as full compensation for all other expenses including overhead, profit, bond, superintendence, insurance and small tools.

3. When extra work is to be paid for on a force account basis, compensation will be determined as follows:

a. Materials

A sum equal to the actual cost to the Contractor of the materials furnished by him, as shown by paid receipts, plus not more than fifteen percent (15%). Only installed materials shall be paid for.

b. Labor

- The actual wages paid as shown on the certified copies of Contractor's payroll, for all labor directly engaged in the work and including the cost of any compensation insurance paid for by the Contractor, subsistence and travel allowance aid to such workmen as required by collective bargaining agreements plus not more than twenty percent (20%).
- 2. To the actual wages as described in 1 above will be added a labor surcharge of not more than seventeen percent (17%), and shall constitute full compensation for all other payments, including payments imposed by State and Federal laws.

c. Equipment

- 1. Equipment will be paid for as a rental charge whether owned by the Contractor or not, and said rental rates prevailing in the area for comparable equipment will be paid. To the direct costs of "Equipment Rental" will be added a not more than fifteen percent (15%) markup.
- 2. All extra work at Force Account shall be adjusted daily upon report sheets prepared by the Engineer, furnished to the Contractor and signed by both parties. Said daily reports shall thereafter be considered the true record of all extra work done. The decision of the Engineer as to whether extra work has in fact been performed shall be conclusive and binding upon both parties to the contract.
- 4. A contract change order approved by Authority may be issued to the Contractor at any time. Should the Contractor disagree with any terms or conditions set forth in the contract change order, the Contractor shall submit a written protest to the Authority within 15 days after the receipt of the contract change order. The protest shall state the points of disagreement and, if possible, the contract specification references, quantities and costs involved. If a written protest is not submitted within the above period, payment will be made as set forth in the approved contract change order and such payment shall constitute full compensation for all work included therein or required thereby. Such unprotested approved contract change orders will be considered as executed

contract change orders.

5. Contractor shall promptly notify the Authority in writing when it receives direction, instruction, interpretation or determination from any source other than the Authority or its designated representatives that may lead to or cause change in the work. Such written notification shall be give to the Authority before the Contractor acts on said direction, instruction, interpretation or determination.

G. EXTENDED FIELD OFFICE OVERHEAD COSTS

- Within thirty (30) days after receipt of the Notice to Proceed, the Contractor shall submit a written statement to the Authority detailing its field office overhead costs which are time related. The Authority will review this cost submittal and reach a written agreement with the Contractor on a daily field office overhead cost rate which shall be issued as an agreed upon Change Order. The daily rate agreed to in this Change Order will be applicable throughout the duration of the Contract. No field office costs will be paid until such agreement is reached between the Authority and the Contractor and the Change Order concerning this daily rate is executed by both parties.
- 2. The individual cost components of the daily field office overhead rate shall represent costs which increase as a direct result of any time extension caused solely and exclusively by an act of the Authority. This listing may include such cost items as on-site project management, supervision, engineering and clerical salaries; on-site office utilities and rent; on-site company vehicles and their operating expenses; and site maintenance and security expenses. Field office overhead costs which are unaffected by increased time shall not be allowable costs in calculating the daily field office overhead rate. These non-time related costs include, but are not limited to, acquisition and installation of stationary equipment; temporary construction facilities; utilities and office furnishings (unless such items are rented or leased); the preparation of the site including grubbing, grading and fencing; mobilization demobilization costs; and the costs of permits, bonds and insurance coverage for the project.
- 3. The individual wage cost components used to calculate the daily field office overhead rate shall be supported by actual employee payroll records, not salary ranges or estimates. Hourly rates for management, supervisory, engineering and clerical employees shall be based upon 2,080 works hours per year and shall not include allowances for holidays, vacation or sick time.

4. The daily field office overhead rate shall be multiplied by the number of days the Contract is delayed or extended by Change Order and shall be added to the agreed upon Change Order cost. The days of delay shall be those caused solely by action of the Authority and documented by a time impact analysis prepared and submitted by the Contractor. In the event of a deductive Change Order is issued which reduces time under the Contract, the daily field office overhead rate shall be added to the deductive amount. No allowance for overhead costs and no profit allowance shall be added to the extended field office overhead cost.

H. ACCELERATION

- 1. Authority reserves the right to accelerate the work of the Contract at any time during its performance. In the event that the Authority directs acceleration, such directive will be given to the Contractor in writing. The Contractor shall keep cost and other Project records related to the acceleration directive separately from normal Project cost records and shall provide a written record of acceleration costs to the Authority on a daily basis.
- 2. In the event that the Contractor believes that some action or inaction on the part of the Authority constitutes an acceleration directive, the Contractor shall immediately notify the Authority in writing that the Contractor considers the actions or inactions an acceleration directive. This written notification shall detail the circumstances of the acceleration directive. The Contractor shall not accelerate their work efforts until the Authority responds to the written notification. If acceleration is then directed or required by the Authority, all cost records referred to in section (1) shall be maintained by the Contractor and provided to the Authority on a daily basis.
- 3. In order to recover additional costs due to acceleration, the Contractor must document that additional expenses were incurred and paid by the Contractor. Labor costs recoverable will only be overtime or shift premium costs or the cost of additional laborers brought to the site to accomplish the accelerated work effort. Equipment costs recoverable will only be the cost of added equipment mobilized to the site to accomplish the accelerated work effort.

I. VALUE ENGINEERING

Authority encourages the Contractor to submit Value Engineering Proposals (VEP's) whenever it identifies areas and/or instances in which improvements can be made, in order to avail the Authority of potential cost savings. Contractor and the Authority will share any savings in the manner described below.

A VEP applies to a Contractor developed and documented VEP that:

1. Requires a change to the contract.

- 2. Reduces the total contract price without impairing essential functions or characteristics of the work.
- 3. Results in an estimated total net savings to the Authority equal to or greater than \$1,000.

At a minimum, a VEP should include the following information:

- 1. A description of the existing contract requirements that are involved in the proposed change.
- 2. A description of the proposed change, and all specifications and/or plans necessary for the complete evaluation of the proposed change. Include a discussion of the differences between existing requirements and the proposed change, together with advantages and disadvantages of each changed item. All relevant back up documentation needs to be included to support proposed changes.
- Cost estimate for existing contract requirements correlated to the Contractors lump sum breakdown and the proposed changes in those requirements, including costs of development and implementation by the Contractor.

Contractor shall submit the VEP to the Authority. At its sole discretion, Authority may accept, in whole or in part and by change order, any VEP submitted pursuant to this section. Until a change order is issued on a VEP, Contractor shall remain obligated to perform in accordance with the contract. The decision of the Authority as to the rejection or acceptance of a VEP shall be at the sole discretion of the Authority.

If a VEP, submitted by the Contractor pursuant to this section is accepted by the Authority, the total contract price shall be adjusted based upon a sharing of the net savings by the Contractor and the Authority (50% Authority, 50% Contactor). Contractor's profit shall not be reduced by application of the VEP.

Net savings are defined as gross savings less the Contractor's costs and less the Authority's costs.

- 1. Contractors cost means reasonable costs incurred by the Contractor in preparing the VEP and making the change.
- 2. Authority's costs means reasonable costs incurred by the Authority for evaluating and implementing the VEP.
- Contractor is not entitled to share in either concurrent, collateral or future contract savings. Collateral savings are those measurable net reductions in the Authority's costs of operation that result from the VEP. Concurrent savings cover the reductions in the cost of performance of other contracts.

Contractor shall include appropriate VEP provisions in all subcontracts greater than \$25,000.

J. STOP NOTICES

The Authority, at its sole discretion, may, at any time, retain out of any amounts due the Contractor, sums sufficient to cover claims filed pursuant to Section 9358 et. seq. of the California Civil Code.

K. ORDER OF WORK

Contractor shall perform work hereunder at such places, and in such order or precedence, as may be determined necessary by the Engineer to expedite completion of the required work.

L. LABOR PROVISIONS

1. Prevailing Wages

Contractor shall comply with all applicable requirements of Division 2, Part 7, Chapter 1 of the Labor Code and all applicable federal requirements respecting prevailing wages. If there is a difference between the minimum wage rates predetermined by the Secretary of Labor and the wage rates determined by the Director of the Department of Industrial Relations (DIR) for similar classifications of labor, the Contractor and subcontractors shall not pay less than the higher wage rate. The DIR will not accept lower state wage rates not specifically included in the Federal minimum wage determination.

2. Minimum Wages

a. All mechanics and laborers employed or working upon the site of the work will be paid unconditionally, and not less often than once a week and without subsequent deduction or rebate on any account, the full amounts due at time of payment computed at wage rates not less than those specified in the General Wage Determinations referenced in this section regardless of any contractual relationship which may be alleged to exist between the Contractor and such laborers and mechanics; and the wage determination decision shall be posted by the Contractor at the site of the work in a prominent place where it can be easily seen by the workers. For the purpose of this clause, contributions made or cost reasonably anticipated under the Labor Code of the State of California on behalf of laborers or mechanics are considered wages paid by such Laborers or mechanics. Also for the purpose of this clause, regular contributions made or costs incurred for more than a weekly period under plans, funds or programs, but covering the particular weekly period, are deemed to be constructively made or incurred during such weekly period.

- b. Authority shall require that any class of laborers or mechanics, including apprentices and trainees, which is not listed in the General Wage Determinations and which is to be employed under this Contract, shall be classified conformably to such wage determinations. In the event the Authority does not concur in the Contractor's proposed classification or reclassification of a particular class of laborers and mechanics (including apprentices and trainees) to be used, the question, accompanied by the recommendation of the Authority, shall be referred to the State Director of Industrial Relations for determination.
- c. Authority shall require, whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly wage and the Contractor is obligated to pay a cash equivalent of such a fringe benefit, an hourly cash equivalent thereof to be established. In the event the interested parties cannot agree upon cash equivalent of the fringe benefit, the questions, accompanied by the recommendation of the Authority, shall be referred to the State Director of Industrial Relations for determination.
- d. All disputes concerning the payment of wages or the classification of workers under this Agreement shall be promptly reported to the Authority.

3. Deductions

Authority may deduct from each progress payment and the Final Payment the following:

- Any Authority or third party claims or losses for which Contractor is responsible hereunder or any Liquidated Damages which have accrued as of the date of the application for payment;
- b. If a notice to stop payment is filed with Authority, due to the Contractor's failure to pay for labor or materials used in the work, money due for such labor or materials, plus the 25% prescribed by law, will be withheld from payment to the Contractor. In accordance with Section 9358 of the Civil Code, Authority may accept a bond by a corporate surety in lieu of withholding payment;
- c. Any sums expended by or owing to Authority as a result of Contractor's failure to maintain the as-built drawings;
- d. Any sums expended by Authority in performing any of the Contractor's obligations under the Contract which Contractor has failed to perform; and

e. Any other sums which Authority is entitled to recover from Contractor under the terms of the Contract.

The failure by Authority to deduct any of these sums from a progress payment shall not constitute a waiver of Authority's right to such sums.

All amounts owing by Contractor to Authority under the Contract shall earn interest from the date on which such amount is owing at the lesser of (i) 10% per annum or (ii) the maximum rate allowable under applicable Governmental Rules.

4. Payrolls and Basic Records

- a. Payrolls and basic records relating thereto will be maintained during the course of the work and preserved for a period of three (3) years thereafter for all laborers and mechanics working at the site of the work. Such records will contain the name, address and social security number of each such worker, the correct classification, rates of pay, daily and weekly number of hours worked, deductions made and actual wages paid.
- b. Contractor will submit weekly a copy of all payrolls to the Authority as required in these "Labor Provisions." The copy shall be accompanied by a statement signed by the employer or its agent indicating that the payrolls are correct and complete, that the wage rates contained therein are not less than those determined by the State Director of Industrial Relations and that the classifications as set forth for each laborer or mechanic conform to the work performed. A submission of the "Weekly Statement of Compliance," which is required under this Contract, shall satisfy this requirement. The prime Contractor shall be responsible for the submission of copies of payrolls of all subcontractors. The Contractor will make the records required under the labor standard clauses of the contract available for the inspection by authorized representatives of the Authority, and will permit such representatives to interview employees during working hours on the job.

5. Apprentices and Trainees

a. Apprentices: Apprentices will be permitted to work at less than the predetermined rate for the work they perform when they are employed and individually registered in a bona fide apprenticeship program as defined in section 1777.5 of the Labor Code of the State of California. The allowable ratio of apprentices to journeymen in any craft classification shall not be greater than the ratio permitted to the Contractor as to his entire work force under the registered program. Any employee listed on a payroll at an apprentice wage rate who is not registered or otherwise employed as stated above, shall be paid the wage rate determined by the State Director

of Industrial Relations for the classification of work he actually performed. The Contractor or subcontractor will be required to furnish to the Authority or the State Director of Industrial Relations written evidence of the registration of his program and apprentices as well as the appropriate ratios and wage rates (expressed in percentages of the journeyman's rate contained in the applicable wage determination).

- Trainees: Except as provided in 29 CFR 5.15, trainees will not be permitted b. to work at less than the predetermined rate for the work performed unless they are employed pursuant to or individually registered in a program which has received prior approval, evidenced by formal certification, by the U.S. Department of Labor, Employment and Training Administration, Bureau of Apprenticeship and Training. The ratio of trainees to journeymen shall not be greater than that permitted under the plan approved by the Bureau of Apprenticeship and Training. Every trainee must be paid at not less than the rate specified in the approved program for his level of progress. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Bureau of Apprenticeship and Training shall be paid not less than the wage rate determined by the Secretary of Labor for the classification of work he actually performed. The Contractor or subcontractor will be required to furnish the contracting officer or a representative of the Wage-Hour Division of the U.S. Department of Labor written evidence of the certification of his program, the registration of the trainees, and the ratios and wage rates prescribed in that program. In the event the Bureau of Apprenticeship and Training withdraws approval of a training program, the Contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.
- c. Equal Employment Opportunity: The utilization of apprentices and journeymen under this part shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, 29 CFR Part 30, and 41 CFR Part 60.
- 6. Compliance With Copeland Regulations (29 CFR Part 3)

The Contractor shall comply with the Copeland "Anti-Kickback" Act (18 U.S.C. 874 and 40 U.S.C. 276c). The Contractor shall also comply with the Copeland Regulations (29 CFR Part 3) of the Secretary or Labor which are herein incorporated by reference.

7. Contract Termination; Debarment

A breach of item 1 through 6 may be grounds for termination of the contract, and for debarment as provided in 29 CFR Section 5.6.

8. Overtime Requirements

No Contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any laborer or mechanic in any work week in which he is employed on such work to work in excess of 8 hours a day or 40 hours in such work week unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of 8 hours a day or 40 hours in such work week.

9. Violation; Liability for Unpaid Wages

Pursuant to section 1775 of the Labor Code of the State of California, in the event that any workman employed on this public works project is paid less than the amount specified in the General Prevailing Wage Determinations or less than is required, relative to overtime, the Contractor and any subcontractor responsible therefore shall be liable to the affected workman for the unpaid wages. In addition, such Contractor and subcontractor shall be liable to the State of California or the Authority for liquidated damages. Such liquidated damages shall be computed with respect to each individual workman found to be underpaid and shall be in the amount of \$50 per calendar day that a workman was underpaid.

10. Withholding for Liquidated Damages

The Authority may withhold or cause to be withheld, from any monies payable on account of work performed by the Contractor or subcontractor, such sums as may administratively be determined to be necessary to satisfy any liabilities of such Contractor or subcontractor for liquidated damages as provided in this section.

11. Final Labor Summary

The Contractor and each subcontractor shall furnish to the Authority, upon the completion of the contract, a summary of all employment, indicating for the completed project, the total hours worked and the total amount earned.

12. Final Certificate

Upon completion of the contract, the Contractor shall submit to the Authority, with the voucher for a final payment for any work performed under the contract, a concerning wages and classifications for laborers and mechanics, including apprentices and trainees employed on the project, in the following form:

The undersigned, Contractor on			
(Co	ontract No.)		

hereby certifies that all laborers, mechanics, apprentices and trainees employed by the Contractor or by a subcontractor performing work under the contract on the project have been paid wages at rates not less than those required by the contract provisions, and that the work performed by each such laborer, mechanic, apprentice or trainee conformed to the classifications set forth in the contract or training program provisions applicable to the wage rate paid.

Signature and Title

13. Notice to the Authority of Labor Dispute

Whenever the Contractor has knowledge that any actual or potential labor dispute is delaying or threatens to delay the timely performance of this contract, the Contractor shall immediately give notice thereof, including all relevant information with respect thereto, to the Authority.

14. Disputes Clause

- a. All disputes concerning the payment of prevailing wage rates or classifications shall be promptly reported to the Authority for its referral to DOT for decision or, at the option of the Authority, DOT referral to the Secretary of Labor. The decision of DOT or the Secretary of Labor, as the case may be, shall be final.
- b. All questions relating to the application or interpretation of the Copeland Act, the Contract Work Hours Standards Act, the Davis-Bacon Act, or Section 13 of the Act shall be sent to the Federal Transit Administration (FTA) for referral to the Secretary of Labor for ruling or interpretation, and such ruling or interpretation shall be final.

15. Convict Labor

In connection with the performance of work under this Contract, the Contractor agrees not to employ any person-undergoing sentence of

imprisonment at hard labor. This does not include convicts who are on parole or probation.

16. Insertion in Subcontracts

The Contractor shall set forth in item 1 through 15 of this Section so that all of the provisions of this section will be inserted in all construction subcontracts of any tier, and such other clauses as the Government may by appropriate instructions require.

17. Certified Payrolls

- a. The Authority shall obtain from the Contractor and each subcontractor a certified copy of each weekly payroll within seven (7) days after the regular payroll date. Following a review by the Authority for compliance with State and Federal labor laws, the payroll copy shall be retained at the project site for later review by FTA.
- b. Contractor may use the Department of Labor Form WH-347, "Optional Payroll Form," which provides for all the necessary payroll information and certifications.
- c. If, on or before the 20th of the month, the Contractor has not submitted satisfactory payrolls covering its work and the work of all subcontractors for all payroll periods ending on or before the 6th of that month, such payrolls will be considered to be delinquent. Regardless of the number of delinquent payrolls, an amount equal to 10% (but not less than \$1,000 or more than \$10,000) shall be deducted from the estimate. Deductions will be made separately for each estimate period in which a new delinquency appears and will be continued until payrolls have been submitted.
- d. Contractors employing apprentices or trainees under approved programs shall include a notation on the first weekly certified payrolls submitted to the Authority that their employment is pursuant to an approved program and shall identify the program.

M. TIME EXTENSION/DELAYS

a. Contractor may be granted an extension of time for any portion of a delay in completion of the work due to acts of God, the public enemy, wars, civil unrest, fires, quarantine restrictions, or weather more severe than normal, providing that (1) the aforesaid causes were not foreseeable and did not result from an act or omission by the Contractor, (2) Contractor has taken reasonable precautions to prevent further delays owing to such causes, and (3) Contractor notifies Authority in writing of the cause(s) for the delay within ten (10) days from the beginning of any such delay. No claims for additional compensation or damages for the foregoing delays shall be allowed to the Contractor, and the extension of time provided for herein shall be the sole remedy of the Contractor on account of any such delays.

- b. An extension of time will not be granted for a delay described in the above paragraph(s) caused by a shortage of materials, except if materials are furnished by Authority, unless the Contractor supplies the Authority with documented proof that every effort to obtain the materials from all known sources that (a) such materials could have been obtained only at exorbitant prices or (b) the prices were entirely inconsistent with current rates, taking into account the quantities; and (c) such facts could not have been known or anticipated at the time the Notice To Proceed was issued. Contractor shall also submit proof, that the inability to obtain such materials when originally planned, did in fact, cause a delay in completion of the work that could not be compensated for by revising the sequence of its operations. Only the physical shortage of material will be considered as a basis for an extension of time.
- c. An extension of time for weather more severe than normal shall be granted only to the extent the work is actually delayed as determined by the Authority. Normal is defined as the monthly average of the temperature and rainfall wherein the work was performed for the prior 20 years before the execution of the contract.
- d. In the event Contractor is actually and necessarily delayed by an act or omission on the part of the Authority, as determined by the Authority, the Contractor shall notify the Authority in writing within five (5) days from the beginning of any such delay. The time for completion of the work may be extended at the sole discretion of the Authority.
- e. Within 30 days after the last day of delay, Contractor shall provide Authority with detailed information concerning the circumstances of the delay, the number of days actually delayed, and the measures taken to minimize or prevent the delay. Failure to submit information shall be sufficient reason to deny the claim. Authority shall ascertain the facts and the extent of the delay; and provide the Contractor its written findings, which will be final and conclusive. Except for the additional compensation for herein and except as provided in Public Contract Code Section 7102, Contractor shall have no claim for damages or compensation for any delay or hindrance.
- f. No extension of time will be granted for any Authority caused delay or delay as defined in which (a) the performance of work would have been concurrently delayed by Contractor induced causes, including but not limited to an act or omission of the Contractor, or (b) remedies are included or excluded by any other contract provision. Only the actual delay necessarily resulting from the causes specified in this Article shall be

- grounds for extension of time. Should the Contractor be delayed at any time for any period by two or more of the causes specified in this article, Contractor shall only be entitled to one time extension for the entire delay.
- g. Any time extension granted to Contractor shall not release the Contractor or surety from its obligations. Work shall continue and be carried on in accordance with the contract provisions, unless formally suspended or terminated by the Authority.

N. NONDISCRIMINATION

During the performance of this Contract, the Contractor agrees as follows:

- 1. The Contractor will not discriminate against any employee or applicant for employment because of race, creed, color or national origin. The Contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, religion, color, sex or national origin. Such action shall include, but not be limited to employment; upgrading; demotion; transfer; recruitment or recruitment advertising; layoff; termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The Contractor agrees to post, in conspicuous places available to the employees and applicants for employment, notices to be provided setting forth the provisions of this nondiscrimination clause.
- 2. The Contractor will, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, state that all qualified applicants will receive consideration for employment without regard to race, religion, color, sex or national origin.
- 3. The Contractor will send to each labor union or representative of workers with which it has a collective bargaining agreement or other contract or understanding, a notice to be provided advising the said labor union or workers' representatives of the Contractor's commitments under this Section, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.
- 4. The Contractor will comply with all provisions of Executive Order 11246 of September 24, 1965, and of the rules, regulations and relevant orders of the Secretary of Labor. The Contractor will furnish all information and reports required by Executive Order 11246 of September 24, 1965, and by rules, regulations and orders of the Secretary of Labor, or pursuant thereto, and will permit access to his books, records and accounts by the administering agency and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations and orders.
- 5. In the event of the Contractor's noncompliance with the nondiscrimination

clauses of this Contract or with any of the said rules, regulations or orders, this Contract may be canceled, terminated or suspended in whole or in part, and the Contractor may be declared ineligible for further Government contracts or Federally assisted construction contracts in accordance with procedures authorized in Executive Order 11246 of September 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order 11246 of September 24, 1965, or by rule, regulation or order, of the Secretary of Labor, or as otherwise provided by law.

- 6. The Contractor will include the provisions of this Paragraph ("Nondiscrimination") in every subcontract or purchase order entered into under this Agreement unless exempted by rules, regulations or orders of the Secretary of Labor issued pursuant to Section 204 of Executive Order 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. The Contractor will take such action with respect to any subcontract or purchase order as the administering agency may direct as a means of enforcing such provisions, including sanctions for noncompliance provided, however, that in the event a Contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the administering agency, the Contractor may request the United States to enter into such litigation to protect the interests of the United States.
- 7. No person employed on the work covered by this Agreement shall be discharged or in any way discriminated against because he has filed any complaints or instituted or caused to be instituted any proceeding or has testified or is about to testify in any proceeding under or relating to the labor standards applicable hereunder to his employer.

O. TITLE VI OF THE CIVIL RIGHTS ACT OF 1964

Contractor agrees to comply with and ensure compliance by all subcontractors with all requirements of Title VI of the Civil Rights Act of 1964, as amended, 42 U.S.C. §2000d; 49 U.S.C. §5332 and Department of Transportation Regulations, "Nondiscrimination in Federally-Assisted Programs of the Department of Transportation-Effectuation of Title VI of the Civil Rights Act," 49 CFR Part 21.

P. AFFIRMATIVE ACTION

Contractors and subcontractors holding a value of work of \$10,000 or more must submit a Monthly Employment Utilization Report (Form 257) to the Authority Engineer by the 5th of each month or sanctions shall be applied for late submittal, non-submittal and incomplete forms returned to the Contractor and resubmitted after the due date.

The reporting period shall be for each calendar month.

The report shall include the information requested for each Contractor's aggregate work force (for all workers on all projects within Orange County) and not just for workers on this project.

If the form is not received by the 5th of the month, a deduction of 10% (with a minimum of \$1,000 and a maximum of \$10,000) will be withheld from the monthly estimate at the option of the Authority.

The Contractor shall designate an Equal Employment Officer for the project and notify the Authority in writing whom that person is prior to beginning of work. All workers shall also be informed who the EEO Officer is.

Q. STANDARD FEDERAL EQUAL EMPLOYMENT OPPORTUNITY CONSTRUCTION CONTRACT SPECIFICATIONS (EXECUTIVE ORDER 11246)

- 1. As used in these specifications:
 - a. "Covered area" means the geographical area described in the solicitation from which this Contract resulted;
 - b. "Director" means Director, Office of Federal Contract Compliance Programs, United States Department of Labor, or any person to whom the Director delegates Authority;
 - c. "Employer identification number" means the Federal Social Security number used on the Employer's Quarterly Federal Tax Return, U.S. Treasury Department Form 941;
 - d. "Minority" includes persons who are citizens or lawful permanent residents of the United States and are one of the following:
 - 1) Black (all persons having origins in any of the Black African racial groups not of Hispanic origin);
 - 2) Hispanic (all persons of Mexican, Puerto Rican, Cuban, Central or South American, Portuguese American or other Spanish culture or origin, regardless of race);
 - 3) Asian and Pacific Islanders (all persons having origins in any of the original peoples of the Far East, Southeast Asia, the Indian subcontinent or the Pacific Islands);
 - American Indians and Alaskan Native (all persons having origins in any of the original peoples of North America and maintaining identifiable tribal affiliations through membership and participation or community identification);
 - 5) Women regardless of ethnicity.

- 2. In order for the nonworking training hours of apprentices to be counted in meeting the goals, such apprentices must be employed by the Contractor during the apprenticeship period, and the Contractor must have made a commitment to employ the apprentices at the completion of their training, subject to the availability of employment opportunities. Trainees must be trained pursuant to training programs approved by the U.S. Department of Labor.
- 3. The Contractor shall take specific affirmative actions to ensure equal employment opportunity. The evaluation of the Contractor's compliance with these specifications shall be based upon its effort to achieve maximum results from its actions. The Contractor shall document these efforts fully, and shall implement affirmative action steps at least as extensive as the following:
 - a. Ensure and maintain a working environment free of harassment, intimidation and coercion at all sites, and in all facilities at which the Contractor's employees are assigned to work. The Contractor, where possible, will assign two or more women to each construction project. The Contractor shall specifically ensure that all foremen, superintendents and other on-site supervisory personnel are aware of and carry out the Contractor's obligation to maintain such a working environment, with specific attention to minority or female individuals working at such sites or in such facilities.
 - b. Establish and maintain a current list of disadvantaged and female recruitment sources, provide written notification to minority and female recruitment sources and to community organizations when the Contractor or its unions have employment opportunities available, and maintain a record of the organization's responses.
 - c. Maintain a current file of the names, addresses and telephone numbers of each minority and female off-the-street applicant and disadvantaged or female referral from a union, a recruitment source or community organization and of what action was taken with respect to each such individual. If such individual was sent to the union hiring hall for referral and was not referred back to the Contractor by the union or, if referred, not employed by the Contractor, this shall be documented in the file with the reason therefore, along with whatever additional actions the Contractor may have taken.
 - d. Provide immediate written notification to the Director when the union or unions with which the Contractor has a collective bargaining agreement has not referred to the Contractor a disadvantaged person or woman sent by the Contractor, or when the Contractor has other information that the union referral process has impeded the Contractor's efforts to meet its obligations.

- e. Develop on-the-site-training opportunities and/or participate in training programs for the area which expressly include minority and women, including upgrading programs and apprenticeship and trainee programs relevant to the Contractor's employment needs, especially those programs funded or approved by the Department of Labor. The Contractor shall provide notice of these programs to the sources compiled under 3.b. above.
- f. Disseminate the Contractor's EEO policy by providing notice of the policy to unions and training programs and requesting their cooperation in assisting the Contractor in meeting its EEO obligations; by including it in any policy manual and collective bargaining agreement; by publicizing it in the company newspaper, annual report, etc.; by specific review of the policy with all management personnel and with all minority and female employees at least once a year; and by posting the company EEO policy on bulletin boards accessible to all employees at each location where construction work is performed.
- g. Review, at least annually, the company's EEO policy and affirmative action obligations under these specifications with all employees having any responsibility for hiring, assignment, layoff, termination or other employment decisions including specific review of these items with on-site supervisory personnel such as Superintendents, General Foreman, etc., prior to the initiation of construction work at any job site. A written record shall be made and maintained identifying the time and place of these meetings, persons attending, subject matter discussed and disposition of the subject matter.
- h. Disseminate the Contractor's EEO policy externally by including it in any advertising in the news media, specifically including minority and female news media, and providing written notification to and discussing the Contractor's EEO policy with other Contractors and subcontractors with whom the Contractor does or anticipates doing business.
- i. Direct its recruitment efforts, both oral and written, to minority, female and community organizations, to schools with minority and female students and to minority and female recruitment and training organizations serving the Contractors' recruitment area and employment needs. Not later than one month prior to the date of the acceptance of applications for apprenticeship or other training by any recruitment source, the Contractor shall send written notification to organizations such as the above, describing the opening, screening, procedures and tests to be used in the selection process.

- j. Encourage present minority and female employees to recruit other minority persons and women and, where reasonable, provide after school, summer and vacation employment to minority and female youth both on the site and in other areas of Contractor's work force.
- k. Validate all tests and other selection requirements where there is an obligation to do so under 41 C.F.R., Part 60-3.
- I. Conduct, at least annually, an inventory and evaluation of all minority and female personnel for promotional opportunities, and encourage these employees to seek or to prepare for, through appropriate training, etc., such opportunities.
- m. Ensure that seniority practices, job classifications, working assignments and other personnel practices, do not have a discriminatory effect by continually monitoring all personnel and employment related activities to ensure that the EEO policy and the Contractor's obligations under these specifications are being carried out.
- n. Ensure that all facilities and company activities are non-segregated except that separate or single-user toilet and necessary changing facilities shall be provided to assure privacy between the sexes.
- Document and maintain a record of all solicitations or offers for subcontracts from disadvantaged and female construction Contractors and suppliers, including circulation of solicitations, to disadvantaged and female Contractor associations and other business associations.
- p. Conduct a review, at least annually, of all supervisors' adherence to and performance under the Contractor's EEO policies and affirmative action obligations.
- 4. Contractors are encouraged to participate in voluntary associations, which assist in fulfilling one or more of their affirmative action obligations (3. (a) through (p)). The efforts of a Contractor association, joint Contractor-union, Contractor-community, or other similar group of which the Contractor is a member and participant, may be asserted as fulfilling any one or more of its obligations under 3. (a) through (p) of these specifications provided that the Contractor actively participates in the group, makes every effort to assure that the group has a positive impact on the employment of minorities and women in the industry, ensures that the concrete benefits of the program are reflected in the Contractor's minority and female work force participation, make a good faith effort to meet its individual goals and timetables, and can provide access to documentation which demonstrates the effectiveness of actions taken on behalf of the Contractor. The obligation to comply, however, is the

Contractor's failure if such a group to fulfill an obligation, shall not be a defense for the Contractor's noncompliance.

- 5. A single goal for minorities and a separate single goal for women have been established. The Contractor, however, is required to provide equal employment opportunity and to take affirmative action for all minority groups, male and female, and all women, both minority and nonminority. Consequently, the Contractor may be in violation of the Executive Order if a particular group is employed in a substantially disparate manner (for example, even though the Contractor has achieved its goals for women generally, the Contractor may be in violation of the Executive Order 11246 if a specific minority group of women is underutilized.)
- 6. The Contractor shall not use the goals and timetables or affirmative action standards to discriminate against any person because of race, color, religion, sex or national origin.
- 7. The Contractor shall not enter into any subcontract with a person or firm debarred from Government contracts pursuant to Executive Order 11246.
- 8. The Contractor shall carry out such sanctions and penalties for violation of these specifications and of the Equal Opportunity Clause, including suspension, termination and cancellation of existing subcontracts as may be imposed or ordered pursuant to Executive Order 11246, as amended, and its implementing regulations by the Office of Federal Contract Compliance Programs. Any Contractor who fails to carry out such sanctions and penalties shall be in violation of these specifications and Executive Order 11246, as amended.
- 9. The Contractor, in fulfilling its obligations under these specifications, shall implement specific affirmative action steps, at least as extensive as those standards prescribed in item 7 of these specifications, so as to achieve maximum results from its efforts to ensure equal employment opportunity. If the Contractor fails to comply with the requirements of the Executive Order, the implementing regulations, or these specifications, the Director shall proceed in accordance with 41 C.F.R. 60-4.8.
- 10. The Contractor shall designate a responsible official to monitor all employment related activity to ensure that the company EEO policy is being carried out, to submit reports relating to the provisions hereof as may be required by the Government and to keep records. Records shall at least include for each employee the name, address, telephone numbers, construction trade, union affiliation, if any, employee identification number when assigned, social security number, race, sex, status (e.g., mechanic, apprentice, trainee, helper or laborer), dates of changes in status, hours worked per week in the indicated trade, rate of pay, and locations at which the work was performed. Records shall be maintained in an easily understandable and retrievable form; however, to

the degree of existing records satisfy this requirement; Contractor shall not be required to maintain separate records.

11. Nothing herein provided shall be construed as a limitation upon the application of other laws which establish different standards of compliance or upon the application of requirements for the hiring of local or other area residents (e.g., those under the Public Works Employment Act of 1977 and the Community Development Block Grant Program).

R. CONFLICT OF INTEREST

All Contractors responding to this Invitation For Bids must avoid organizational conflicts of interest which would restrict full and open competition in this procurement. An organizational conflict of interest means that due to other activities, relationships or contracts, a Contractor is unable, or potentially unable to render impartial assistance or advice to the Authority; a Contractor's objectivity in performing the work identified in the specifications is or might be otherwise impaired; or a Contractor has an unfair competitive advantage. Contractor is obligated to fully disclose to the Authority in writing any conflict of interest issues as soon as they are known. All disclosures must be disclosed at the time of bid submittal.

S. CODE OF CONDUCT

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

T. GOVERNMENT INSPECTIONS

The Authority or Federal Government representatives shall have access to the construction site and shall have the right to inspect all project works.

U. LICENSING, PERMITS AND INSPECTION COSTS

1. The Contractor warrants that it has all necessary licenses and permits required by the laws of the United States, State of California, the County of Orange, the Local Jurisdictions, and all other appropriate governmental agencies, and agrees to maintains these licenses and permits in effect for the duration of the Agreement. Further, Contractor warrants that its employees, agents, and Contractors and subcontractors shall conduct themselves in compliance with such laws and licensure requirements including, without limitation, compliance with laws applicable to nondiscrimination, sexual harassment and ethical behavior throughout the duration of this Agreement. Contractor further warrants that it shall not retain or employ an unlicensed subcontractor to perform work on this Project. Contractor shall notify the Authority immediately and in writing of its employees', agents', Contractors' or subcontractors' inability to obtain or maintain, irrespective of the pendency of any appeal, any

such licenses, permits, approvals, certificates, waivers, and exemptions. Such inability shall be cause for termination of this Agreement.

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

V. HAZARDOUS SUBSTANCES

1. CAL-OSHA Requirements

All flammable, corrosive, toxic, or reactive materials being bid must have a complete CAL-OSHA Safety Data Sheet (SDS) accompanying the submitted bid.

2. South Coast Air Quality Management District (SCAQMD)

All materials (paints, coatings, inks, solvents, and adhesives) shall comply with the volatile organic compounds (VOC) content requirements of the applicable SCAQMD rules.

3. Notice of Hazardous Substances

Title 8, California Code of Regulations, Section 5194 (e) (c), states that the employer must inform any Contractor employers with employees working in the employer's workplace of the hazardous substances to which their employees may be exposed while performing their work. In compliance with this requirement, the Authority hereby gives notice to all bidders that the following general categories of hazardous substances are present on the Authority's premises:

- Adhesives, sealant, patching, and coating products
- Antifreezes, coolants
- Cleaners, detergents
- Paints, thinners, solvents
- Pesticides, Petroleum products (diesel and unleaded fuel, oil products)
- Printing, photocopying materials
- Propane Welding materials/compressed gases (e.g., acetylene, oxygen, nitrogen)

More specific information may be obtained from the Authority's Safety and Benefits office at (714) 560-5854, and from Safety Data Sheets (SDS) for individual products.

4. Hazardous Waste Labels

Containers containing hazardous substances must be labeled with the following information:

- Identity of hazardous substance-chemical name, not manufacturer or trade name;
- Appropriate health warning relative to health and physical hazard; and
- Name and address of manufacturer or other responsible party.

All containers containing hazardous substances may be rejected unless containers are properly labeled. Containers of 55 gallons or larger must have either weather resistant labels or the information should be painted directly on the containers.

W. CHANGES IN LAWS AND REGULATIONS

CONTRACTOR shall at all times comply with all applicable state and local regulations, policies, procedures and directives, including without limitation those listed directly or by reference in this Agreement. CONTRACTOR's failure to so comply shall constitute a material breach of contract.

X. MEDIA AND THE PUBLIC

Contractor shall immediately refer all inquires from the news media or other public sources to the Authority's Project Manager, or designated representative, relating to this project.

Y. COORDINATION AND ACCESS

Authority may undertake or award other contracts for additional work at the project site. Contractor is responsible for coordinating its work with the work of other Contractors as appropriate. The Contractor acknowledges that they do not have any exclusive access to the site or other work areas Authority may require that certain facilities and areas be used concurrently by the Contractors and others. Contractor shall cooperate fully with Authority Contractors/consultants that may be performing work in the construction area.

Z. UTILITIES RELATED DELAYS

If, due to interruptions caused by the undocumented utilities, Contractor sustains loss which could not have been avoided by the judicious handling of forces, equipment and plant, there shall be paid to the Contractor that amount that the Authority may find to be a fair and reasonable compensation for the part of the Contractor's actual loss, that, in the opinion of Authority was unavoidable, determined as follow: Compensation for idle time of equipment will be determined in the same manner as determinations are made for equipment used in the performance of extra work paid for on a force account basis, as provided in Section F. Extra Work and Changes, Item 3,c. Equipment with the following exceptions:

1. The utility related delay factor for each classification of equipment shown

in the Department of Transportation publication entitled Labor Surcharge And Equipment Rental Rates will be applied to that equipment rental rate.

- 2. The time for which the compensation will be paid will be the actual normal working time during which the delay condition exists, but in no case will exceed 8 hours in any one day.
- The days for which compensation will be paid will be the calendar days, excluding Saturdays, Sundays and legal holidays, during the existence of the delay, except that when the rented equipment can be returned or used elsewhere on the project, then no payment will be made for utilities related delays.

Actual loss shall be understood to include no items of expense other than idle time of equipment and necessary payments for idle time of workers, and cost of extra moving of equipment. Compensation for idle time of equipment will be determined as provided in this Section and compensation for idle time of workers will be determined as provided in Section F. Extra Work and Changes, Item 3, b. "Labor," and no markup will be added in either case for overhead and profit. The cost of extra moving of equipment will be paid for as extra work and changes as provided in Section F of General Provisions.

If performance of the Contractor's work is delayed as the result of the Utilities Related Delays, an extension of time determined pursuant to the provisions in Article 18. Termination for Default – Damages for Delay – Time Extensions will be granted.

AA. UTILITIES AND SUBSURFACE STRUCTURES

Contractor shall protect from damage utility and other subsurface structures that are to remain in place, be installed, relocated or otherwise rearranged (as used herein, rearranged includes installation, relocation, alteration or removal).

The right is reserved to the Authority, or their authorized agents, to enter upon the site for the purpose of making those changes that are necessary for the rearrangement of their facilities or for making necessary connections or repairs to their properties. Contractor shall cooperate with forces engaged in this work and shall conduct operations in such a manner as to avoid any unnecessary delay or hindrance to the work being performed by the other forces. Wherever necessary, the work of Contractor shall be coordinated with the rearrangement of utility or other non-highway facilities, and Contractor shall make arrangements with the owner of those facilities for the coordination of the work.

Attention is directed to the possible existence of underground main or trunk line facilities not indicated on the plans or in the special provisions and to the possibility that underground main or trunk lines may be in a location different from that which is indicated on the plans or in the special provisions. Contractor shall ascertain the exact location of underground main or trunk lines whose presence is indicated

on the plans or in the special provisions, the location of their service laterals or other appurtenances, and of existing service lateral or appurtenances of any other underground facilities which can be inferred from the presence of visible facilities such as buildings, meters and junction boxes prior to doing work that may damage any of the facilities or interfere with their service.

If Contractor cannot locate an underground facility whose presence is indicated on the plans or in the special provisions, the Contractor shall so notify the Authority in writing. If the facility for which the notice is given is in a substantially different location from that indicated on the plans or in the special provisions, the additional cost of locating the facility will be paid for as extra work as provided in Section F.

If Contractor discovers underground main, trunk lines or other structures and utilities not indicated on the plans or in the special provisions, Contractor shall immediately give the Authority and the Utility Company written notification of the existence of those facilities. Such facilities shall be located and protected from damage as directed by the Authority, and the cost of that work will be paid for as extra work as provided in Section F. Contractor shall, if directed by the Authority repair any damage which may occur to the main or trunk lines. The cost of that repair work, not due to the failure of the Contractor to exercise reasonable care, will be paid for as extra work as provided in Section F. Damage due to Contractor's failure to exercise reasonable care shall be repaired at the Contractor's cost and expense.

Where it is determined by the Authority that the rearrangement of an underground facility is essential in order to accommodate the project work and the plans and specifications do not provide that the facility is to be rearranged, AuthorityY will provide for the rearrangement of the facility by other forces or the rearrangement shall be performed by Contractor and will be paid for as extra work as provided in Section F.

When ordered by the Authority in writing, Contractor shall rearrange any utility or other subsurface structures necessary to be rearranged as a part of the project work and that work will be paid for as extra work as provided in Section F.

Should Contractor desire to have any rearrangement made in any utility facility, or other improvement, for the Contractor's convenience in order to facilitate the Contractor's construction operations, which rearrangement is in addition to, or different from, the rearrangements indicated on the plans or in the special provisions, the Contractor shall make whatever arrangements are necessary with the owners of the utility or other subsurface structure for the rearrangement and bear all expenses in connection therewith.

Contractor shall immediately notify the Authority of any delays to the Contractor's operations as a direct result of underground utilities or other structures which were not indicated on the plans or in the special provisions or were located in a position substantially different from that indicated on the plans or in the special provisions, (other than delays in connection with rearrangements made to facilitate the

Contractor's construction operations or delays due to a strike or labor dispute). These delays will be considered utilities related delays within the meaning of Section X., Utilities Related Delays and compensation for the delay will be determined in conformance with the provisions in Section M. Contractor shall be entitled to no other compensation for that delay.

BB. LOCATION OF UNDERGROUND FACILITIES (OFFSITE WORK ONLY)

Contractor is required to obtain digging permits prior to start of excavation by contacting the appropriate permitting agencies 15 calendar days in advance. For the Offsite work scan the construction site with electromagnetic or sonic equipment, and mark the surface of the ground where existing underground utilities are discovered. Verify the elevations of existing piping, utilities, and any type of underground obstruction not indicated or specified to be removed but indicated or discovered during scanning in locations to be traversed by piping, ducts, and other work to be installed. Verify elevations before installing new work closer than nearest manhole or other structure at which an adjustment in grade can be made. Perform potholing to confirm location of all the utilities along the construction alignment prior to start of the construction. The Contractor is responsible for all costs associated with these investigations including the cost of equipment, labor and materials required for any confined space entry.

CC. UNFORESEEN HAZARDOUS OR REGULATED MATERIALS

All known hazardous or regulated materials are indicated in the contract documents. If material that is not indicated in the contract documents is encountered that may be dangerous to human health upon disturbance during construction operations, stop that portion of work and notify Authority immediately. Intent is to identify materials such as PCB, lead paint, mercury, petroleum products, and friable and non-friable asbestos. Within 14 calendar days, the Authority will determine if the material is hazardous. If the material is not hazardous or poses no danger, the Authority will direct Contractor to proceed without change. If the material is hazardous and handling of the material is necessary to accomplish the work, Authority will contract with a qualified environmental remediation/hazardous materials removal Contractor for such remediation or removal as may be necessary. The remediation or removal will be performed in compliance with applicable State, Federal, and local environmental laws and regulations.

Contractor shall immediately notify the Authority of any delays to the Contractor's operations as a direct result of Unforeseen Hazardous and Regulated Materials These delays will be considered utilities related delays within the meaning of Section X., Utilities Related Delays and compensation for the delay will be determined in conformance with the provisions in Section M. Contractor shall be entitled to no other compensation for that delay.

SECTION VI: PROJECT SPECIFICATIONS - EXHIBIT B



ORANGE COUNTY TRANSPORTATION AUTHORITY

SECURITY GATES INSTALLATION AT ANAHEIM, GARDEN GROVE, AND SANTA ANA BUS BASES

PROJECT SPECIFICATIONS

C-3-2279

January 20, 2023

ORANGE COUNTY TRANSPORTATION AUTHORITY

SECURITY GATES INSTALLATION AT ANAHEIM, GARDEN GROVE, AND SANTA ANA BUS BASES

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SECTION 01 11 00 SUMMARY OF WORK

PART 1 - GENERAL

1.01 DESCRIPTION

- A. Contract documents: The Contractor shall obtain all copies of the Contract Drawings and Specifications including all addenda through the OCTA CAMMNET website, as required to perform the work. The cost for obtaining any additional documents required for the contractor shall be included in the bid price and no additional compensation will be allowed.
- B. All drawings, specifications, and other contract documents, and copies furnished by the Authority are its property. They are not to be used on other work and with the exception of signed contract sets are to be returned to the Authority upon request at the completion of the work. The location of the work, its general nature and extent, and the form and general dimensions of the project and appurtenant works are shown on the contract drawings which are hereby made a part of these specifications as listed herein.
- C. The general intent of the contract, specifications, drawings, and other contract documents is that the Contractor shall:
 - 1. Furnish tools, qualified labor, material, equipment, qualified superintendence, and services, assurances and guarantees, and assumptions of risk and responsibility, necessary for the performance of the Work as set forth in the contract documents unless otherwise specifically provided.
 - 2. Begin work promptly and proceed expeditiously and continuously without cessation or shutdown of Work unless otherwise specifically approved in writing by the OCTA Engineer, or directed by the contract documents.
 - 3. Perform, complete, and make ready for its intended purpose, within the times specified, including additional times provided for certain conditions, the work or parts thereof covered by the contract, all in accordance with drawings, specifications, and modifications thereto and directions or instructions the OCTA Engineer may give to supplement the drawings and specifications. The Contractor shall retain sole responsibility and expense for quality control of the work.
- D. Words and abbreviations which have well-known technical or trade meanings are used in the contract documents in accordance with such recognized meanings.
- E. The organization of the specifications into divisions, sections, parts, and paragraphs, and the arrangement of the drawings, shall not control the Contractor in dividing the work among subcontractors or in establishing the extent of work to be performed by any trade. Study and compare the contract documents and immediately report to the

OCTA Engineer any error, inconsistency, or omission that may be discovered. Contractor shall be liable to OCTA for damage resulting from unreported errors, inconsistencies, or omissions in the contract documents.

- F. It will be the responsibility of the Contractor to stage the construction activities at the project site, using the Site Specific Work Plan process (SSWP)
- G. Ownership of Materials:
 - 1. Materials furnished by the Contractor under this contract shall become the property of the OCTA.
- H. General Summary of Work:
 - 1. Work to be performed by Contractor shall consist of the construction of the work shown on the drawings and detailed in the specifications.
 - 2. The descriptions provided in this section are general in nature and are not meant to detail all work required by the contract documents.
 - 3. The work under this contract consists of vehicular and pedestrian security gate improvements and pedestrian pathway improvements at the following locations:
 - a. Anaheim Bus Base, 1717 E. Via Burton, Anaheim, CA 92806
 - b. Garden Grove Bus Base, 11790 Cardinal Circle, Garden Grove, CA 92843
 - c. Santa Ana Bus Base, 4301 W. MacArthur Blvd., Santa Ana, CA 92704
 - 4. This project is a facility modification project under OCTA Level 3 Health, Safety and Environmental Specifications and requirements.
- I. Other features of the work include, but are not limited to, the following, as indicated in the respective Contract Drawings and Specifications for the Anaheim, Garden Grove and Santa Ana Bus Bases:
 - 1. At the indicated vehicular entrances and exits, demolish existing electrically-operated rolling vehicular security gates and replace with new gates. Except at Anaheim Bus Base garage, the new vehicular gates are to be hydraulically-operated cantilevered slide gates. At Anaheim Bus Base garage, the new vehicular gates are to be motorized overhead coiling grilles. Furnish and install embedded sensor loops, electronic access controls, and provide modifications and enhancements to video surveillance systems. Provide related modifications to existing foundations and new foundations for new support posts.
 - 2. At Anaheim Bus Base, add two new pedestrian security gates, each with video surveillance system and electronic access controls.
 - 3. Integrate new gate and access controls with each existing and respective Bus Base gate control and security system.

- 4. Integrate new/modified video surveillance systems with existing OCTA video surveillance system and platform.
- 5. Furnish and install new pre-engineered and prefabricated guard booths at Garden Grove and Santa Ana Bus Bases, as indicated.
- 6. Furnish and install new in-roadway warning light systems for pedestrian crosswalks and enhanced pathway definition as indicated at Anaheim and Santa Ana Bus Bases.
- 7. Cut and patch pavements, and modify curbing, parking, circulation configurations, and other site features as indicated to accommodate the new gates, pedestrian walkways, in-roadway warning lights, guard booths, and related underground electrical work. Provide new striping and other painted pavement markings as indicated. Provide construction joints with sealant and backer rod in concrete pavement.
- 8. Provide indicated modifications to existing masonry and concrete walls and to existing steel fence to accommodate the new gates.
- 9. Provide miscellaneous repairs as indicated for selective existing masonry walls.
- 10. Furnish and install custom steel picket fencing, protective bollards, other protective metal fabrications, and chain-link fencing as indicated.
- 11. Provide field painting of new bollards and other metal work that is not factory or shop painted. Paint posts for overhead coiling grilles. Do not paint galvanized posts for sliding gates.
- 12. Provide painted lettering as indicated.
- 13. Provide signage as indicated.
- 14. Provide related electrical work, including but not limited to power, communications, and control wiring or cabling, buried and surface-mounted conduits, handholes, boxes, disconnects and other devices, connections, panels, breakers, and identification. Provide luminaires for new pedestrian security gates.
- 15. Modify, improve and/or restore other existing construction affected by the work.
- 16. Provide related earthwork, including excavations, trenching, protections, dewatering, backfill, compaction, and testing.
- 17. Start-up, test, adjust, and demonstrate new operable gate systems, controls, intercoms, video surveillance equipment, guard booth equipment, and inroadway warning light systems.
- 18. Complete mobilization and demobilization.

- 19. Obtaining of necessary construction and related permits from various jurisdictional agencies. Contractor shall be responsible for all related fees from various jurisdictional agencies.
- 20. Obtain and pay for all licenses required by all jurisdictions associated with the approval and requirements of the project.

1.02 INTENT OF DRAWINGS AND SPECIFICATIONS

- A. The intent of the drawings and specifications is to prescribe the details for construction and completion of the work that the Contractor undertakes to perform in accordance with the terms of the Contract. Where the drawings or specifications describe portions of the work in general terms, but not complete detail, it is understood that only the best industry practice is to prevail and that only materials and workmanship of the first quality are to be used. Unless otherwise specified, the Contractor shall furnish all labor, materials, tools, equipment, and incidentals, and perform all the work involved in executing the contract in a satisfactory and workmanlike manner.
- B. Drawings and specifications are essential parts of the Contract, and a requirement indicated in one is binding as though indicated in all. They are intended to be complementary and to describe and provide for the complete work.
- C. Summaries or introductory descriptions of the work of individual sections do not limit requirements. The Contractor's responsibilities include all requirements for proper execution of the work.
- D. Division 01 of the specifications governs all divisions. Comply with Division 01 requirements whether or not referenced in individual sections in Divisions 02-49.
- E. References to the singular include the plural and do not imply that only one unit of a product is required.
- F. Unless an object or activity is specified to be less than the total, the quantity or amount is all of the object or activity.
- G. Unless a requirement is specified to apply for a limited time, it applies for the duration of the work.
- H. "Including," "such as," "as follows," and similar terms do not limit the meaning to only items listed. The phrase "but not limited to" is understood to follow these expressions.
- I. All items in a list apply unless the items are specified as choices.

1.03 REFERENCE MATERIAL

A. Reference specifications or standards referred to in the plans or specifications shall be the most recent version developed as of Contract award. Where referenced

standards refer to the "specifications" or the "special conditions," this shall be understood by Contractor to mean the drawings and specifications of this contract. Contractor is responsible to obtain all reference material at its own expense and to make itself familiar with the requirements therein.

1.05 PROJECT ACCESS AND CONTRACT LIMITS

- A. Contractor shall submit a Traffic Management Plan as required on Section 01 14 43 Environment Resource Protection, outlining access to the job site and maintaining the facility operational at all times.
- B. Construction activity shall be within the normal work hours between 7:00 am to 4:00 pm Monday through Friday. Construction area shall be cordoned off using temporary barriers and chain link fencing unless otherwise noted on Contract Drawings. See project plans for additional information on phasing and work windows.

PART 2 - PRODUCTS

Not Used

PART 3 - EXECUTION

Not Used

PART 4 - MEASUREMENT AND PAYMENT

No separate measurement or payment shall be made under this section.

END OF SECTION

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SECTION 01 14 22

RULES AND HOURS OF OPERATION

PART 1 – GENERAL

1.01 SUMMARY

A. This section outlines rules and hours of operation to which Contractor shall conform during the execution of the work under this contract. It is Contractor's responsibility to ensure that these rules are acceptable to OCTA.

1.02 REFERENCE STANDARDS

- A. Comply with the provisions of applicable local, State, and Federal codes, standard plans and specifications, and recommended practices, and with OCTA policy, including:
 - 1. SSPWC: Public Works Standards, Inc., Standard Specifications for Public Works Construction.
 - 2. Caltrans: California Department of Transportation, Trenching and Shoring Manual.
 - 3. Cal/OSHA: California Department of Industrial Relations, Division of Occupational Safety and Health (Cal/OSHA) regulations.
 - 4. OSHA: Federal Occupational Safety and Health Administration regulations.

1.03 SUBMITTALS

A. Site Specific Work Plan (SSWP) containing the information specified herein.

1.04 PROJECT COORDINATION

- A. Cooperate with the OCTA Project Manager in all matters requiring coordination.
- B. Coordinate execution of the work with the OCTA Project Manager to eliminate or minimize to the greatest extent possible interference with bus operations.
- C. Keep OCTA Project Manager fully informed regarding all work.

1.05 CONTRACTOR'S RESPONSIBILITY

- A. Perform work in accordance with the contract and all applicable codes, ordinances, rules, regulations, orders, and other legal requirements of governmental bodies and public agencies having jurisdiction, including the OCTA.
- B. Damage caused by Contractor to third-party property, signal and communications equipment, or other facilities shall be repaired at Contractor's expense to a condition equal or better than the condition prior to Contractor entry and as accepted by the OCTA Project Manager. At the sole discretion of the OCTA Project Manager, the OCTA Project Manager may direct repairs to be performed by other contractors. Charges for those repairs shall be deducted from Contractor's payment due under this Contract.
- C. Items shown on the drawings to be protected in place, or not identified as part of demolitions, removals, or modifications, shall be protected in place in accordance with SSPWC Section 7-9, Protection and Restoration of Existing Improvements, at no additional cost to the OCTA.
- D. Perform work within the operating envelope or which affects the operating system only after submitting a Site Specific Work Plan (SSWP) and receiving written approval of the SSWP from the OCTA Project Manager.
- E. Furnish all labor, materials, and equipment as required to perform and complete the work within the work windows in accordance with the approved schedule in the SSWP.

1.06 SSWP – GENERAL CONTRACTOR REQUIREMENTS

- A. SSWPs with potential to impact normal functioning of any part of the operating system shall include a detailed schedule of events indicating the expected hourly progress of each activity that has duration of one hour or longer. The schedule shall include a time at which each activity planned under the SSWP and the requested work window will be completed. The total duration of the construction activities shall be less than the approved work window. Contractor's failure to complete scheduled activities by the planned time or to put in place an approved contingency plan may adversely impact the operations of the bus base.
- B. The SSWP shall be prepared by the Contractor and shall include the following information:
 - 1. All activities necessary to perform construction activities.
 - 2. Conformance with all other requirements applicable under the contract documents.

- 3. A schedule for the work showing each activity and where and how it affects normal operation. Each activity in the plan shall include all labor, materials, and equipment required to complete the activity within the OCTA allotted time period.
- 4. List of approved proposed work plans to be performed under the SSWP, with names and phone numbers of Contractor's supervisors in charge of SSWP tasks.
- C. SSWPs must be of sufficient details, clarity, and organization to permit easy review and approval by the OCTA Project Manager before the proposed work is performed. SSWPs shall be submitted to the OCTA Project Manager as follows:
 - 1. At least 14 calendar days prior to start of work.
- D. The OCTA Project Manager may request explanations and changes to the SSWP to conform the SSWP to the requirements of the contract documents. If the SSWP is not acceptable, Contractor shall revise the SSWP to make it acceptable. Contractor is responsible for submitting a revised SSWP that can be reviewed and approved by the OCTA at least seven days in advance of any work.
- E. Contractor will be informed if the SSWP is acceptable not less than seven calendar days prior to the scheduled start of work within the operating envelope. Once the SSWP is accepted, Contractor shall assemble the resources necessary to perform the work represented by the SSWP, so that necessary resources are available one day before the work is to be accomplished. At that time, the OCTA Project Manager will make a final decision as to whether or not the work is to proceed as planned or will be canceled. The prime consideration will be the stage of readiness of Contractor, which Contractor shall demonstrate to the OCTA Project Manager.

1.07 SSWP – SPECIAL CONTRACTOR REQUIREMENTS

- A. Contractor shall provide sufficient personnel, equipment, materials, and all other resources necessary to return impacted facilities to full service upon the conclusion of the approved work window.
- B. Contractor shall perform the work expeditiously and continuously with no gaps or breaks in work activities or substantive reductions in the labor force, equipment, and materials necessary to construct, reconstruct, or repair the impacted facility to full service upon conclusion of the approved work window.
- C. In general, open excavation areas shall be protected per OSHA regulations.

1.08 WORK WINDOWS - GENERAL

A. Site-specific available work windows shall be as approved by the OCTA Project Manager under established procedures.

B. Construction hours shall be limited to 7:00 am to 4:00 pm Monday through Friday unless approved in writing in advance by OCTA and appropriate regulatory agencies.

PART 2 - PRODUCTS

Not Used

PART 3 - EXECUTION

Not Used

PART 4 - MEASUREMENT AND PAYMENT

No payment will be made to Contractor for work of this section.

END OF SECTION

SECTION 01 14 23

COORDINATION WITH OCTA AND LOCAL AGENCIES

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes:
 - 1. Requirements for coordination with OCTA and Local Agencies.

1.02 REGULATIONS

A. If additional work is being performed by others, on or adjacent to the work site for this Contract, coordinate work with other activities in order to avoid conflicts.

1.03 COORDINATION

- A. Coordination: Contractor shall coordinate the Work as stated in the Conditions of the Contract.
- B. Relationship of Contract Documents: Drawings, Specifications and other Contract Documents are intended to be complementary. What is required by one shall be as if required by all. What is shown or required, or may be reasonably inferred to be required, or which is usually and customarily provided for similar work, shall be included in the Work.
- C. Discrepancies in Contract Documents: In the event of error, omission, ambiguity or conflict in the Drawings or Specifications, Contractor shall bring the matter to the OCTA's attention in timely manner, for the OCTA's determination and direction in accordance with provisions of the Conditions of the Contract.
- D. Construction Interfacing and Coordination: Layout, Phasing, and Sequencing of Work shall be solely the Contractor's responsibility. Contractor shall bring together the various parts, components, systems and assemblies as required for the correct interfacing and integration of all elements of Work. Contractor shall coordinate Work to correctly and accurately connect abutting, adjoining, overlapping and related elements, including utilities, for a complete operational system to the satisfaction of the OCTA, agencies, and companies. Provide adequate access for OCTA buses to pass through all areas at all times. Do not block non-construction areas.
- E. Contractor shall notify OCTA a minimum of three (3) working days before excavation begin. The work shall be construction in phases where indicated on the contract drawings or specifications. A phase shall be completed and operational before proceeding to the next phase.

- F. The Contractor shall cooperate fully with all forces of the Authority. Contractor should note that additional work is being conducted on site with other construction contracts and work of this contract must be coordinated amounts the trades and not additional compensation will be allowed for this coordination work.
- G. Unless otherwise directed, provide five (5) days notice of all utility outages and shutdowns. Duration of outages and shutdowns shall not hinder normal operations and maintenance of the facility. In case of accidental damage to power or utility lines, repair power or utility line immediately, provide alternate source of power to keep facility operation during the repair period.

1.04 GENERAL REQUIREMENTS

- A. Adhere to work window rules detailed in the approved SSWP under Section 01 14 22, Rules and Hours of Operation and the specifications.
- B. See Section 01 14 22, Rules and Hours of Operation

PART 2 - PRODUCTS

Not Used

PART 3 – EXECUTION

Not Used

PART 4 - MEASUREMENT AND PAYMENT

No separate measurement or payment shall be made under this section.

END OF SECTION

SECTION 01 14 25

PROCEDURES IN CONSTRUCTION

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Procedures used in performance of work of a general nature, including work by Contractor, Contractor use of work site, work zone limitations of site, and pollution controls.

B. Related Sections:

- 1. Section 01 14 23, Rules and Hour of Operation.
- 2. Section 01 14 27, Legal Relations and Responsibility.

1.02 WORK BY CONTRACTOR

- A. Provide work reasonably inferred from the drawings and specifications as being required to produce the intended result whether or not specifically called for.
- B. Work, materials, or equipment described in words which have known technical or trade meaning shall be deemed to carry the accepted meaning of recognized standards.
- C. Complete all work enumerated under the contract including but not limited to the following:
 - 1. Perform work set forth in the contract documents, including the drawings and specifications.
 - 2. Obtain required permits, inspections, and certifications for material compliance.

1.03 SUBMITTALS

- A. All required submittals per OCTA Level 3 Health, Safety and Environmental Specification.
- B. Material Safety Data Sheets (MSDSs).

1.04 STORM WATER MANAGEMENT

- A. Contractor is responsible for preventing and/or mitigating potential chemical releases, erosion and sedimentation impacts associated with storm water runoff. Contractor shall comply with OCTA's bus base industrial SWPPP and comply with the Statewide General Permit for Storm Water Discharges Associated with Industrial Activities (IGP) order number 2014-0057-DWQ or the latest order (See link below). Contractor shall prepare and submit a best management practices (BMP) plan for OCTA's review and acceptance; and shall implement BMP plan and maintain the BMPs for the duration of the project. See Section 01 57 13, Temporary Erosion and Sedimentation Control, for additional requirements.

 (http://www.waterboards.ca.gov/board_decisions/adopted_orders/water_quality/2014/wgo2014_0057_dwg_rev_mar2015.pdf).
- B. Use best management practices (BMPs) Contractor proposes in connection with the execution of construction activity at the project site. Use BMPs included in the Construction Site Best Management Practices (BMP) Manual prepared by the California Stormwater Quality Association, www.cabmphandbooks.com.
- C. Provide copies of the contractor's BMP plan to subcontractors and keep a copy available onsite at the project office. Provide amendments to the BMP plan when there is a change in construction or operations, or where storm water runoff conditions may affect the discharge of significant quantities of pollutants to surface waters, groundwater, or separate municipal storm sewer systems. Submit the amended BMP plan to the OCTA for review and acceptance as soon as practicable, and retain the amended plan on site.
- D. Preparation and implementation of an OCTA-accepted BMP plan does not relieve the Contractor or subcontractors of their responsibilities to comply with state, county, and local governmental requirements, including those for storm water management and non-point source runoff controls.

1.05 MATERIAL SAFETY DATA SHEETS (MSDS)

- A. Material Safety Data Sheets (MSDSs) are prepared by manufacturers and suppliers of products that contain hazardous materials. Hazardous material is defined as any substance which is a physical or health hazard, or is included in the Cal/OSHA Director's List of Hazardous Substances, or is listed by the California EPA Office of Environmental Health Hazard Assessment under Title 27 of the California Code of Regulations, Section 27001, Chemicals Known to the State to Cause Cancer or Reproductive Toxicity.
- B. No hazardous materials shall be delivered, stored, or used at any work site or facility unless they are properly labeled, tagged, or marked and a copy of the MSDS has been provided to the OCTA. Provide a copy of any updated MSDS to the Engineer immediately.

- C. Maintain a file of MSDSs at the work site. Keep MSDS files current; add new or updated MSDSs immediately and provide a copy to the OCTA.
- D. See Contract Documents for OCTA Level 3 Health, Safety, and Environmental Specifications for additional requirements.

1.06 CONTRACTOR USE OF WORK SITE

- A. Coordinate access, use, and preparation of facilities adjacent to project areas with owners and agencies. Coordination shall include but not be limited to the following:
 - 1. Staging and laydown areas for use under this Contract are as specified or shown on the Drawings. Staging and laydown areas not covered in the Contract Documents shall be requested in writing and approved by the OCTA. The OCTA may or may not grant approval. No equipment may be operated or materials stored or placed for any period of time in unfenced areas. Provide a fence to enclose each laydown or staging area within the right-of-way. Furnish the OCTA with photographs of all staging and laydown areas to document their condition prior to start of work.
 - 2. Contractor shall submit construction staging plan as a part of SSWP for review and approval by OCTA. The staging plan must be accepted by the OCTA prior to undertaking work in accordance with the staging plan.
 - 3. Prior to demobilization, restore to full serviceability fences, walls, signs, and gates affected by Contractor's access to the right-of-way.
- B. Confine work site operations to areas permitted by law, ordinances, permits, and the contract.
- C. Consider the safety of the work, OCTA patrons and property on and adjacent to the work site when determining amount, location, movement, and use of materials and equipment on work site.
- D. Do not load work site with excessive amounts of material, equipment, or other items which have the potential to interfere with the work or with bus base operations.
- E. Protect products, equipment, and materials stored on work site.
- F. Coordinate operations and secure from property owners at no cost to OCTA additional storage or work areas as needed for proper execution of the work. Adhere to the noise levels and work hours of local ordinances.
- G. Protect the general public from work-related activities, and do not unnecessarily inconvenience those persons by work activities.
- H. Submit proposed locations of staging areas for OCTA's approval.

- Preserve drainage facilities throughout the duration of the work so that there is no ponding or accumulation of water in any work site area, there is no flow of water diverted out of normal drainage channels. Maintain culvert inlets and outlets free of debris.
- J. Preserve existing right-of-way fences and walls, and replace any fences or walls damaged during the work to the satisfaction of the owner(s) of the fences or walls.
- K. Provide and maintain barriers and chain link fence around the work area as shown on the contract drawings.

1.07 WORK ZONE LIMITATIONS OF SITE

- A. In addition to site utilization limitations and requirements indicated in contract documents, divide available space equitably among subcontractors and other entities needing access and space so as to provide best overall efficiency in performance of total work of the project.
- B. Schedule deliveries so as to minimize space and time requirements for storage of materials and equipment on site, with minimal disruption to adjoining property owners and operations. Pick-up and delivery shall be conducted only during normal working hours and as approved by OCTA. Contractor shall give OCTA 48 hours notice prior to delivery of equipment or materials to the project site.

1.08 POLLUTION CONTROLS

A. Conduct operations for the execution of the project in compliance with applicable Federal, State, and local regulations controlling pollution and noise levels related to construction work, in accordance with Section 01 14 27, Legal Relations and Responsibility.

PART 2 - PRODUCTS

Not Used

PART 3 – EXECUTION

Not Used

PART 4 – MEASUREMENT AND PAYMENT

No separate measurement or payment shall be made under this section.

END OF SECTION

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SECTION 01 14 27

LEGAL RELATIONS AND RESPONSIBILITY

PART 1 – GENERAL

1.01 SUMMARY

A. Section Includes:

- 1. Laws to be observed, fire prevention, protection of premises, use of explosives, access roads, construction roads, waste control, public relations, and pollution controls.
- 2. This section complements requirements in other sections.

1.02 LAWS TO BE OBSERVED

- A. Keep fully informed of State and Federal laws; county, municipal, and other local ordinances; regulations; and orders of authorities having jurisdiction that affect those engaged in the work, materials used in the work, or conduct of the work.
- B. Observe and comply with laws, ordinances, regulations, and orders of authorities having jurisdiction over the work. Contractor's responsibilities include causing Contractor's agents, employees, subcontractors, and visitors to observe and comply with these laws, ordinances, regulations, and orders.
- C. Protect and indemnify OCTA and its officers and employees against claims and liabilities arising from or based on Contractor's violation of a law, ordinance, regulation, or order.
- D. Report to the OCTA, in writing within two days of discovery, discrepancies or inconsistencies discovered in the drawings, specifications, or contract documents in relation to laws, ordinances, regulations, or orders.

1.03 COORDINATION WITH UTILITIES

A. Coordinate with utility companies to ensure that utility locations are clearly marked for the duration of construction activities.

1.04 FIRE PROTECTION

A. Comply with Federal, State, county, municipal, and other laws and regulations pertaining to the prevention, control, and fighting of fire and to the conduct of welding and burning operations. Procure all related permits and licenses.

B. Supply fire-fighting equipment, supplies, and personnel and perform work required by laws and regulations pertaining to fire protection. If loss or damage results from fire or other cause, promptly repair loss or damage at no expense to OCTA.

1.05 PROTECTION OF PREMISES

- A. Take precautions necessary and be responsible for maintaining lights, guards, signs, temporary passages, or other protection.
- B. Restore loss or damage to materials, tools, or other articles used or held for use in connection with the work at no expense to OCTA.
- C. Restore loss or damage as a result of fire or other cause attributable to Contractor or subcontractors at no expense to OCTA. Promptly repair damage and restore loss to materials, tools, or other articles used or held for use in connection with the work. Carry the work to completion without damage to or interference with other work or contiguous property.

1.06 USE OF EXPLOSIVES

A. Use of explosives is not permitted unless specifically detailed in the specifications or approved in advance in writing by OCTA.

1.07 WORK SITES AND WASTE MATERIAL

- A. Obtain required approvals and bear costs of location, construction, maintenance, operation, removal, and transportation of sanitation facilities and waste material from work sites. Sanitation shall conform to local, State, and Federal requirements. Maintain work sites in a neat and orderly condition.
- B. Before starting work, submit to OCTA a contingency plan for cleanup of accidental spillage of toxic or detrimental materials and for restoration of soil damaged thereby to near-natural conditions. Conduct the handling, storage, and disposal of waste material so as to avoid pollution of rivers, streams, ponds, or wells, and in compliance with local, State, and Federal environmental laws and regulations
- C. OCTA shall acquire all applicable permits. These permits include, but would not be limited to, a Section 404 Wetlands Fill Permit from the USACE, or a Report of Waste Discharge from the Regional Water Quality Control Board (RWQCB), and a Section 401 Water Quality Certification from the RWCQB. Additionally, a Section 1602 Streambed Alteration Agreement from the California Department of Fish and Wildlife (CDFW) would be required for development that would cross or affect any stream course.

1.08 PUBLIC RELATIONS, CONVENIENCE, AND NOTICE OF DAMAGE

- A. Conduct operations so as to offer the least possible obstruction and inconvenience to the public. Have under construction no greater length or amount of work than can be prosecuted properly with due regard to the rights of the public. Control temporary noise from construction equipment by using work hour controls and maintenance of muffler systems on machinery as necessary.
- B. Provide, at Contractor's expense, adequate safeguards, safety devices, and protective equipment, and take other needed action, both at Contractor's own volition and as the OCTA may determine reasonably necessary, to protect property, life, health, and public safety in connection with the performance of the work covered by the contract.
- C. Notify the OCTA in writing within 24 hours after causing injury to persons or damage to public or private property, including above and below ground structures. Contractor shall be responsible and liable for all damages and injuries.

1.09 ENVIRONMENTAL AND ANTI-POLLUTION

- A. Comply with Federal, State, county, municipal, and other local laws and regulations pertaining to the environment, including noise, aesthetics, air quality, water quality, and resources of archaeological significance. Refer also to Section 01 14 43 Environmental Resource Protection for additional requirements. Expense of compliance with these laws and regulations is included in the lump sum and unit prices. 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. Carry out grading and other work in a manner which will not create a pollution problem. Temporary construction roads, haul roads, and work areas shall be maintained free from excessive dust by an approved program of sprinkling, graveling, chemical treatment, temporary asphalt pavement, or combination thereof for the duration of the work.
- C. Give attention to the effect of work operations upon the landscape, and take care to maintain natural surroundings undamaged. Disturbances of land or waters outside the limits of construction shall be rehabilitated by Contractor at its expense, when and as directed by the OCTA.
- D. 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.

- E. Protect adjacent properties and water resources from erosion and sediment damage throughout the duration of the contract. Comply with applicable NPDES permits and Storm Water Pollution Prevention Plan (SWPPP) requirements. See Section 01 14 25, Procedures in Construction, and Section 01 57 13, Temporary Erosion and Sedimentation Control.
- F. Do not conduct construction activities outside the right-of-way during muddy or wet ground conditions.
- G. If archaeological remains are uncovered during construction, stop grading operations in the vicinity of the find and immediately notify the OCTA. Refer to Section 01 14 43, Environmental and Resource protection for additional requirements.
- H. Costs associated with environmental and pollution control measures are considered incidental to the contract work, at no additional cost to OCTA.
- I. Take the following actions and others as necessary to control environmental pollution:
 - 1. Reduce air pollution by minimizing dust, containing chemical vapors, and controlling engine exhaust gases. Limit idling of machinery as directed by the OCTA.
 - 2. Reduce water pollution by control of sanitary facilities and proper storage of fuel and other contaminants.
 - 3. Reduce turbidity and siltation by controlling erosion and sedimentation.
 - 4. Minimize noise levels.
 - 5. Dispose of waste and spoil properly.
 - 6. Prevent landscape defacement and damage.
- J. Comply with South Coast Air Quality Management District (SCAQMD) Rule 403 to control fugitive dust emissions. In addition to the requirements contained therein, comply with the following:
 - 1. Water all land clearing/earth moving activity areas to control dust as required by the OCTA. Areas shall remain visibly moist during active operations.
 - 2. Visually inspect construction equipment prior to leaving work sites. Wash off any loose dirt with wheel washers as necessary.
 - 3. Properly tune and maintain all construction equipment in accordance with manufacturer's specifications.

- 4. Maintain and operate construction equipment so as to minimize exhaust emissions. During construction activities, trucks and vehicles in loading and unloading queues shall have their engines turned off when not in use to reduce noise and exhaust emissions.
- Establish on-site construction equipment staging areas and construction worker parking lots on either paved surfaces or unpaved surfaces treated with soil stabilization materials.
- 6. Use electricity from power poles where feasible, rather than temporary diesel or gasoline powered generators. Muffle noise from generators to the extent practical.
- 7. Use on-site mobile equipment powered by alternative fuel sources, such as ultralow sulfur diesel, methanol, natural gas, propane or butane.
- 8. Construction grading or earth moving on days when wind gusts exceed or are forecast to exceed 25 mph is prohibited.

PART 2 - PRODUCTS

Not Used

PART 3 – EXECUTION

Not Used

PART 4 - MEASUREMENT AND PAYMENT

- A. There will be no separate measurement for work of this section.
- B. Full compensation for all work involved shall be included in the various items of work, and no separate payment shall be allowed therefor.

END OF SECTION

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SECTION 01 14 43

ENVIRONMENTAL RESOURCE PROTECTION

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes:
 - 1. Protection of species habitat.
 - 2. Protection of archaeological resources.
 - 3. Protection of paleontological resources (fossils).
 - 4. Protection of human remains.
 - 5. Protection from previously existing contamination.
 - 6. Prevention of fuel spills and hazardous material spills.
 - 7. Prevention of stored fuel leaks.
 - 8. Protection of stormwater quality and control of stormwater quantity.
 - 9. Prevention of traffic impacts.
 - 10. Prevention of road damage.
 - 11. Prevention of fugitive dust.
 - 12. SCAQMD requirements.
 - 13. Disposal of refuse.
- B. Related Sections:
 - 1. Section 01 14 25, Procedures in Construction.
 - 2. Section 01 14 27, Legal Relations and Responsibility.

1.02 SUBMITTALS

- A. Submit under Section 01 33 00, Submittal Procedures.
- B. Written commitment to clean up leaks of fuel or hazardous materials.

C. Traffic Management plan.

1.03 GENERAL

- A. Provisions of this section are required to reduce or avoid potential environmental impacts of the project, in accordance with environmental mitigation measures imposed by the OCTA and other responsible agencies.
- B. This section summarizes required mitigation. Proceed with mitigation only after consultation with OCTA and Contractor's biological, archaeological, and geological consultants.

PART 2 - PRODUCTS

Not Used

PART 3 – EXECUTION

3.01 PROTECTION OF SPECIES HABITAT

- A. Avoid placement of construction equipment and personnel within environmentally sensitive habitat areas used by target species of concern. Activities that cannot be conducted without placement of construction equipment and personnel within sensitive habitats shall be timed to avoid the breeding season of the target species of concern. Coordinate such activities and their timing with the OCTA.
- B. Locate equipment storage, fueling and staging areas to minimize risks of direct drainage or runoff into riparian areas or other environmentally sensitive habitats. Take every precaution to prevent the release of toxic substances into surface waters. Report immediately all project spills of hazardous materials to the OCTA, OCTA, US Fish and Wildlife Service (USFWS), California Department of Fish and Wildlife (CDFW), and Regional Water Quality Control Board (RWQCB). Immediately clean up hazardous materials and remove all contaminated soils; dispose of only at approved disposal sites.
- C. Stockpiling and staging of materials shall be limited to disturbed areas without native vegetation, areas to be impacted by the project or in non-sensitive habitats.
- D. Establish No-Fueling zones within a minimum of 33 feet from all drainages and firesensitive areas.
- E. Maintain project areas clean of debris to avoid attracting predators of the target species of concern. Enclose all food related trash in sealed containers and regularly

- remove from site. Pets of construction personnel shall not be allowed on site where they may come into contact with any listed species.
- F. If dead or injured listed species are located, biologist, in consultation with the OCTA, will notify the USFWS and the CDFG according to required protocols. Obtain instructions form the OCTA on how to proceed following such discovery.
- G. Nesting avian species protected by the Migratory Bird Treaty Act (MBTA):
 - 1. For any construction activities or vegetation removal between February 15 and August 31, a nesting bird survey shall be conducted by contractor's qualified biologist of all habitats within 250 feet of the construction area. Surveys shall be conducted no less than 14 days and no more than 30 days prior to commencement of construction activities and vegetation removal. The nesting bird surveys will be conducted in accordance with CDFG protocol as applicable. If no active nests are identified on or within 250 feet of the construction site, no further mitigation is necessary. A copy of the pre-construction survey shall be submitted to the local agencies jurisdiction. If an active nest of a MBTA protected species is identified onsite (per established thresholds) a 100-foot no-work buffer shall be maintained between the nest and construction activity. This buffer can be reduced in consultation with CDFW and/or USFWS.
 - 2. Completion of the nesting cycle shall be determined by qualified ornithologist or biologist.

3.02 PROTECTION OF ARCHAEOLOGICAL RESOURCES

A. If evidence of an archaeological site or other suspected historical resource as defined by CEQA Guidelines Section 15064.5, including darkened soil representing past human activity, that could conceal material remains (e.g., worked stone, fired clay vessels, faunal bone, hearths, storage pits, or burials) are discovered during any project-related earth-disturbing activities (including projects that would not encounter undisturbed soils), all earth-disturbing activity within 100 feet of the find shall be halted and OCTA shall be notified.

3.03 PROTECTION OF PALEONTOLOGICAL RESOURCES (FOSSILS)

A. Should paleontological resources (i.e., fossil remains) be identified at a particular site during project construction, the construction foreman shall cease construction within 100 feet of the find until a qualified professional can provide an evaluation.

3.04 PROTECTION OF HUMAN REMAINS

A. In the event of the discovery of human remains during construction, procedures outlined in Section 15064.5(e) of the CEQA Guidelines shall be strictly followed. Upon discovery all excavation at the site or any nearby area reasonably suspected to

overlie human remains shall cease immediately. Notify OCTA immediately. OCTA will notify County Coroner who will determine if remains are Native American. If the remains are determined to be Native American, the coroner will contact the Native American Heritage OCTA (NAHC). The NAHC will identify the Most Likely Descendent (MLD). The MLD will make recommendations for the appropriate treatment and disposition of the remains and any associated artifacts in accordance with Public Resources Code (PRC), Section 5097.98. Do not commence construction in the area until notified to do so by the OCTA.

3.05 PROTECTION FROM PREVIOUSLY EXISTING CONTAMINATION

A. In the event that previously unknown or unidentified soil and/or groundwater contamination that could present a threat to human health or the environment is encountered during construction of the proposed project, construction activities in the immediate vicinity of the contamination shall cease immediately. If contamination is encountered, a Risk Management Plan shall be prepared and implemented that (1) identifies the contaminants of concern and the potential risk each contaminant would pose to human health and the environment during construction and post development and (2) describes measures to be taken to protect workers, and the public from exposure to potential site hazards. Such measures could include a range of options, including, but not limited to, physical site controls during construction, remediation, long-term monitoring, post development maintenance or access limitations, or some combination thereof. Depending on the nature of contamination, if any, appropriate agencies shall be notified. If needed, a Site Health and Safety Plan that meets Occupational Safety and Health Administration requirements shall be prepared and in place prior to commencement of work in any contaminated area.

3.06 PREVENTION OF FUEL SPILLS AND HAZARDOUS MATERIAL SPILLS

- A. Store fuel, hazardous materials, and chemicals of all types in a contained staging area.
- B. Conduct equipment refueling and maintenance in the contained staging area.
- C. Check vehicles daily for leaks.

3.07 PREVENTION OF STORED FUEL LEAKS

- A. Provide berms or other secondary containment at fuel/chemical storage areas.
- B. Test storage tanks, valves, etc., for leaks.
- C. Submit a written commitment to provide labor, equipment, and materials to promptly clean up any leakage.

3.08 PROTECTION OF STORMWATER QUALITY AND CONTROL OF QUANTITY

- A. Comply with the stormwater quality plan prepared before issuance of construction permits. The plan will incorporate the state's industrial best management practices and other techniques if more effective. Refer to Section 01 14 25 Procedures in Construction for additional requirements.
- B. Runoff from impervious areas is to be detained, treated to industrial standards, and released under control.

3.09 PREVENTION OF TRAFFIC IMPACTS

- A. The Contractor shall prepare and submit a Traffic Management Plan in conjunction with local jurisdictions addressing the following:
 - 1. Detours.
 - 2. Coordination with any other construction projects.
 - 3. Length and timing of street closures.
 - 4. Coordination with police and fire departments regarding changes in emergency access routes.
 - 5. Temporary access routes and signage for any affected commercial property.
 - 6. Contact information for OCTA, contractors and their personnel.
- B. Conform to all conditions required therein. Notify Resident Inspector in advance of any constructions activities that could potentially violate the requirements and conditions set forth in the plan.
- C. Construction parking shall be configured to minimize traffic interference during the construction period and, therefore, reduce idling of traffic.
- D. Temporary traffic controls are provided, such as a flag person, during all phases of construction to facilitate smooth traffic flow.
- E. Construction activities that affect traffic flow on the arterial system be scheduled to off-peak hours (10:00 A.M. to 4:00 P.M.).
- F. Dedicated on-site and off-site left-turn lanes on truck hauling routes be utilized for movement of construction trucks and equipment on site and off site to the extent feasible during construction activities.
- G. To ensure adequate access for emergency vehicles when construction activities would result in temporary lane or roadway closures, the contractor shall consult with the local agencies, Police and Fire Departments to disclose temporary lane or

roadway closures and alternative travel routes. The contractor shall be required to keep a minimum of one lane in each direction free from encumbrances at all times on perimeter streets accessing the project site. If construction activities require the complete closure of a roadway segment, the Contractor shall coordinate with the local agencies, Police and Fire Departments to designate proper detour routes and signage indicating alternative routes.

3.10 PREVENTION OF ROAD DAMAGE

- A. Before and after offsite road and utility construction, videotape the affected roadway and its access roads.
- B. Temporarily repair roadway damage caused during construction.
- C. Permanently restore damaged roadway to its original condition immediately after offsite improvements are completed.
- D. Establish construction truck routes with local jurisdictions before beginning offsite work. Refer to Section 01 14 27 Legal Relations and Responsibility for additional requirements.
- E. Consult with local jurisdictions to coordinate offsite work with other projects in the vicinity.

3.11 SCAQMD REQUIREMENTS

- A. Refer to Section 01 14 27 Legal Relations and Responsibility for these requirements.
- B. All diesel-powered equipment used will be retrofitted with after-treatment products (e.g., engine catalysts).
- C. All heavy-duty diesel-powered equipment operating and refueling at the project site use low-NOX diesel fuel to the extent that it is readily available and cost effective (up to 125 percent of the cost of California Air Resources Board diesel) in the South Coast Air Basin (this does not apply to diesel powered trucks traveling to and from the project site).
- D. Construction equipment engines be maintained in good condition and in proper tune per manufacturer's specification for the duration of construction.
- E. Construction operations rely on the electricity infrastructure surrounding the construction site rather than electrical generators powered by internal combustion engines.
- F. As required by South Coast Air Quality Management District Rule 403—Fugitive Dust, all construction activities that are capable of generating fugitive dust are required to implement dust control measures during each phase of project

development to reduce the amount of particulate matter entrained in the ambient air. These measures include the following:

- 1. Application of soil stabilizers to inactive construction areas.
- 2. Quick replacement of ground cover in disturbed areas.
- 3. Watering of exposed surfaces three times daily.
- 4. Watering of all unpaved haul roads three times daily.
- 5. Covering all stock piles with tarp.
- 6. Reduction of vehicle speed on unpaved roads.
- 7. Post signs on-site limiting traffic to 15 miles per hour or less.
- 8. Sweep streets adjacent to the project site at the end of the day or hourly per Section 01 14 27, 1.10 J if visible soil material is carried over to adjacent roads.
- 9. Cover or have water applied to the exposed surface of all trucks hauling dirt, sand, soil, or other loose materials prior to leaving the site to prevent dust from impacting the surrounding areas.

3.12 PREVENTION OF NOISE IMPACTS

- A. Limit noise-producing activities to hours required by the local jurisdictions for construction activities.
- B. Construction-related equipment, including heavy-duty equipment, motor vehicles, and portable equipment, shall be turned off when not in use for more than 30 minutes. Diesel-fueled commercial motor vehicles with gross vehicular weight ratings of greater than 10,000 pounds shall be turned off when not in use for more than 5 minutes.
- C. Contractor shall require by contract specifications that the following construction best management practices (BMPs) be implemented by contractors to reduce construction noise levels:
 - As requested by the OCTA's Project Manager and/or specified in Contract Document, two weeks prior to the commencement of construction, the Contractor shall provide notification to surrounding land uses within 300 feet of the project site disclosing the construction schedule, including the various types of activities that would be occurring throughout the duration of the construction period.
 - 2. Ensure that construction equipment is properly muffled according to industry standards and be in good working condition.

- 3. Place noise-generating construction equipment and locate construction staging areas away from sensitive uses, where feasible.
- 4. Schedule high noise-producing activities between the hours of 8:00 A.M. and 3:30 P.M. to minimize disruption on sensitive uses, Monday through Friday.
- 5. Implement noise attenuation measures, which may include, but are not limited to, temporary noise barriers or noise blankets around stationary construction noise sources.
- 6. Use electric air compressors and similar power tools rather than diesel equipment, where feasible.
- 7. Construction-related equipment, including heavy-duty equipment, motor vehicles, and portable equipment, shall be turned off when not in use for more than 10 minutes.
- 8. Construction hours, allowable workdays, and the phone number of the job superintendent shall be clearly posted at all construction entrances to allow for surrounding owners and residents to contact the job superintendent. If the City or the job superintendent receives a complaint, the superintendent shall investigate, take appropriate corrective action, and report the action taken to the reporting party.
- D. Construction staging areas along with the operation of earthmoving equipment within the project area would be located as far away from vibration and noise sensitive sites as possible.
- E. Heavily loaded trucks used during construction would be routed away from residential streets.

3.13 DISPOSAL OF REFUSE

The Contractor shall establish a construction management plan with Disposal Company to divert a target of 50 percent of construction, demolition, and site clearing waste.

PART 4 - MEASUREMENT AND PAYMENT

No separate measurement or payment will be made for the work of this section.

END OF SECTION

SECTION 01 25 00

SUBSTITUTION PROCEDURES

PART 1 - GENERAL

<u>1.01 SUMMARY</u>

- A. Section Includes:
 - 1. Administrative and procedural requirements for requesting substitutions.
- B. Definitions:
 - 1. Substitutions: Requests by the Contractor to deviate from specified requirements for products, material, equipment, and methods, or to provide products other than those specified, shall be considered requests for substitutions, limited to the following conditions:
 - a. Substitutions requested during the bidding period and accepted prior to the execution of the Contract.
 - b. Substitutions requested after execution of the Contract.
- C. Substitution Provisions: Refer to substitution provisions of the Instructions to Bidders, in addition to the following specific requirements.
- D. Substitution Request Submittal Period:
 - 1. Time Limit:
 - a. Substitutions requested during Bidding Period: OCTA will consider requests for substitutions if received during bidding. Request permission for substitutions from the OCTA per provisions of the Instructions to Bidders. If approved, OCTA will issue an addendum allowing all bidders to incorporate the request substitution.
 - Substitutions requested after execution of Contract: Only within 14 calendar days of the Notice to Proceed will the Authority and the Engineer consider requests for substitutions, requests submitted after this will be denied.
 - Product Availability Waiver: Substitutions will be considered 21 calendar days of
 execution of the Agreement only when a product becomes unavailable due to no
 fault of the Contractor. Failure to place orders for specified products sufficiently in
 advance of required date for incorporation into the Work will not be considered as

a valid reason for which Contractor may request a substitution or deviation from requirements of the Drawings and Specifications.

1.02 SUBMITTAL REQUIREMENTS

- A. Substitution Requests: Submit three copies of each request for consideration to the OCTA. Identify product or fabrication or installation method proposed for substitution. Include specification section number and title and drawing numbers and titles.
 - 1. Substitution Request Form: Use form acceptable to OCTA Project Manager.
 - 2. Documentation: Substitutions will not be considered when they are indicated or implied on shop drawings, product data or sample submittals without a separate written request, or when acceptance will required substantial revision of the Contract Documents. Show compliance with requirements and the following, as applicable:
 - a. Statement indicating why specified material or product cannot be provided.
 - b. Coordination information, including a list of changes or modifications needed to other parts of the work and to construction performed by OCTA and separate contractors, which will be necessary to accommodate proposed substitution.
 - c. Detailed comparison of significant qualities of proposed substitution with those of the work specified. Significant qualities may include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated or specified.
 - d. Product data, including drawings and descriptions of products and fabrication and installation procedures.
 - e. Samples, where applicable or requested.
 - f. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners.
 - g. Material test reports from a qualified testing agency indicating and interpreting test results for compliance with requirements indicated or specified.
 - h. Research/evaluation reports evidencing compliance with building code in effect for project, from a model code organization acceptable to Inspector and authorities having jurisdiction.
 - i. Detailed comparison of Contractor's Construction Schedule using proposed substitution with products specified for the work, including effect on the

overall contract time. If specified product or method of construction cannot be provided within the contract time, include letter from manufacturer, on manufacturer's letterhead, stating lack of availability or delays in delivery.

- j. Cost information, including a proposal of change, if any, in the contract sum.
- k. Contractor's certification that Contractor has investigated proposed substitution and that it complies with requirements in the contract documents and is appropriate for applications indicated. Contractor further certifies that Contractor will provide the same or better guarantee or warranty as for specified product or method of construction. Contractor shall also certify that Contractor will coordinate installation of accepted substitution into work, making any changes as may be required for work to be complete in all respects as specified.
- I. Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.
- m. Only one request for substitution will be considered for each product.
- n. If the proposed substitution is not accepted, provide the specified product.
- 3. OCTA Project Manager's Action: If necessary, OCTA Project Manager will request additional information or documentation for evaluation within 7 days of receipt of a request for substitution. OCTA Project Manager will notify Contractor of acceptance or rejection of proposed substitution within 15 days of receipt of request, or 7 days of receipt of additional information or documentation, whichever is later.
 - a. Form of Acceptance: Change Order, if costs involved; otherwise written approval.
 - b. Use product specified if OCTA Project Manager is unable to make a decision on proposed substitution within time allocated.

1.03 COMPARABLE PRODUCTS

A. See Section 01 60 00, Product Requirements, for discussion of comparable products.

1.04 PRODUCT SUBSTITUTIONS

A. OCTA Project Manager will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, OCTA Project Manager will return requests without action, except to record noncompliance with these requirements:

- 1. Requested substitution is submitted within the time frame stated herein above.
- Requested substitution offers OCTA a substantial advantage in cost, time, energy conservation, or other considerations, after deducting additional responsibilities OCTA must assume. OCTA's additional responsibilities may include compensation to consultants for redesign and evaluation services, increased cost of other construction by OCTA, and similar considerations.
- 3. Requested substitution does not require extensive redesign of the project or revisions to the contract documents.
- 4. Requested substitution is consistent with the contract documents and will produce indicated results.
- 5. Substitution request is fully documented and properly submitted.
- 6. Requested substitution will not adversely affect Contractor's Construction Schedule.
- 7. Requested substitution has received necessary approvals of authorities having jurisdiction.
- 8. Requested substitution is compatible with other portions of the work.
- 9. Requested substitution has been coordinated with other portions of the work.
- 10. Requested substitution provides specified warranty.
- 11. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.
- B. Substitutions will not be considered if they are indicated or implied on shop drawings or project data submittals or Requests for Information without formal submittal request detailed in this section.

1.05 AVAILABILITY OF SPECIFIED ITEMS

- A. Prior to execution of Contract, Contractor shall verify that all specified items will be available as required by the schedule for orderly and timely progress of the work. Notify OCTA Project Manager if specified items will not be available.
- B. Costs of delays because of non-availability of specified items, when such delays could have been avoided by the Contractor, will deducted from amounts due or to become due the contractor, and will not be borne by OCTA.

- C. Substitutions during construction for prior approved items will only be considered under the following circumstances:
 - 1. Substitution is required for compliance with subsequent interpretation of code.
 - 2. Specified item cannot be provided within the contract time or becomes unavailable through no fault of contractor.
 - 3. Subsequent information discloses that specified item or system will not perform properly or fit in designated space, or manufacturer or supplier refuses to certify or warrant performance as required.

PART 2 - PRODUCTS

Not Used.

PART 3 – EXECUTION

Not Used

PART 4 – MEASUREMENT AND PAYMENT

- A. No separate measurement will be made for the work of this section.
- B. No separate payment will be made for the work of this section.

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SECTION 01 26 00

CONTRACT MODIFICATION PROCEDURES

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

 Administrative and procedural requirements for handling and processing contract modifications.

B. Related Sections:

- 1. Section 01 60 00, Product Requirements, for procedures to approve comparable products.
- 2. Section 01 25 00, Substitution Procedures, for procedures to propose substitutions.
- 3. Section 01 26 13 Requests for Information, for procedures to clarify and interpret the contract documents.

1.02 MINOR CHANGES IN THE WORK / FIELD ORDERS

A. OCTA will issue supplemental instructions authorizing minor changes in the work, not involving adjustment to the Contract Price or the Contract Time, in written form.

1.03 DOCUMENTATION OF CHANGES IN AGREEMENT PRICE AND AGREEMENT TIME

- A. Documentation of Changes in Contract Sum and Contract Time: Contractor shall provide full information required for evaluation of proposed changes and to substantiate costs of changes in the Work.
 - Maintain detailed records of Work completed on time and material basis. Contractor shall use "Daily Extra Work Report" provided by the Authority. All extra work reports shall be signed by the Authority and the Contractor verifying all extra materials and labor incorporated into the project at the end of each work day.
 - 2. Document each quotation for a change in Contract Sum and Contract Time, with sufficient cost breakdown data for labor, materials, and equipment to allow evaluation of the quotation.

- 3. Provide details of cost of all material used for change in work. Provide detail of labor hours expended in change of work, and wage rate of worker. Provide total of hours equipment was used in the work, and hourly rate of the equipment.
- B. Additional Data: Upon request by the Engineer, provide additional data to support computations:
 - 1. Quantity of product, material, labor, and equipment.
 - 2. Overhead and profit (20% includes all superintendence, taxes, insurance, bonds, overhead and profit, etc.). 20 percent overhead and profit shall be divided between Contractor and sub-contractor(s).
 - 3. Justification for change in Contract Time, if claimed.
 - 4. Credit for deletions from Contract, similarly documented.

1.04 CHANGE PROCEDURES

- A. Change Procedure General: The following describe administrative procedures to be followed in complying with provisions of the Conditions of the Contract for changes in the Work.
- B. The Engineer's Supplemental Instructions: Minor changes in the Work, not involving an adjustment in either the Contract Sum or Contract Time, as authorized by the Conditions of the Contract. The Contractor shall take prompt action on such instructions.
- C. OCTA-Initiated Proposal Requests: OCTA will issue a detailed description of proposed changes in the work that may require adjustment to the Contract Price or the Contract Time. If necessary, the description will include supplemental or revised drawings and specifications.
 - 1. Proposal Requests issued by OCTA are not instructions either to stop work in progress or to execute the proposed change.
 - 2. Proposal Request may include an estimate of additional or deductions in Contract Sum or Contract Time for executing the change and may include stipulations regarding overtime work and period of time the requested response from the Contractor shall be considered valid.
 - a. Within time specified in Proposal Request or five (5) calendar days, when not otherwise specified, after receipt of Proposal Request, submit a quotation estimating cost adjustments to the Contract Price and the Contract Time necessary to execute the change. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.

- b. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
- c. Include costs of labor and supervision directly attributable to the change.
- d. Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
- e. Submit name of individual authorized to receive construction change documents and who is responsible for informing others in Contractor's employ or subcontractors of changes in the Work.
- f. Quotation Form: Use forms acceptable to OCTA.
- D. Upon OCTA's approval of a Proposal Request, OCTA will issue a Change Order for signatures of OCTA and Contractor. The OCTA and Contractor will sign the Change Order indicating acceptance and approval of the change.

1.05 WORK CHANGE DIRECTIVE

- A. Work Change Directive: In accordance with provisions of the Conditions of the Contract, OCTA may issue a Work Change Directive. A Work Change Directive instructs Contractor to proceed with a change in the work, for subsequent inclusion in a Change Order.
- B. Work Change Directive contains a complete description of change in the work. It also designates method to be followed to determine change in the Contract Price or the Contract Time. Contractor shall promptly execute the change in the Work.
- C. Changes Based on Stipulated Sum or Time: Construction Change Directive shall be based on stipulated adjustment in Contract Sum and Contract Time as mutually-acceptable to the Authority and Contractor and the change shall be performed immediately. A Change Order for this amount shall be executed at the earliest convenience of all parties. Contractor shall provide a cost estimate based on section 1.03 of this section.
- D. Changes Based on Unit Costs or Quantities: When scope of change cannot be accurately determined in advance, a Construction Change Directive shall be executed based on mutually-acceptable quantities and pre-determined unit prices. Actual costs shall be determined after completion of the Work and a Change Order for this amount shall be executed.
- E. Changes Based on Time and Material Costs: If directed for changes for which amounts are not defined or are disputed, a Construction Change Directive will be issued by the Authority and Contractor shall execute the Work, keeping accurate

records of time, both labor and calendar days, and cost of materials. See Section 1.03. A. 1.

- F. Cost and Time Resolution: If amounts for changes in Agreement price and Agreement time cannot be agreed upon by the Authority and Contractor, amounts shall be resolved in accordance with requirements of the Conditions of the Contract for resolution of disputes.
- G. Documentation: Maintain detailed records on a time and material basis of work required by the Work Change Directive. The total construction cost of the change shall not exceed the mutually agreed adjustment in Contract Sum and Contract time of the Change Order.
- H. After completion of change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the contract.

1.06 CHANGE ORDER

- A. Change Orders, General:
 - In accordance with provisions of the Conditions of the Contract, the Engineer and Authority will review Contractor's response to a Proposal Request or a Construction Change Directive and determine with the Contractor the acceptable amount, if any, of the change in Contract Sum and Contract Time.
 - 2. When agreement is reached on the change in Contract Time and Sum, the Engineer will prepare a Change Order, with supplementary documents (Contractor's cost estimate) as necessary to describe the change and the associated costs and schedule impacts, if any.
 - 3. The Authority and Contractor will sign the Change Order indicating acceptance and approval of the change.

1.07 RECONCILIATION OF CHANGE ORDER

- A. Schedule of Values: Promptly revise the Schedule of Values and Application for Payment forms to record each authorized Change Order as a separate line item and adjustment to the Contract Sum.
- B. Schedules: Promptly revise progress schedules to reflect changes in Contract Time, revising sub-schedules to adjust time for other items of Work as may be affected by the change. Submit revised schedules at the next Application for Payment following approval and acceptance of the Change Order.
- C. Change in work due to request for information, or any other reason shall not be reason for claims of delays by the contractor. Contractor shall allow the Consultant seven (7) days to respond to request for information, and additional fourteen (14)

SECURITY GATES INSTALLATION AT ANAHEIM, GARDEN GROVE, AND SANTA ANA BUS BASES

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days to the Authority to make necessary changes to resolve changes in work and change orders. Allow the Authority 30 calendar days for final Change Order approval.

PART	2 –	PRO	DU	CTS
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Not Used.

PART 3 – EXECUTION

Not Used.

PART 4 - MEASUREMENT AND PAYMENT

Not Used.

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SECTION 01 26 13

REQUESTS FOR INFORMATION

PART 1 - GENERAL

1.01 DESCRIPTION

A. Section Includes:

1. The general requirements for Contractor's requests for information and pertains to all portions of the contract documents.

1.02 **DEFINITION**

- A. A "Request for Information" is defined as a document submitted by the Contractor requesting clarification of a portion of the contract documents, hereinafter referred to as RFI.
- B. All questions and requests for clarification of the Contract Documents from the contractor and subcontractors shall be submitted in writing as a "Request for Information".

1.03 CONTRACTOR'S REQUESTS FOR INFORMATION (RFI)

- A. When the Contractor is unable to determine from the contract documents, the exact material, process or system to be installed, the Contractor shall request the OCTA to make a clarification of the indeterminate item. Wherever possible, such clarification shall be requested at the next appropriate project meeting, with the response entered into the meeting minutes. When clarification at the meeting is not possible, either because of the urgency of the need or the complexity of the item, the Contractor shall prepare and submit an RFI to the OCTA.
- B. RFI's shall be submitted on a form provided by the OCTA. The Contractor will be given the form electronically upon Notice To Proceed.
- C. RFI forms shall be completely filled in, and if prepared by hand, shall be fully legible after photocopying. Each page of attachments to RFI's shall bear the contract number, project name, RFI number. Each RFI shall reference a drawing number and/or Specification Section. The Contractor shall include sketches, mark ups on the contract drawings, and/or photographs to clearly demonstrate its requests or questions in each RFI. Contractor shall indicate on the RFI the date by which response is required.
- D. RFI's from Subcontractors or Material suppliers shall be submitted through, reviewed by, and signed by the Contractor prior to submittal to the OCTA.

- E. Prior to submitting an RFI, the Contractor shall carefully study the Contract Documents to assure that the requested information is not available therein. Contractor shall be responsible for insuring that RFI's are not frivolous or excessive.
- F. Frivolous RFIs: Frivolous RFIs include requests for information shown in the contract documents or resulting from Contractor's failure to study and compare contract documents or to coordinate its own work; and RFIs that are incomplete, contain errors, or include unrelated items. The cost in time and materials on the part of OCTA and related design professionals to review unnecessary or frivolous RFIs will be assessed and deducted from the Contractor's final payment.
- G. RFI's shall not be used for the following purposes:
 - 1. To request approval of submittals.
 - 2. To request approval of substitutions.
 - 3. To request changes which entail additional cost or credit or changes in the contract time.
 - 4. To request different methods of performing work than those shown or specified.
- H. In the event the Contractor believes that a clarification by the OCTA results in additional cost, the Contractor shall not proceed with the Work indicated by the RFI until a Change Order is prepared and approved. Answered RFI's shall not be construed as approval to perform extra work.
- I. RFIs submitted to request clarification of issues related to means, methods, techniques and sequencing of construction, or to establish scope of subcontractors' work will be returned without response.
- J. Unanswered RFI's will be returned with a stamp or notation indicating: "Not Reviewed."
- K. Assign each RFI a sequential number starting from 001. Contractor shall prepare and maintain a log of RFI's and, at any time requested by the OCTA, Contractor shall furnish copies of the log showing all outstanding RFI's. Contractor shall also note all unanswered RFI's in the log.
- L. Contractor shall allow for 14 calendar days review and response time for RFI's.

1.04 RESPONSE TO RFI'S

A. OCTA's response to RFIs will be in writing. RFIs received after 12:00 noon will be considered as received on the following working day for purposes of establishing the start of the 14 day response time. OCTA's response may include a request for additional information, in which case OCTA's time for response will date from time of receipt of additional information.

- B. No extension of time will be granted because of Contractor's failure to submit RFIs in a timely manner or to allow a sufficient amount of time for review.
- C. OCTA's response will confirm a stated interpretation or solution or otherwise interpret the design intent; this may include an alternative solution, consistent with the design intent of the Contract Documents. Where such a solution would result, in the contractor's opinion, in an extra cost or time extension to the project, contractor shall notify the OCTA prior to implementing the response.
- D. Each RFI and the OCTA's response shall become a part of the Contract Documents. To the extent that OCTA's response changes, modifies or amends any portion of the Contract Documents, the response shall be deemed sufficient. No revised Contract Documents will be issued unless the RFI response is insufficient in providing direction to the Contractor. Whenever possible, revised contract documents will be issued in 8-1/2x11 inch or 11x17 inch size, suitable for inclusion with the RFI response. Re-issuance of full size drawings or sets of drawings will be kept to an absolute minimum.

1.05 SPOKEN COMMUNICATIONS

A. Any spoken instructions given to the Contractor on the job site by any person other than the OCTA's personnel is subject to nullification by the OCTA. Contractor shall obtain written documentation of any and all spoken instructions (especially if instructions may reflect an addition to or deduction from the contract sum) from the OCTA prior to commencement of the work resulting from the verbal instructions.

PART 2 - PRODUCTS

Not Used

PART 3 – EXECUTION

Not Used.

PART 4 - MEASUREMENT AND PAYMENT

No separate measurement or payment shall be made under this Section.

END OF SECTION

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SECTION 01 29 00

PAYMENT PROCEDURES

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

- 1. Administrative and procedural requirements necessary to prepare and process Applications for Payment.
- 2. Administrative and procedural requirements for preparing and submitting a Schedule of Values.

B. Related Sections:

- 1. Section 01 26 00, Contract Modification Procedures, for administrative procedures for handling changes to the contract.
- 2. Section 01 32 00, Construction Progress Documentation, for administrative requirements governing the preparation and submittal of the Contractor's construction schedule.
- 3. Section 01 33 00, Submittal Procedures, for administrative requirements governing the preparation and submittal of the Schedule of Values.

1.02 **DEFINITIONS**

A. Schedule of Values (Cost Breakdown): A document furnished by Contractor allocating portions of the Contract Price to various portions of the work and used as the basis for reviewing Contractor's Applications for Payment. The Contract Scope of Work including any and all required deliverables are considered by OCTA to be part of the Schedule of Values upon which progress payments will be made to the Contractor, and if not clearly identified in the Contractor's Schedule of Values, 100% of progress payment will not be made until all required Scope of Work items are completed and received by OCTA.

1.03 SCHEDULE OF VALUES

A. Prepare and submit within 15 calendar days after the effective date in the Notice to Proceed, but in any event prior to the Contractor's first Application for Payment, for approval by OCTA, a Schedule of Values. If the schedules are affected by Change Orders, prepare and submit updated copies of the schedules under this Section.

- B. Submit, under the provisions of Section 01 33 00, Submittals, and a Schedule of Values including the following information:
 - Identify items in the Schedule of Values with the title of Project and location, agreement number, name and address of the Contractor, date of submission, Specification Section/Subsection number, Specification Section/Sub-section title, and Bid item number as contained in the Schedule of Quantities and Prices submitted with the Contractor's bid.
 - 2. Contractor shall indicate subcontracted work items the Schedule of Values including the related subcontractor name(s) and subcontracted amount(s).
 - 3. Schedule shall list the installed value of the component parts of the Work in sufficient detail to serve as a basis for computing values as itemized in the Cost Breakdown for progress payments during construction. Percentage of completed items installed will be paid.
 - 4. Provide a line item to identify each of the following:
 - a. Bonds:
 - b. Insurance premiums;
 - c. Field supervision;
 - d. Mobilization cost (not to exceed 10% of the total contract amount).
 - 5. Upon request by OCTA, support values given with data, which will substantiate the correctness of the values.
 - 6. In addition to the requirements stated in the General Conditions, the Schedule of Values shall be in the form of an Excel hardcopy spreadsheet along with the electronic file on a read-only compact disk (CD-ROM).
- C. Each item shall include a directly proportional amount of Contractor's overhead and profit, which will not be paid separately.
- D. Lump Sum bid payment based on Schedule of Values approved by OCTA based on percentage of work completed.
- E. The sum of all values listed in the schedule shall equal the total contract Sum.
- F. Cost loading of Schedule of Values is for fund management purposes only and will not be constructed to establish unit cost.
- G. OCTA's Review: OCTA will review the Schedule of Values to assure that they are reasonable and balanced. When approved, they will be used in reviewing and approving the monthly partial payment requests. If review by OCTA indicates that changes to the schedules are required, upon five (5) calendar days from receipt of

notice from the OCTA, the Contractor shall revise and resubmit schedules in the same manner as the original schedules were prepared and submitted.

1.04 APPLICATION FOR PAYMENT – GENERAL

- A. Progress Payment Application: The Authority, no later than 25th day of each month, shall prepare a progress payment estimate based on the estimated percentage of completion of work in the approved Schedule of Values and on the Contractor's actually incurred allowable expenses on such work. Fabricated materials, materials on site but not installed in construction and work items not completed shall not be included in progress payment and will not be paid by the Authority. The Authority will issue the progress payment, in the amount it deems appropriate, by approximately the 15th days of the following month.
- B. Application for progress payments and partial progress payments shall be in accordance with Contract General Provision and the approved Schedule of Values.
- C. The Contractor shall submit the progress payment application prepared by the Authority and signed by the Contractor's authorized representative and furnish an invoice for further process based on a schedule to be established at the preconstruction meeting. Submit other documentation such as certified payroll, monthly labor utilization form, and waivers as required by contract.
- D. For the final payment, OCTA shall determine if all Work of the Contract has been performed by the Contractor according to the provisions of the Contract. OCTA shall make a final estimate and determine the amount remaining due the Contractor. This amount shall include any amounts withheld from previous estimates, but exclude any and all deductions that have been or should be made at the time under other sections of these Specifications.

1.05 WORK AUTHORIZATION CHANGE NOTICE WORK

A. Measurement and payment of Work associated with a Work Authorization Change Notice (WACN) shall be as detailed in the OCTA's Exhibit A.

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

Not Used.

PART 4 - MEASUREMENT AND PAYMENT

Not Used.

END OF SECTION

SECTION 01 31 00

PROJECT MANAGEMENT AND COORDINATION

PART 1 – GENERAL

<u>1.01 SUMMARY</u>

A. Section Includes:

- 1. Administrative provisions for coordinating construction operations on project including, but not limited to, the following:
 - a. General project coordination procedures.
 - b. Administrative and supervisory personnel.
 - c. Project meetings.
- B. Contractor is responsible for coordination with OCTA selected material suppliers and contractors involved in the project.

C. Related Sections:

- 1. Section 01 32 00, Construction Progress Documentation, for preparing and submitting Contractor's construction schedule.
- 2. Section 01 43 01, Contractor Qualifications and Requirements, for required staff and qualifications.
- 3. Section 01 71 23, Field Engineering, for procedures for coordinating general installation and field-engineering services, including establishment of benchmarks and control points.
- 4. Section 01 77 00, Closeout Procedures, for coordinating closeout of the contract.
- 5. Individual specification sections for normal startup, testing, and adjusting procedures required.

1.02 COORDINATION

A. Coordination: Coordinate construction operations with those of other OCTA selected material suppliers and contractors. Coordinate construction operations included in different sections of the specifications to ensure efficient and orderly installation of each part of the work. Coordinate construction operations, included in different

sections, which depend on each other for proper installation, connection, and operation. Contractor is responsible for progress and performance of the work, and shall provide direction to others as required to properly coordinate trades and processes.

- 1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the work depends on installation of other components, before or after its own installation.
- 2. Coordinate installation of different components to ensure maximum performance and accessibility for required maintenance, service, and repair.
- 3. Make adequate provisions to accommodate items scheduled for later installation.
- 4. Coordinate equipment installation requirements with equipment contractors to prevent delays and facilitate proper installation. Acknowledge, accommodate, and respect equipment contractors' needs for access to the work for the periods required to complete equipment installation. Incorporate these periods into the construction progress schedule and work plan before commencing work.
- B. Prepare memoranda for distribution to each party involved (including OCTA and separate contractors and suppliers) outlining special procedures required for coordination. Include such items as required notices, actions, reports, and list of attendees at meetings.
- C. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities and activities of other contractors to avoid conflicts and to ensure orderly progress of the work. Such administrative activities include, but are not limited to, the following:
 - 1. Preparation of Contractor's construction schedule.
 - 2. Preparation of the schedule of values.
 - 3. Installation and removal of temporary facilities and controls.
 - 4. Delivery and processing of submittals.
 - 5. Progress meetings.
 - 6. Pre-installation conferences.
 - 7. Commissioning, Startup and adjustment of systems.
 - 8. Training activities.
 - 9. Project closeout activities.

D. Conservation: Coordinate construction activities to ensure that operations are carried out with consideration given to conservation of energy, water, and materials. Coordinate use of temporary utilities to minimize waste.

1.03 KEY PERSONNEL

- A. Key Personnel Names: Within 5 days of date of Notice to Proceed, submit a list of key personnel assignments, including superintendent and other personnel in attendance at project site. Conform to requirement of Section 01 43 01 Contractor Qualifications and Requirements. Identify individuals and their duties and responsibilities; list addresses and telephone numbers, including home, office, and cellular telephone numbers and email addresses. Provide names, addresses, and telephone numbers of individuals assigned as standbys in the absence of individuals assigned to project.
 - 1. Post copies of list in project meeting room and in temporary field office. Keep list current at all times.

1.04 INITIAL CONSTRUCTION MEETING

- A. The OCTA will schedule the Initial Construction Meeting (Pre-construction meeting) after the Contractor has been provided the written Notice to Proceed.
- B. OCTA will distribute a notice of this meeting, along with an agenda of the subjects to be addressed at least one (1) work day prior to the meeting.
- C. Contractor's Construction Project Manager and key staff, as defined in Section 01 43 01, and as identified per the requirements of 1.03, shall attend the meeting.
- D. The following is a minimum agenda for the Initial Construction Meeting:
 - 1. OCTA will explain and discuss:
 - a. Insurance, laws, codes, maintenance of traffic, permits, quality control, inspection, and related items.
 - b. Preparation, submittal, and review of Site Specific Work Plans (SSWP)
 - c. Procedures for processing RFI's and Submittals
 - d. Monthly estimate cutoff dates, and procedures for processing Applications for Payment.
 - e. Distribution of the contract documents.

- f. Preparation of record documents.
- g. Use of the premises.
- h. Work restrictions and permitted working hours.
- i. Owner's occupancy requirements.
- i. Responsibility for temporary facilities and controls.
- k. Procedures for disruptions and shutdowns.
- I. Construction waste management and recycling.
- m. Parking availability.
- n. Areas available for Contractor's Office, work, and storage areas.
- o. First aid.
- p. Security.
- q. Progress cleaning.
- r. Level 3 Health, Safety and Environmental Specifications.
- 2. The Contractor shall introduce, explain, and discuss the following:
 - Contractor's representatives and personnel, briefly describing each person's responsibilities, and furnishing complete contact information for the Contractor's staff.
 - b. Arrangements for safety, first aid, emergency actions, and security.
 - c. A list of Subcontractors and suppliers.
 - d. Sequence of critical Work, the construction schedule and the submittal schedule.
 - e. Plan for construction sequencing of entire Contract, general worksite layout, temporary facilities, erosion and sedimentation control plans, haul routes, noise, air and water pollution control and temporary closure plans.
 - f. Breakdown of lump sum items and Schedule of Values.
 - g. Status of coordination and notification for utility Work.
 - h. Locations and use of office, storage, parking and construction areas.

- i. Method of providing security to the Worksite.
- j. Construction methods and coordination of Work within the provisions of the Contract Documents.
- k. Coordination with the Work of Subcontractors and procedures for sharing access to the Worksite.
- I. Plan for deliveries of major construction equipment and deliveries of long lead-time materials and products needed in the construction of this Contract.

1.05 PROGRESS MEETINGS

- A. Progress meetings will be scheduled by OCTA on a weekly basis and more often as necessary. OCTA will make every effort to accommodate the Contractor's availability in establishing the meeting schedule.
- B. Attendees: In addition to OCTA and representatives of the Contractor, subcontractors, suppliers, and other entities concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the meeting shall be familiar with project and authorized to conclude matters relating to the work.
- C. Meetings will focus on the competent and timely execution of the Work under the Contract. The OCTA will chair these meetings. Weekly site meetings will start when Contract Work commences. At the weekly meetings the Contractor shall present a review of the following topics:
 - 1. Safety and accidents.
 - 2. Contractor's Schedule status.
 - 3. Progress according to the current approved schedule.
 - 4. Presentation of new 28-day schedule.
 - 5. Critical activities on the 28-day schedule.
 - 6. OCTA's needs and requests
 - 7. Specific late items of Work.
 - 8. Overall Project schedule status.
 - 9. Contract time.

- 10. Public impacts, notifications, and contacts.
- 11. RFI, submittal and change order logs and status.
- 12. Contract Issues including:
 - a. Status of proposal requests.
 - b. Pending changes.
 - c. Status of Change Orders.
 - d. Pending claims and disputes.
 - e. Documentation of information for payment requests.

1.06 PRE-INSTALLATION CONFERENCES:

- A. Contractor shall conduct a pre-installation conference at Project site before each construction activity that requires coordination with other construction, as required in individual specification sections.
- B. Attendees: Installer and representatives of manufacturers and fabricators involved in or affected by the installation and its coordination or integration with other materials and installations that have preceded or will follow, shall attend the meeting. Advice OCTA of scheduled meeting dates.
- C. Suggested Agenda: Review progress of other construction activities and preparations for the particular activity under consideration, including requirements for the following:
 - 1. Contract Documents.
 - 2. Options.
 - 3. Related RFIs.
 - 4. Purchases.
 - 5. Deliveries.
 - 6. Submittals.
 - 7. Review of any required mockups.

- 8. Possible conflicts.
- 9. Compatibility problems.
- 10. Time schedules.
- 11. Weather limitations.
- 12. Manufacturer's written recommendations.
- 13. Warranty requirements.
- 14. Compatibility of materials.
- 15. Acceptability of substrates.
- 16. Installation procedures.
- 17. Coordination with other work.
- 18. Required performance results.
- 19. Protection of adjacent work.
- D. Contractor shall record significant conference discussions, agreements, and disagreements, including required corrective measures and actions.
- E. Reporting: Distribute minutes of the meeting to OCTA, each party present and to other parties requiring information.
- F. Do not proceed with installation if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of the work and reconvene the conference at earliest feasible date.

1.07 PROJECT CLOSEOUT MEETING:

- A. OCTA will schedule and conduct a project closeout conference, at a time convenient to Contractor, but no later than 15 calendar days prior to the scheduled date of Substantial Completion. The conference will review requirements and responsibilities related to project closeout.
- B. Attendees: OCTA, Contractor's key personnel, major subcontractors and other concerned parties shall attend the meeting. Participants at the meeting shall be familiar with project and authorized to conclude matters relating to the work.

- C. Agenda: OCTA will introduce and discuss items of significance that could affect or delay Project closeout, including the following:
 - 1. Preparation of record documents.
 - 2. Procedures required prior to inspection for Substantial Completion and for final inspection for acceptance.
 - 3. Submittal of written warranties.
 - 4. Requirements for preparing operations and maintenance data.
 - 5. Requirements for demonstration and training.
 - 6. Preparation of Contractor's punch list.
 - 7. Procedures for processing Applications for Payment at Substantial Completion and for final payment.
 - 8. Final Submittal procedures.
 - 9. Coordination of separate contracts.
 - 10. Owner's partial occupancy requirements.
 - 11. Installation of Owner's fixtures, and equipment.
 - 12. Responsibility for removing temporary facilities and controls.

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

3.01 REPORTING

A. Minutes: OCTA Project Manager will record significant discussions and agreements achieved at all conference chaired by OCTA Project Manager, including initial construction meeting, progress meetings and project closeout meeting. OCTA Project Manager will distribute the meeting minutes to everyone concerned within five (5) working days of the meeting.

PART 4 - MEASUREMENT AND PAYMENT

No separate measurement or payment shall be made under this section.

END OF SECTION

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SECTION 01 32 00

CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 - GENERAL

1.01 DESCRIPTION

- A. This Section specifies the requirements for preparation of a preliminary schedule, a Contractor's Progress Schedule, related narratives, and progress reporting.
- B. The reports and schedules shall be designed to:
 - 1. Assure adequate planning and execution of the Work so that the Work is completed within the number of calendar days allowed in the Contract
 - 2. Assist the Contractor and OCTA Project Manager in appraising:
 - a. The attainability of the proposed schedule.
 - b. Conformance to contract requirements.
 - c. The progress of Work.
- C. For all schedules and scheduling requirements/activities related to this Contract, the Contractor shall utilize Primavera Project Planner version 7 or later, or Microsoft Project software as directed by the OCTA Project Manager.

1.02 SUBMITTALS

- A. Submit the following information under the provisions of 01 33 00, Submittal Procedures. All electronic file submittals shall include the entire schedule, which is typically provided by utilizing the file backup routine in the software. Electronic submittals shall be on read-only compact disc (CD-ROM) media.
 - 1. Construction Schedule (with narrative) in print and electronic format.
 - 2. Contractor's Progress Schedule in print and electronic format.
 - 3. Weekly Progress Reports (28 day schedule) in print and electronic format.
- B. Milestones, as specified in the Contract Documents, shall be incorporated into all areas of the scheduling process.

1.03 CONTRACTOR'S CONSTRUCTION SCHEDULE (BASE SCHEDULE)

- A. Within five (5) calendar days of the Notice to Proceed, the Contractor shall prepare and submit to the Engineer for approval a detailed schedule of work. This schedule shall indicate the areas in which the Contractor anticipates working and the dates during which construction operations will be performed. All submittals by the Contractor shall be listed as separate activities in the schedule. The Contractor shall submit three (3) hard copies and a PDF file of the schedule to the Engineer for approval.
- B. The detailed schedules shall be of the bar chart or network diagram method, at the Contractor's option. The schedule shall be comprehensive, covering activities at the site of the work, procurement, and construction.
- C. The schedule shall identify work items or Milestones that affect or are affected by OCTA Project Manager, other utilities, and other third parties including Subcontractors.
- D. The work activities making up the schedule shall be of sufficient detail to assure that adequate planning has been done for proper execution of the Work and such that, in the judgment of the OCTA Project Manager, it provides an appropriate basis for monitoring and evaluating the progress of the Work. A work activity is defined as any activity requiring time and resources (manpower, equipment and/or material) to accomplish. Activity durations will be in workdays. Typical construction activity durations should be between 3 and 14 workdays. Exceptions may be reviewed by the OCTA Project Manager where sub-schedules will be used to define critical portions of prime schedules, materials delivery, key submittals, etc. Activities shall include but not necessarily be limited to the following:
 - 1. Project mobilization.
 - 2. Submittal and review of plans and procedures.
 - 3. Procurement of Materials.
 - 4. Each item of Work.
 - 5. Final cleanup.
 - 6. Final inspection.
 - 7. All activities by Contractor, OCTA Project Manager, and others, which affect progress or required dates for completion, or both, for each part of the Work.
 - 8. Release of areas to OCTA Project Manager according to Milestone Dates.
- E. Other requirements that shall be incorporated into the Contractor's schedule include
 - 1. Division of Work into major work areas (i.e. Areas 1, 2, etc.).

- 2. Manpower required to perform the Work in total man-hours by craft for each activity.
- 3. All activities that require unusual shift work, such as two shifts, 6-day workweek, etc. shall be clearly identified in the schedule.
- F. Each activity shall be labeled with an alphanumeric work breakdown structure/sorting/selection code.
- G. The sequence, duration in workdays, and interdependence of activities required for the complete performance of all work shall be shown.
- H. The schedule shall begin with the date of the Notice to Proceed and conclude with the date of Final Completion shown in the Contract.
- I. The network diagram shall include the following:
 - 1. Time scaled network diagrams based on calendar days and shall be critical path method (CPM) precedence format showing the sequence/interdependence of activities required for complete accomplishment of all items of work.
 - 2. Each activity shall be plotted so that the start/finish dates can be determined graphically (by comparison) with the calendar scale.
 - 3. All network diagrams shall be drawn legibly and accurately on 22" x 34" size media, or other size acceptable to the OCTA Project Manager.
 - 4. Each activity shall be labeled with complete description, planned duration in workdays, and total float time.
 - 5. The schedules shall accurately indicate the sequence and interdependency of all work activities.

1.04 CONTRACTOR'S PROGRESS SCHEDULE

- A. The Contractor shall update the Progress Schedule monthly (the "Schedule Update") and submit to the OCTA Project Manager for review concurrent by the 5th of the month following month for which the progress reflected on schedule.
- B. Progress Payment to Contractor will not be made until a schedule conforming to the requirements stated herein is submitted each month to the OCTA Project Manager. A continued failure to supply such schedule data shall be grounds for declaring Contractor in default of the Contract.
- C. Contractor's progress schedule shall:
 - 1. Become an integral part of the Contract and will establish interim completion dates for the various activities under the Contract and shall reflect and be consistent with the Milestone Dates established by the Contract.

- 2. Be used to determine if any activity is not completed by the Milestone date.
- 3. Be combined with the Schedule of Values for use in the Contractor's submittal/application for and the OCTA Project Manager's review and approval of monthly partial payments.

1.05 PROGRESS REPORTING

- A. Contractor shall provide regular progress reports monthly along with progress schedule submittal to include as described herein.
- B. A statement that the approved Contractor's Progress Schedule has not changed or has been revised. Only the revisions described in this statement shall be made to the progress schedule.
- C. A 28-day schedule covering the past week, current week and two weeks ahead at each scheduled weekly meeting. The schedule shall be a bar chart schedule, divided into 28 calendar days, listing all activities for the four-week period. Scheduled and actual start and finish dates shall be shown. Each activity shall be identified by its approved activity number and a brief description. The bar chart schedule shall have in the heading the Project Title, Contract Number, Contractor's Name, Date, Contract Day Number and Remaining Contract Days.

1.06 PROGRESS EVALUATION

- A. If at any time during the Project, the Contractor fails to complete any activity by its latest scheduled completion date and which late completion of such activity will impact the end date of the work past the Contract Completion Date, Contractor shall within five (5) working days, submit to the OCTA Project Manager a written statement as to how and when Contractor will reorganize his work force to return to the current Contractor's construction schedule. Whenever it becomes apparent from progress evaluation and updated construction schedule data that any Milestone Date(s) or the Contract Completion Date will not be met, Contractor, at his sole cost, shall take some or all of the following actions:
 - 1. Increase construction manpower in such quantities and crafts as shall substantially eliminate the backlog of work and meet the current Contract Completion Date.
 - Increase the number of working hours per shift, the number of shifts per day, the number of work days per week, the amount of construction equipment, or any combination of the foregoing sufficient to substantially eliminate the backlog of work.
 - 3. Reschedule work items to achieve concurrent accomplishment of work activities.

- B. Under no circumstances will the addition of equipment or construction forces, increasing work hours, or any other method, manner, or procedure required to return to the contractually required completion date be considered justification for a change order or treated as an acceleration.
- C. The Contractor's Progress Schedule shall begin with the date of issuance of the Notice to Proceed (NTP) and conclude with the date of final completion of the project. Float or slack time within the Progress Schedule is not for the exclusive use or benefit of either the OCTA Project Manager or the Contractor but is a jointly owned expiring project resource available to both parties as needed to meet contract milestones and the Contract completion date.

1.07 SUBMITTAL OF SCHEDULES

- A. The Contractor shall submit to the OCTA Project Manager for review, two (2) copies of the construction schedule (base schedule) within time frame specified herein. Allow OCTA a minimum of 2 weeks to review the construction schedule. Contractor shall address OCTA's comments on schedule and resubmit within five (5) workdays from receipt of OCTA' comments.
- B. The Contractor shall submit to the OCTA Project Manager for review two (2) hard copies of the Contractor's Progress Schedule, one (1) copy of all schedule data, along with one electronic copy within the time frames specified herein. Updates of the Contractor's schedule shall be submitted monthly as part of the payment application submittal.
- C. OCTA Project Manager will have five (5) workdays after receipt of the Contractor's Progress Schedule to respond. Upon receipt of OCTA Project Manager's comments, the Contractor shall confer with the OCTA Project Manager on the appraisal and evaluation of the proposed Contractor's Progress Schedule. The Contractor shall make necessary changes resulting from this review, and the Contractor's Progress Schedule shall be resubmitted for review within three (3) workdays after the receipt of comments.
- D. The Contractor's construction schedule (base schedule) when reviewed and recognized by the OCTA Project Manager shall stand until updated schedules are submitted to reflect actual completed work, reviewed changes, or recognized delays.
- E. All updated or revised schedules submitted after the base schedule shall be in the same detail as the base submittal unless modified in writing by the OCTA Project Manager.

1.08 REVISIONS TO REVIEWED SCHEDULE

A. The Contractor shall accomplish the Work in accordance with Contractor's construction schedule recognized by the OCTA Project Manager. Changes made to

- Contractor's construction schedule for accomplishing the Work shall in all cases require prior approval by the OCTA Project Manager.
- B. The Contractor shall reflect processed Change Orders that affect the schedule, and issuance of emergency change authorizations in the next schedule submittal.
- C. If Contractor desires to make a major change to Contractor's construction schedule, the Contractor shall submit to the OCTA Project Manager a schedule change request in writing stating the reasons and justification for the change, for OCTA's review and acceptance. Major changes are defined as follows:
 - 1. Those that affect the time estimate for the accomplishment of an activity.
 - 2. Those that affect the sequence when varied from the original schedule to a degree that there is doubt that the agreed Contract Completion Date will be met.
 - Changes to activities having adequate float to absorb the change shall be considered as minor changes, except that an accumulation of minor changes may be considered a major change when the effect of such changes impact the Project Milestones or the Contract Completion date.

PART 2 - PRODUCTS

Not used.

PART 3 – EXECUTION

Not Used

PART 4 - MEASUREMENT AND PAYMENT

A. No separate measurement or payment shall be made under this section. Contractor's Progress Schedule will be reviewed each month. The monthly progress payment will not be made until the Contractor's Progress Schedule is found by the OCTA Project Manager to be in conformance with the requirements of this Section.

END OF SECTION

SECTION 01 33 00

SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.01 DESCRIPTION

A. This Section consists of requirements for Contractor submittals to the OCTA Project Manager including plans, procedures, certificates, shop drawings, product data, samples, and miscellaneous Work-related submittals. Individual submittal requirements are specified in the applicable specification section for each unit of Work. No construction work shall be commenced prior to submittals and acceptance of all submittals and shop drawings required per contract documents.

1.02 **DEFINITIONS**

- A. Submittals are categorized for convenience as follows:
 - 1. Plans and Procedures: Include narrative descriptions, diagrams, equipment, procedures for excavation, demolition, site clearing, maintenance of traffic, etc.
 - 2. Certificates: Include certified material test reports, certification of proper disposal of demolition materials, or tickets demonstrating compliance with materials, tests or specifications indicated.
 - 3. Equipment: Include equipment specifications, manufacturer information and demonstration of suitability of equipment for intended use.
 - 4. Product Data: Standard published information ("catalog cuts") and specially prepared data for the Work of the Contract, including standard illustrations, schedules, brochures, diagrams, performance charts, instructions and other information to illustrate a portion of the Work. Include standard printed information on materials, products and systems to be furnished by the Contractor for this Contract.
 - 5. Shop Drawings: Include detailed manufacturing and layout information, drawings, diagrams, schedules, and illustrations, demonstrating the contractor's understanding and approach to meeting the intent of the plans and specifications. Shop drawings shall be submitted to the Engineer for review and comment on the conformance of the submitted information to the general intent of the design.
 - 6. Samples: Include physical examples of materials either for limited visual inspection or selection, or (where indicated) for confirmation, testing, and analysis by the OCTA Project Manager.

- 7. Miscellaneous Submittals: Such submittals shall be related directly to the Work, not administration related. Include but not be limited to asphalt concrete mix design, work schedule, phasing plans, warranties, guarantees, maintenance agreements, workmanship bonds, survey data and reports, physical work records, quality testing and certifying reports, copies of industry standards, record drawings, field measurement data, operating and maintenance materials, overrun stock (and similar information) and, devices and materials applicable to the Work but not processed as shop drawings, product data or samples. Beside the shop drawings required in the project plans or specifications, the OCTA Project Manager may require additional shop drawings demonstrating the contractor's approach to meeting the intent of the plans and specifications as a part of Quality Control/Quality Assurance.
- B. Product data, shop drawings, samples, and any other submittals are not contract documents.

1.03 SCHEDULE OF SUBMITTALS

- A. It is the Contractor's responsibility to identify the submittals that will be required in each section of specifications and on the contract drawings and determine the date on which each submittal will be made. The submittal schedule, the timeline for which Contractor plans to deliver required submittals to OCTA shall be submitted by the Contractor at time of initial construction meeting to the OCTA Project Manager for review and acceptance. Allow OCTA a minimum of 14 calendar days to review Schedule of Submittal. After review and return by the Engineer, resubmit Schedule of Submittal within 7 calendar days.
- B. Throughout the duration of the Contract, Contractor shall, at the OCTA Project Manager's request, submit all product or procedure documentation for any activity in the Contract.

1.04 GENERAL SUBMITTAL REQUIREMENTS

- A. Administrative Requirements for Submittal: Submittals shall be made in accordance with requirements specified herein and in Product Sections of the Specifications.
- B. Transmission of Submittals: Transmit all submittals through the Project Engineer, unless otherwise directed. Include all information specified below for identification of submittals and for monitoring of review process.
- C. Make submittal at time required per the contract documents and per the Submittal Schedule accepted by the OCTA. Allow three (3) weeks for the OCTA's Consultant to review and accept submittals.
- D. OCTA Project Manager and Contractor shall discuss at the initial construction meeting, the exact procedure to be adopted for the processing of submittals. Generally, submittals shall be made at the time indicated in Contractor's approved

submittal schedule. OCTA Project Manager will process submittals within 21 calendar days after receipt of each of submittals and within 14 calendar days after receipt of each of resubmittals from Contractor. After review and return by the Engineer, resubmit the submittals within 7 calendar days.

- E. Contractor shall be responsible for on time delivery and processing of submittals so as not to impede the progress of the Work. Contractor shall submit an electronic copy of each submittal in PDF format, plus up to three (3) hard copies of each submittal if requested by OCTA.
- F. Contractor shall provide, unless otherwise indicated, five (5) hard copies of each submittal.
- G. Contractor shall, before making submittals, ensure that products will be available in the quantities and in the time required by the Contract.
- H. Contractor shall coordinate and sequence different categories of submittals for same work, and interface units of work, so that one will not be delayed for coordination with another.
- I. Contractor shall maintain a file of all approved submittal documents on work site.
- J. Where required by California law, or as specified in the Contract Documents, submittals shall be signed and sealed by a Professional Engineer licensed in the State of California, or Land Surveyor licensed in the State of California as applicable.
- K. Submittals shall be consecutively and uniquely numbered using a document identifier including Contract number and the appropriate suffix, which will include specification section number and submittal number. Submittals under each specification section shall be in a separate package.
- L. Submittals Identification: Identify each submittal by Specification Section number in order of submittal submitted to OCTA starting from 001 as the first submittal. Resubmittals shall use same number as original submittal, followed by a point number indicating sequential re-submittal. For example:

001	First submittal of the project
002	Second submittal of the project
002.1	First re-submittal of second submittal of the project
002.2	Second re-submittal of second submittal of the project

- 1. Title each submittal with Project name, the Contract number (C-X-XXXX), Submittal number, Contractor's Project number and submission date.
- 2. Identify each element on submittal by reference to Drawing sheet number, detail, schedule, number, assembly or equipment number, Specifications article and

paragraph, and other pertinent information to clearly correlate submittal with Contract Drawings. Identify field dimensions clearly and relationships to adjacent or critical features of Work, any deviations from the contract documents and applicable standards, ASTM, ACI, OSHA, ect.

- M. Contractor's review of submittals: Prior to submission to the Engineer for review, Contractor shall review each submittal for completeness and conformance to specified requirements. Contractor shall stamp each submittal with a review action stamp and sign each copy certifying that:
 - 1. Field measurements have been determined and verified.
 - 2. Field construction criteria have been verified.
 - 3. Catalog numbers and similar data are correct.
 - 4. Conformance with requirements of Contract Drawings and Specifications is confirmed.
 - 5. All deviations from requirements of Drawings and Specifications have been identified and noted, and product is available.
- N. Submittals which are received from sources other than through Contractor's office or which have not undergone Contractor's review, will be returned marked "Without Action".
- O. Contractor shall be responsible for timely delivery of submittals in the proper specified format for each submittal category.
- P. Except as otherwise indicated in individual work sections, the Contractor shall comply with requirements specified herein for each indicated category of submittal.
- Q. The Contractor shall include an up-to-date log of submittals in each submittal package.
- R. Grouping of Submittals: Unless otherwise specifically permitted by the Engineer, make all submittals in groups containing all associated items. The Engineer may reject partial submittals as incomplete or hold them until related submittals are made. Submittals under a specification section shall be in one submittal package.
- S. Unsolicited Submittals: Unsolicited submittals will be returned un-reviewed.
- T. Record Submittals: When record submittals are specified, submit three hard copies or sets only. Record submittals will not be reviewed but will be retained for historical and maintenance purposes.

1.05 CITY PLAN CHECK DRAWINGS AND SHOP DRAWINGS

- A. Contractor shall submit to OCTA a full size hard copy and an electronic copy in PDF format of all approved plan check permit drawings issued by the local City, immediately after obtaining the plan check permits drawings from the City.
- B. Shop drawings shall be prepared using AutoCAD. Unless otherwise approved by the OCTA Project Manager or indicated in specific sections of the project specific specifications, shop drawings shall be scaled sufficiently large to accurately show all pertinent aspects of the item and its relationship to the work. Acceptable shop drawings hard copy sizes are 22" x 34", 11" x 17" and 8½" x 11" and are scalable. The Contractor shall additionally submit the shop drawing on electronic media in PDF format and in AutoCAD format compatible with AutoCAD version 2012.
- C. Shop drawings shall be original drawings prepared for submittal review, fabrication and execution of Work. Direct copies and modified reproductions of Contract Drawings will not be accepted for review. Provide space for review action stamps. Contractor shall field verify all existing conditions and all measurements on site before preparing and submitting shop drawings.
- D. Shop drawings shall show, at a minimum, the following:
 - 1. General project information:
 - a. The original date of issue;
 - b. The dates of all applicable revisions;
 - c. The project title, project number, and address;
 - d. The names of contractor, subcontractors, suppliers, manufacturers, separate detailers, etc...
 - 2. Detailed manufacturing and layout information.
 - 3. Drawings, diagrams, schedule and illustrations.
 - 4. Bill of materials including materials types, dimensions and weights, quantities, origin of the materials, material certifications.
 - 5. Welding procedure specifications.
 - 6. Erection or installation plans.
 - 7. Any other important items related to specific work of the Project and as requested by the OCTA's Project Manager.
- E. Detailed work drawings shall be submitted by Contractor for temporary structures and for such other temporary work as may be required for construction, but which

does not become an integral part of the completed project. Submittals shall include back-up calculations or any information needed to explain the structure or system or its intended use.

- F. Where a submittal involves engineering computations or original design work is depicted, the submittal shall show the name, the State of California registration number, seal, and signature of the Professional Engineer certifying that such computations or design work are correct and in conformance with standards, codes, and acceptable engineering practice.
- G. Contractor shall submit 5 hard copies and a PDF file of each shop drawing submittal. Distribution of submitted shop and working drawings by Contractor for OCTA Project Manager's use will be performed by OCTA Project Manager. Review comments of OCTA Project Manager, and other parties as may be required will be shown on the reproducible set when it is returned to Contractor. Contractor shall make and distribute all copies required for his purposes.

1.06 PRODUCT DATA

- A. Contractor shall collect required data into one submittal for each unit of work or system, and mark each copy to show which choices and options are applicable to the Project.
- B. Contractor shall include the manufacturer's standard printed recommendations for application and use, certification of compliance with standards, notation of field measurements, which have been checked, and special coordination requirements. A Material Safety Data Sheet (MSDS) shall be submitted for each product.

1.07 CERTIFICATES OF COMPLIANCE

- A. Certificates of Compliance shall be submitted by Contractor to OCTA Project Manager for those materials and products for which no samples and test results are specified. The certificates shall:
 - 1. State that the product complies with the respective contract specification and contract drawing requirements.
 - 2. Be accompanied by a certified copy of test results pertaining to the product. All test equipment used shall be verified to be in calibration at the time of each test and test reports shall so indicate. No test shall be made without such verification. When required by the Contract Documents or by law, certified test results shall be sealed by a Professional Engineer licensed to practice in the State of California.
 - 3. Show product represented and its location in the Contract, producer's name, product trade name and catalog number as applicable, place of product origin,

test date, testing organization's name and address, quantity of the product to be furnished, and the related Contract Drawing and specification section numbers.

1.08 SAMPLES

- A. Provide samples of each color, texture and pattern identical with final condition of proposed materials or products for the work. Include range of samples (not less than three units) where unavoidable variations may be expected. Submit one item only of actual assembly or product. Full-size and complete samples may be returned or may be incorporated into field mock-up and the Work.
- B. Submit actual samples. Photographic or printed reproductions will not be accepted. For manufacturer's products, the Contractor shall submit samples from manufacturer, with manufacturer's finish.
- C. Include information with each sample showing generic description, source or product name, manufacturer and compliance with standards and specifications.
- D. Samples are submitted for review and confirmation by OCTA Project Manager. The Engineer will review and select material for Project only after all samples are received, so that materials may be probably coordinated. OCTA Project Manager will not test samples (except as otherwise indicated) for compliance with specifications. Contractor shall have the exclusive responsibility of demonstrating material compliance.

1.09 SURVEY DATA

A. As required per contract documents and/or by OCTA Project Manager, Contractor shall submit survey data, signed and sealed by a Land Surveyor licensed to practice in the State of California. Refer to Section 01 71 23, Field Engineering for requirements.

1.10 GENERAL DISTRIBUTION

- A. Contractor shall provide distribution of OCTA Project Manager's reviewed submittals (not included in foregoing copy submittal requirements) to subcontractors, suppliers, fabricators and installers, governing authorities, and others as necessary for proper performance of the Work.
- B. Contractor shall include such additional copies of transmittal to OCTA Project Manager, where required, to receive status marking before final distribution.

1.11 REVIEW OF SUBMITTALS

- A. Submittals shall be a communication aid between Contractor and the Engineer by which interpretation of Contract Documents requirements may be confirmed in advance of construction. OCTA Project Manager will review submittals for general conformance with the design concept only. Such review by OCTA Project Manager shall not relieve Contractor or any subcontractor of responsibility for full compliance with contract requirements, for proper design of details, for proper fabrication and construction techniques, for proper coordination with other trades, or for providing all devices required for safe and satisfactory construction and operation.
- B. Changes shall only be authorized by separate written Change Order or Construction Change Authorization, in accordance with the Conditions of the Contract and Section 01 26 00 Contract Modification Procedures.

1.12 SUBMITTAL STATUS

- A. Submittals reviewed by OCTA Project Manager and returned to Contractor will be marked with one of the following designations:
 - 1. Conforms
 - 2. Revise as Noted and Resubmit
 - 3. Rejected. Resubmit
 - 4. No Action Taken
- B. Contractor shall not proceed with procurement, manufacture or fabrication of items submitted for review, until such submittals have been designated by OCTA Project Manager as "Conforms". Until submittal items receive a conforming designation by OCTA Project Manager, any costs associated with procurement for these items shall be at the Contractor's risk.

1.13 SUBMITTALS DESIGNATED AS "CONFORMS"

- A. Each copy of the submittal so designated by OCTA Project Manager will be identified accordingly by being so stamped and dated.
- B. One reproducible copy will be returned to Contractor.
- C. When a submittal has been designated as "Conforms" by OCTA Project Manager, Contractor shall carry out construction in accordance therewith and no further changes shall be made therein except upon written approval and instructions from OCTA Project Manager.

- D. Contractor shall take responsibility for and bear all cost of damages, which may result from the ordering of any material or from proceeding with any part of the Work prior to submittal being marked "Conforms" by OCTA Project Manager.
- E. Submittals stamped "Conforms" do not relieve the contractor from the responsibility of performance of Work as intended in the plans and specifications. Refer to 1.11 of this Section.

1.14 SUBMITTALS DESIGNATED AS "REVISE AND RESUBMIT," OR "REJECTED. RESUBMIT"

- A. Each copy of the submittal so designated by OCTA Project Manager will be identified accordingly by being so stamped and dated.
- B. One copy will be returned to Contractor.
- C. If corrections to the submittals are required, copies returned to Contractor will be marked "Rejected. Resubmit", or "Revise and Resubmit", and the required corrections shall be made on the re-submittal copies.
- D. Re-submittals will be handled in the same manner as first submittals. Direct specific attention in writing on re-submittals to revisions other than the corrections requested by OCTA Project Manager on previous submittals. A resubmittal shall contain all information required specifically for the submittal per contract documents including corrections requested and approved information in the previous submittals. A resubmittal will supersede the previous version of a submittal and/or resubmittal as applicable. Incomplete or missing information submittals/resubmittals will be returned without review.
- E. Contractor shall notify OCTA Project Manager prior to execution of any correction, which constitutes a change of the contract requirements indicated on the submittals.

1.15 SUBMITTALS DESIGNATED AS "NO ACTION TAKEN"

- A. Each copy of the submittal so designated by OCTA Project Manager will be identified accordingly by being so stamped and dated.
- B. One reproducible copy will be returned to Contractor.
- C. Submittals made by the Contractor that are not required by the contract documents or were not otherwise requested shall be designated "No Action Taken"

PART 2 - PRODUCTS

Not Used.

PART 3 – EXECUTION

Not Used.

PART 4 - MEASUREMENT AND PAYMENT

No separate measurement or payment shall be made under this Section.

END OF SECTION

SECTION 01 35 13

SPECIAL PROJECT PROCEDURES

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Products and installation for patching and extending Work.
- B. Transitions and adjustments.
- C. Repair of damaged surfaces, finishes, and cleaning.

1.02 RELATED SECTIONS

- A. Section 01 35 13 Coordination with OCTA and Local Agencies: Authority occupancy and maintenance of utility services.
- B. Section 01 73 29 Cutting and Patching: General requirements for cutting and patching requirements.
- C. Section 01 50 00 Temporary Facilities and Controls: Temporary enclosures, protection installed Work, and cleaning during construction.

PART 2 - PRODUCTS

2.01 PRODUCTS FOR PATCHING AND EXTENDING WORK

- A. New Materials: As specified in PART 2 PRODUCTS of applicable product Specification Sections, provide suitable products and construction procedures for patching and extending Work.
- B. Type and Quality of Existing Products: Determine by inspection and testing of Products where necessary, referring to existing construction as a standard.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Verify that demolition is complete, and areas are ready for execution of Work.
- B. Beginning of alteration Work will be interpreted to mean that Contractor has examined existing conditions and determined that they are acceptable.

3.02 PREPARATION

A. Coverings:

- Provide weather- and dust-protection coverings as necessary to contain dust and debris. Protect OCTA Property, buses, equipment, utilities, landscaping, and accessories from dust. Provide appropriate covers over all buses parked adjacent to the work area or protect by sprinkling water over work area to control dust.
- 2. Close area of work with barricades to protect existing construction and new Work from traffic, weather, and extremes of temperature and humidity. At end of work day, provide enclosure around work area with flashing lights so that traffic is aware of construction excavations and new work.
- Coordinate construction delineation with barricades, but provide OCTA staff cars buses adequate passage to enable the Authority to continue to pass through to parking areas. Provide Bus passage through construction areas if required. OCTA Facility will remain operational during construction.
- 4. Adjacent bus parking stalls will be used during construction. Provide adequate passage for OCTA buses and staff cars to park in adjacent parking stalls during construction. Do not allow contractor's cars or equipment to park in bus parking stalls adjacent to construction
- 5. See Section 01 50 00 Temporary Facilities and Control for additional requirements.
- B. Protective Devices and Directional Signage: Provide barricades, directional signage and other protective devices to enable the Authority to continue bus operations, bus traffic through construction areas, occupancy and operation in the existing buildings and adjacent parking stalls. See Section 01 50 00 - Temporary Facilities and Control for additional requirements.
- C. Access for Work: Demolish, Cut, move or remove items as necessary for access for alterations, renovation and extension Work. Replace and restore at completion.
- D. Disposal of Materials: Immediately remove unsuitable material not marked for salvage, such as decayed wood, insulation, asphalt concrete, corroded rebar, accessories and other materials as required to complete the work. Replace materials as specified for finished Work.
 - 1. Do not allow debris to accumulate in work areas. Dispose debris daily off-site in a legal manner. Dispose all existing asphalt concrete and accessories that are to be removed, and legally dispose off-site.
 - 2. Remove debris and abandoned items from work area and from parking spaces.

- E. Surface Preparation: Remove surface finishes and prepare surfaces to provide for proper installation of new materials and finishes.
- F. Protection: Protect buses and equipment parked adjacent to construction area from damage.

3.03 INSTALLATION

- A. Coordinate Work for alterations and renovations to expedite completion and to accommodate the Authority's concurrent occupancy and use of the facility.
- B. Coordinate Work for alterations and renovations in a timely manner to expedite completion and minimize disruption to the Authority's continued use occupied areas and spaces. Park all construction equipment and materials inside areas of construction and barricade construction area on all sides at end of work day. Provide flashing lights around work area from dusk to dawn.
- C. Remove, cut, and patch Work in a manner to minimize damage and to provide a means of restoring products and finishes to original or specified new condition. Refer to Section 01 73 29 - Cutting and Patching.
- D. Refinish visible existing surfaces to condition before start of construction. Match adjacent finish surface in color and material. Finish to specified condition for each material, with a near transition to adjacent finishes.
- E. In addition to specified work, in case of breakdown of under or above ground utilities, plumbing, electrical power, signal systems, and lighting, restore to fully operational condition immediately as before construction commenced. All power, and other systems should be operational at end of work day. The plans are diagrammatic and do not show all utilities, ducting, equipment, and accessories on the site. Contractor will be required to repair immediately utilities, ducting, plumbing lines, power lines, signal and communication system, data lines, equipment, and accessories in case of breakdown or disruption due to construction work and as required to complete the work. Review OCTA record drawings of construction area before excavation.
- F. Install products as specified in applicable product specification Sections.

3.04 TRANSITIONS

- A. Where Work abuts or aligns with existing construction, perform a smooth and even transition. Patches shall match existing adjacent construction in texture and appearance.
- When finished surfaces are cut so that a smooth transition is not possible, terminate existing surface along a straight line at a natural line of division. Refer to Section 01 73 29 Cutting and Patching.

3.05 <u>ADJUSTMENTS</u>

- A. Where removal of materials results in adjacent spaces becoming one, rework to a smooth plane without breaks, steps or bulkheads.
- B. Where a change of plane of 1/4-inch or more occurs, submit recommendation for providing a smooth transition for the Engineer's review.
- C. Fit Work at penetrations of surfaces as specified in Section 01 73 29 Cutting and Patching.

3.06 REPAIR OF DAMAGED SURFACES

- A. Replace portions of adjacent existing surfaces which are damaged, lifted, discolored, or showing other imperfections or require replacement or repairs during replacement work. Extent of replacement will be required to nearest construction joint, expansion joint, break line, natural break, or in a straight line. Provide a smooth transition between existing and new surface.
- B. Repair substrate prior to patching finish.
- C. Unless noted otherwise or directed by the OCTA Project Manager, all pavement striping, markings, and markers affected by the construction activities shall be reinstalled to match the existing conditions.

3.07 FINISHES

- A. Finish surfaces as specified in applicable Sections.
- B. Finish patches with material and paint to produce uniform finish and texture over entire area. When finish cannot be matched, refinish entire surface to nearest intersections or joints.

3.08 CLEANING

A. In addition to cleaning specified in Section 01 74 23 - Cleaning, clean the Authority-occupied areas affected by construction activities. Clean areas around the site where asphalt concrete material has fallen during work day. Clean site of work daily before leaving site at end of each work day. Haul debris off-site daily. Clean adjacent bus parking areas daily before leaving site

PART 4 - MEASUREMENT AND PAYMENT

No separate measurement or payment shall be made under this section.

END OF SECTION

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SECTION 01 35 23

OWNER SAFETY REQUIREMENTS

PART 1 - GENERAL

1.01 DESCRIPTION

- A. The Contractor shall comply with OCTA Level 3 Health, Safety and Environmental Specifications in the contract documents.
- B. Work specified in this section consists of furnishing, operating, maintaining, and utilizing safety equipment; providing safety aids on construction equipment; and assuring safe operation. Compliance with requirements of this section shall not relieve Contractor from other obligations imposed elsewhere in contract, by law and by regulation.

1.02 OTHER SECTIONS WITH SAFETY REQUIREMENTS

- A. OCTA Level 3 Health, Safety and Environmental Specifications
- B. Section 01 14 22, Rules and Hours of Operation
- C. Section 01 14 23, Coordination with OCTA and Local Agencies
- D. Section 01 14 25, Procedures in Construction
- E. Section 01 43 01, Contractor Qualifications and Requirements

1.03 REFERENCE STANDARDS

- A. Comply with the provisions of all local, State and Federal codes, specifications, standards and recommended practices, and OCTA Project Manager Policy, in particular:
 - 1. Cal/OSHA: California State Occupational Safety and Health Administration
 - 2. OSHA: Federal Occupational Safety and Health Administration

1.04 QUALITY CONTROL AND QUALITY ASSURANCE

- A. Contractor's selection and operation of construction equipment and tools shall meet requirements of California State and Federal Occupational Safety and Health Administration (Cal/OSHA, OSHA).
- B. If there is a conflict between the above, the most stringent requirement will apply.

1.05 SUBMITTALS

- A. Contractor shall submit, under provisions of Section 01 33 00, Submittals, the following information:
 - 1. Information required by OCTA Level 3 Health, Safety and Environmental Specifications.
 - 2. Safety Data Sheet, per Section 01 14 25, Procedures in Construction.
 - 3. Notification to OCTA Project Manager as soon as reasonably possible of any injury to Contractor's employee, subcontractor of any tier, supplier or other entity engaged in any portion of the work while on OCTA Project Manager property. Contractor shall submit an injury report to OCTA Project Manager within 24 hours of said injury.
 - 4. Other records as required by agencies listed in Part 1.03.

1.06 SAFETY AND HEALTH PERSONNEL

A. Provide a Site Safety Representative, as described in Sections 01 43 01 Contractor Qualifications and Requirements, OCTA Level 3 Health, Safety and Environmental Specifications, and the General Provisions, who shall coordinate and supervise onsite safety and health, including training and testing Contractor's personnel.

1.07 CONSTRUCTION AND SAFETY EQUIPMENT

A. Contractor shall conform to requirements of the OCTA Project Manager, Cal/OSHA, and to applicable codes and regulations of Federal, State, and local authorities having jurisdiction over jobsite safety.

1.08 TESTING EQUIPMENT

A. Testing equipment as applicable to work site safety shall conform to requirements of California Code of Regulations, Title 8, Division of Industrial Safety, unless indicated otherwise.

1.09 IDENTIFICATION OF CONTRACTOR/SUBCONTRACTOR PERSONNEL

A. While performing work at worksite, Contractor personnel of any tier shall be identified with employee's company name or logo affixed to employee's hardhat, identification badge, or other identification acceptable to OCTA Project Manager.

B. Contractor personnel shall wear hard hats, orange safety vests or orange T-shirts with reflective strips, safety glasses, and safety shoes at all times while on the project.

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

Not Used.

PART 4 - MEASUREMENT AND PAYMENT

No separate measurement or payment shall be made under this Section.

END OF SECTION

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SECTION 01 41 00

REGULATORY REQUIREMENTS

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Requirements associated with regulations, standards, and requirements of authorities having jurisdiction.

B. Related Sections:

- 1. Section 01 14 25, Procedures in Construction.
- 2. Section 01 14 27, Legal Relations and Responsibility.

1.02 SUBMITTALS

- A. Submit in accordance with Section 01 33 00, Submittal Procedures.
- B. Before starting the work, submit to OCTA Project Manager copies of permit applications, permits, licenses, receipts for fee payments, judgments, and other similar documents, correspondence, and records obtained for performance of the work.
- C. At completion, submit certifications, releases, jurisdictional settlements, notices and other similar documents under Section 01 77 00, Closeout Procedures.

1.03 APPLICABILITY OF INDUSTRY STANDARDS

- A. Construction Industry Standards referenced in the contract documents have the same force and effect as if published herein and are made a part of the contract documents. Refer to Section 01 42 00 References.
- B. Reference standards (referenced in the contract documents or by governing regulations) have precedence over non-referenced standards that are recognized in the industry for applicability to the work.
 - 1. Building Codes: Performance of the Work shall meet or exceed the minimum requirements of California Code of Regulations (CCR), Title 24, including the following:
 - a. CCR Title 24, Part 2: Uniform Building Code (UBC), latest edition, with State of California amendments; referenced as California Building Code (CBC).

- b. CCR Title 24, Part 3: National Fire Protection Association (NFPA) 13 National Electrical Code (NEC), latest edition, with State of California Amendments, referenced as California Electrical Code (CEC).
- c. CCR Title 24, Part 9: Uniform Fire Code (UFC), latest edition, with State of California Amendments, referenced as California Fire Code (CFC).
- d. CCR Title 24, Part 12: Uniform Building Code Standards (UBC Standards), latest edition, with State of California Amendments; referenced as California Building Standards Code (CBSC).
- 2. Performance of the Work shall also comply with applicable requirements of California Code of Regulations (CCR), as follows:
 - a. Title 19 Public Safety.
 - b. Title 22 Social Security.
 - c. Title 24 Building Standards, Parts 2 through 7, and Title 25 as applicable.
- 3. References on the Drawings or in the Specifications to "code", "Code" or "building code" similar terms, not otherwise identified, shall mean the codes specified above, together with all additions, amendments, changes, and interpretations adopted by code authorities of the jurisdiction having authority over the Project.
- 4. The applicable edition of all codes shall be that adopted at the time of issuance of permits by the jurisdiction having authority and shall include all modifications and additions adopted by that jurisdiction(s).
- C. Recognized industry standards shall be used where no specific standard is referenced in the contract documents. Obtain OCTA Project Manager's approval before using any non-referenced standards.

1.04 GOVERNING REGULATIONS AND AUTHORITIES

- A. Contact authorities having jurisdiction directly for necessary information and decisions having a bearing on performance of the work.
- B. Utility location and protection shall conform to Section 5, Utilities, of the Standard Specifications for Public Works Construction (SSPWC). At each OCTA's property, the contractor shall utilize an independent underground utility locating service, which uses standard locating techniques other than excavating, to identify the location of underground utilities in the areas of the work prior to excavating. The contractor shall determine the exact location of utilities identified in the work area by potholing using hand tools before using any power operated excavating equipment. Utilities now

- shown on the plans which are in direct conflict with the work will be dealt with by change orders.
- C. Comply with requirements under the National Pollutant Discharge Elimination System (NPDES).

1.05 OTHER APPLICABLE LAWS, ORDINANCES AND REGULATIONS

- A. Work shall be accomplished in conformance with all applicable laws, ordinances, rules and regulations of Federal, State and local governmental agencies and jurisdictions, County of Orange, AQMD, CAL-OSHA, and all other agencies having authority over the Project.
- B. Work shall be accomplished in conformance with all rules and regulations of public utilities, utility districts, and public agencies providing utility services.
- C. Where such laws, ordinances, rules and regulations require more care or greater time to accomplish Work, or require better quality, higher standards or greater size of products, Work shall be accomplished in conformance to such requirements with no change to the Contract Sum And Contract Time, except where changes in laws, ordinances, rules and regulations occur subsequent to the execution date of the Agreement.
- D. Contractor shall pay for and obtain all permits required by all agencies having jurisdiction over the work. Contractor shall be required to pay for all temporary utility connections and use to the respective utility company during construction.

1.06 PERMITS

- A. Obtain required permits from regulating agencies. Do not start work in areas requiring permits before issuance of permits from authorities having jurisdiction.
 - 1. Coordinate with regulating agencies to obtain required permits.
 - 2. Submit copies of permit applications and permits to OCTA Project Manager.
 - 3. Comply with permit requirements and assume responsibility for any violations.
- B. Prepare permit applications and obtain permits as necessary for performance of the work, including but not limited to:
 - 1. Maintenance and protection of vehicle traffic.
 - 2. Excavation, dewatering and discharge of surface water and runoff into existing drainage systems or surface waters.
 - 3. Disposal of debris and soils.

- 4. All other activities with potential to adversely affect the environment.
- 5. Written permission from property owner for right of entry onto private property where necessary.

PART 2 – PRODUCTS

Not Used.

PART 3 – EXECUTION

Not Used.

PART 4 - MEASUREMENT AND PAYMENT

4.01 MEASUREMENT

No separate measurement will be made for work of this section.

4.02 PAYMENT

Work of this section is considered incidental to work under other payment item(s) listed in the Schedule of Quantities and Prices and no separate payment will be made.

END OF SECTION

SECTION 01 42 00

REFERENCES

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

- 1. Use of references in Drawings and Specifications, including requirements for copies of reference standards at Project site.
- 2. Abbreviations and acronyms.
- 3. General provisions regarding references.

1.02 USE OF REFERENCES

- A. References: The Drawings and Specifications contain references to various standards, standard specifications, codes, practices and requirements for products, execution, tests and inspections. These reference standards are published and issued by the agencies, associations, organizations and societies listed in this Section or identified in individual product specification Sections.
- B. Relationship to Drawings and Specifications: Such references are incorporated into and made a part of the Drawings and Specifications to the extent applicable.
- C. Referenced Grades Classes and Types: Where an alternative or optional grade, class or type of product or execution is included in a reference but is not identified on the Drawings or in the Specifications, provide the highest, best, and greatest of the alternatives or options for the intended use and prevailing conditions.
- D. Copies of Reference Standards:
 - 1. Reference standards are not furnished with the Drawings and Specifications because it is presumed that the Contractor, subcontractors, manufacturers, suppliers, trades and crafts are familiar with these generally-recognized standards of the construction industry.
 - 2. Copies of reference standards may be obtained from publishing sources.

E. Jobsite Copies:

 Contractor shall obtain and maintain at the Project site copies of reference standards identified on the Drawings and/or in the Specifications in order to properly execute the Work.

- 2. At a minimum, the following shall be readily available at the site:
 - a. Local and State Building Codes: As referenced in Section 01060 Regulatory Requirements.
 - b. Safety Codes: State of California, California Code of Regulations (CCR), Title 8 Industrial Relations, Chapter 4, Subchapter 7, General Industry Safety Orders.
 - c. General Standards: UBC Standards, other model Code standards, UL Building Products Listing, FM Approval Guide and ASTM Standards in Building Codes.
 - d. Fire and Life Safety Standards: All referenced standards pertaining to fire rated construction and exiting.
 - e. Common Materials Standards: American Concrete Institute (ACI), American Institute of Steel Construction (AISC), American Welding Society (AWS), Gypsum Association (GA), National Fire Protection Association (NFPA), Tile Council of America (TCA) and Woodwork Institute of California (WIC) standards to the extent referenced within the Contract Specifications.
 - f. Research Reports: ICBO Evaluation Service (ICBO ES) Research Reports and CABO National Evaluation Service Reports (NER), for products not in conformance to prescribed requirements stated in Building Code.
 - g. Product Listings: Approval documentation, indicating approval of authorities having jurisdiction for use of product with local City.

F. Edition Date of References:

- 1. When an edition or effective date of a reference is not given, it shall be understood to be the current edition or latest revision published as of the date indicated on the Drawings and Specifications.
- 2. All amendments, changes, errata and supplements as of the effective date shall be included.
- G. ASTM and ANSI References: Specifications and Standards of the American Society for Testing and Materials (ASTM) and the American National Standards Institute (ANSI) are identified in the Drawings and Specifications by abbreviation and number only and may not be further identified by title, date, revision or amendment. It is presumed that the Contractor is familiar with and has access to these nationally- and industry-recognized specifications and standards.

1.03 ABBREVIATIONS, ACRONYMS, NAMES AND TERMS, GENERAL

- A. Abbreviations, Acronyms, Names and Terms: Where acronyms, abbreviations names and terms are used in the Drawings, Specifications or other Contract Documents, they shall mean the recognized name of the trade association, standards generating organization, authority having jurisdiction or other entity applicable.
- B. Abbreviations: The following are commonly-used abbreviations which may be found on the Drawings or in the Specifications:

AC or ac Alternating current or air conditioning

(depending upon context)

AMP or amp Ampere C Celsius

CFM or cfm Cubic feet per minute

CM or cm Centimeter CY or cy Cubic yard DC or dc Direct current DEG or deg **Degrees** F Fahrenheit FPM or fpm Feet per minute FPS or fps Feet per second Foot or feet FT or ft Gal or gal Gallons

GPM or gpm
IN or in
Kip or kip
Gallons per minute
Inch or inches
Thousand pounds

KSI or ksi Thousand pounds per square inch KSF or ksf Thousand pounds per square foot

KV or kv Kilovolt

KVA or kva Kilovolt amperes

KW or kw Kilowatt
KWH or kwh Kilowatt hour
LBF or lbf Pounds force
LF or lf Lineal foot
M or m Meter

MPH or mph Miles per hour MM or mm Millimeter

PCF or pcf Pounds per cubic foot PSF or psf Pounds per square foot PSI or psi Pounds per square inch

PSY or psy Per square yard SF or sf Square foot SY or sy Square yard

V or v Volts

- C. Undefined Abbreviations, Acronyms, Names and Terms: Words and terms not otherwise specifically defined in this Section, in the Instructions to Bidders, in the Conditions of the Contract, on the Drawings or elsewhere in the Specifications, shall be as customarily defined by trade or industry practice, by reference standard and by specialty dictionaries such as the following:
 - 1. The American Institute of Architects (AIA) Document M101, "Glossary of Construction Industry Terms".
 - 2. The Construction Specifications Institute (CSI) Technical Document TD 2-4, "Abbreviations".
 - 3. <u>Dictionary of Architecture and Construction</u>, (Cyril M. Harris, McGraw-Hill Book Company, 1975).
 - 4. <u>Encyclopedia of Associations</u>, published by Gale Research Co., available in most libraries.

1.04 ABBREVIATIONS FOR AGENCIES, ASSOCIATIONS, CODES AND STANDARDS

A. Abbreviations for Agencies, Associations, Codes and Standards: The following abbreviations and acronyms may be used in the Drawings and Specifications. When used, the abbreviation or acronym shall mean the full name of the applicable agency, association, organization, society or standard.

AAMA	American Architectural Manufacturers Association
AAR	Association of American Railroads
AASHTO	American Association of State Highway and Transportation Officials
ACI	American Concrete Institute
ADA	Americans with Disabilities Act
ADAAG	Americans with Disabilities Act Accessibility Guidelines
AGA	American Galvanizers Association
AGA	American Gas Association
AHRI	Air-Conditioning, Heating, and Refrigeration Institute
AISC	American Institute of Steel Construction
AISI	American Iron and Steel Institute
AITC	American Institute of Timber Construction
ALSC	American Lumber Standard Committee
AMCA	Air Movement and Control Association International, Inc.
ANSI	American National Standards Institute
APA	APA – The Engineered Wood Association (formerly American Plywood
	Association)
AREMA	American Railway Engineering and Maintenance-of-Way Association
ASCE	American Society of Civil Engineers
ASHRAE	American Society of Heating, Refrigerating, and Air-Conditioning Engineers
ASME	ASME International (formerly American Society of Mechanical Engineers)
ASSE	American Society of Safety Engineers

ASSE	American Society of Sonitary Engineering
ASTM	American Society of Sanitary Engineering
AWI	ASTM International (formerly American Society for Testing and Materials) Architectural Woodwork Institute
AWPA	
AVVPA	American Wood Protection Association (formerly American Wood-Preservers'
AMC	Association)
AWS BHMA	American Welding Society
	Building Hardware Manufacturers Association
Cal/EPA Cal/OSHA	California Environmental Protection Agency
	California Department of Industrial Relations, Division of Occupational Safety and Health
Caltrans	California Department of Transportation, Standard Plans & Specifications 2010 Edition
CBC	California Building Code
CEC	California Electrical Code
CFR	Code of Federal Regulations
CMC	California Mechanical Code
CPA	Composite Panel Association
CPC	California Plumbing Code
CPUC	California Public Utilities Authority
CRI	Carpet and Rug Institute
CRSI	Concrete Reinforcing Steel Institute
DHI	Door and Hardware Institute
DOC	U.S. Department of Commerce
DOT	U.S. Department of Transportation
EPA	U.S. Environmental Protection Agency
FM	FM Approvals
FM	FM Global (formerly Factory Mutual)
FRA	Federal Railroad Administration
FS	Federal Specification
FSC	Forest Stewardship Council
FTA	Federal Transit Administration
GA	Gypsum Association
GANA	Glass Association of North America
HI	Hydraulics Institute
HMMA	Hollow Metal Manufacturers Association
ICC	International Code Council
IEEE	Institute of Electrical and Electronics Engineers
IGCC	Insulating Glass Certification Council
IGMA	Insulating Glass Manufacturers Alliance
ISO	International Organization for Standardization
LBTC	Laguna Beach Transportation Center
LEED	Leadership in Energy and Environmental Design
MPI	Master Painters Institute
MSS	Manufacturers Standardization Society of the Valve and Fittings Industry
NAAMM	National Association of Architectural Metal Manufacturers
NACE	NACE International (formerly National Association of Corrosion Engineers)
NEMA	National Electrical Manufacturers Association

NETA	InterNational Electrical Testing Association
NFPA	National Fire Protection Association
NFPA	National Forest Products Association
NFRC	National Fenestration Rating Council
NHLA	National Hardwood Lumber Association
NSF	NSF International (formerly National Sanitation Foundation)
OSHA	Occupational Safety and Health Administration
PCI	Precast/Prestressed Concrete Institute
PDI	Plumbing and Drainage Institute
PS	Product Standard (US Department of Commerce)
RCSC	Research Council on Structural Connections
RIS	Redwood Inspection Service
RTA	Railway Tie Association
SDI	Steel Deck Institute
SDI	Steel Door Institute
SCRRA	Southern California Regional Rail Authority
SCAQMD	South Coast Air Quality Management District
SMACNA	Sheet Metal and Air Conditioning Contractors' National Association
SPPWC	Standard Plans for Public Works Construction, 2015 Edition
SSPC	Society for Protective Coatings (formerly Steel Structures Painting Council)
SSPWC	Standard Specifications for Public Works Construction, 2015 Edition
TCNA	Tile Council of North America
UL	Underwriters Laboratories Inc.
USDOJ	U.S. Department of Justice
USDOT	U.S. Department of Transportation
USGBC	U.S. Green Building Council
WCLIB	West Coast Lumber Inspection Bureau (stamped WCLB)
WI	Woodwork Institute
WWPA	Western Wood Products Association

1.05 REFERENCE STANDARDS

A. General

- Specifications, standards, and guidelines referenced in the text are incorporated by reference as if fully set forth. Where a referenced standard includes both administrative and technical provisions, and the administrative provisions conflict with the contract documents, only the technical provisions shall apply. If a referenced standard appears to conflict with the drawings and specifications, consult OCTA Project Manager for resolution.
- 2. The governing versions of reference standards and codes are those current at the time of contract execution, including errata, amendments, updates, etc., unless noted otherwise.

- 3. Contractor shall maintain the latest copy of applicable standards at jobsite during submittals, planning and progress of the work. Make standards available for use by OCTA Project Manager upon request.
- 4. Caltrans: Standard Plans and Specifications 2010 Edition.
- 5. Standard Plans for Public Works Construction (SPPWC) 2012 Edition, Standard Specifications for Public Works Construction (SSPWC) 2015 Edition.

B. ADA Standards

- References to ADAAG or the ADA Accessibility Guidelines refer to the ADA [Americans with Disabilities Act] Accessibility Guidelines for Buildings and Facilities, adopted 7/23/04 by the U.S. Access Board, amended 8/5/05, supplemented 3/23/07 reflecting amendments by the U.S. Department of Transportation, available at www.access-board.gov.
- 2. References to USDOT ADA Standards refer to the U.S. Department of Transportation ADA Standards for Transportation Facilities, effective 11/29/06, available at www.access-board.gov.
- 3. References to USDOJ ADA Standards are to the U.S. Department of Justice ADA Standards for Accessible Design, 1994, available at www.access-board.gov, or to new standards (currently pending) if in effect at the time of execution of the contract documents.

PART 2 – PRODUCTS

Not Used.

PART 3 – EXECUTION

Not Used.

PART 4 - MEASUREMENT AND PAYMENT

Not Used.

END OF SECTION

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SECTION 01 42 16

DEFINITIONS

PART 1 - GENERAL

1.01 GENERAL

This Section provides definition of terms cited in the Contract Documents.

1.02 **DEFINITION OF TERMS**

- A. Wherever in the specifications and other Contract Documents, the following terms and abbreviations or pronouns in place of them, are used, the intent and meaning shall be interpreted as provided in this section unless the context otherwise requires.
 - Quality Assurance (QA): The process by which the OCTA Project Manager elects to monitor and assure that it receives proper construction related documentation from the Contractor. QA procedures measure the setting of schedules for the receipt and review of documentation and the quality of the information contained within the documentation.
 - 2. Quality Control (QC): The process by which the OCTA Project Manager receives documentation from the Contractor that proves that the Contractor is providing the contractually mandated services, such as training, testing and inspection. Contractor must show evidence of internal procedures demonstrating how he will perform these mandated functions and submit documentation that QC verifications have been completed. QC is the responsibility of the Contractor.
 - 3. Roadway Worker: Any OCTA Project Manager or Contractor employee whose duties include inspection, construction, roadway facilities or roadway machinery within the OCTA and/or City right of way.
 - 4. Salvage: To save any removed item. The salvaged item shall be reused in the contract or delivered and stockpiled for the OCTA Project Manager as specified in the Contract Documents.
 - 5. Site Specific Work Plan (SSWP): A program, plan, and schedule prepared and submitted by the Contractor and approved by the OCTA Project Manager that accurately describes and illustrates the manner in which work within the operating envelope will be accomplished, the impacts on any elements of the Operating System and the manner in which work will be accomplished with the OCTA Project Manager allotted work windows.
 - 6. Project Applicant: all references made by City, local agencies, or other agencies to Project Applicant means the Contractor and not OCTA.

Definitions 01 42 16 - 1

7. Provide: To furnish/supply and install equipment/materials by Contractor per Contract documents.

PART 2 - PRODUCTS

Not Used.

PART 3 – EXECUTION

Not Used.

PART 4 - MEASUREMENT AND PAYMENT

No separate measurement or payment shall be made under this Section.

END OF SECTION

Definitions 01 42 16 - 2

SECTION 01 43 00

QUALITY ASSURANCE

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes: Administrative and procedural requirements for quality assurance.
 - 1. Specific quality assurance requirements for individual construction activities are specified in the sections that specify those activities. Requirements in those sections may also cover production of standard products.
 - 2. Requirements for Contractor to provide quality assurance services required by OCTA, or authorities having jurisdiction are not limited by provisions of this section.

B. Related Sections:

- 1. Section 01 43 01, Contractor Qualifications and Requirements.
- 2. Section 01 45 00, Quality Control.

1.02 DEFINITIONS

- A. Quality Assurance Services: Activities, actions, and procedures performed before and during execution of the work to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.
- B. Quality Control Services: Tests, inspections, procedures, and related actions during and after execution of the work to evaluate that actual products incorporated into the work and completed construction comply with requirements. Refer to Section 01 45 00, Quality Control.
- C. Mockups: Full-size, physical assemblies that are constructed on-site. Mockups are used to verify selections made under sample submittals, to demonstrate aesthetic effects and, where indicated, qualities of materials and execution, and to review construction, coordination, testing, or operation; they are not samples. Approved mockups establish the standard by which the work will be judged.
- D. Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, subcontractor, or sub-subcontractor, to perform a particular construction operation, including installation, erection, application, and similar operations.
 - 1. Using a term such as "carpentry" does not imply that certain construction activities must be performed by accredited or unionized individuals of a

Quality Assurance 01 43 00 - 1

- corresponding generic name, such as "carpenter." It also does not imply that requirements specified apply exclusively to trades people of the corresponding generic name.
- E. Experienced: When used with an entity, "experienced" means having successfully completed a minimum of five previous projects similar in size and scope to this project; having a minimum of five years' experience in work similar to that required for this project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.

1.03 CONFLICTING REQUIREMENTS

- A. General: If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer uncertainties and requirements that are different, but apparently equal, to OCTA for a decision before proceeding.
- B. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to OCTA for a decision before proceeding.

1.04 QUALITY ASSURANCE

- A. General: Qualifications paragraphs in this article establish the minimum qualification levels required; individual specification sections specify additional requirements.
- B. Installer Qualifications: A firm or individual experienced (as defined above) in installing, erecting, or assembling work similar in material, design, and extent to that indicated for this project, whose work has resulted in construction with a record of successful in-service performance.
- C. Manufacturer Qualifications: A firm experienced (as defined above) in manufacturing products or systems similar to those indicated for this project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- D. Fabricator Qualifications: A firm experienced (as defined above) in producing products similar to those indicated for this project and with a record of successful inservice performance, as well as sufficient production capacity to produce required units.
- E. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where project is located and who is experienced (as defined above) in providing engineering services of the kind indicated. Engineering services

- are defined as those performed for installations of the system, assembly, or product which are similar to those indicated for this project in material, design, and extent.
- F. Specialists: Certain sections of the specifications require that specific construction activities shall be performed by entities who are recognized experts in those operations. Specialists shall satisfy qualification requirements indicated and shall be engaged for the activities indicated.
 - 1. Requirement for specialists shall not supersede building codes and regulations governing the work.
- G. Testing Agency Qualifications: An NRTL, an NVLAP, or an independent agency with the experience and capability to conduct testing and inspecting indicated, as documented by a recognized OCTA; and with additional qualifications specified in individual sections; and where required by authorities having jurisdiction, that is acceptable to authorities.
 - 1. NRTL: A nationally recognized testing laboratory according to 29 CFR 1910.7.
 - 2. NVLAP: A testing agency accredited according to NIST's National Voluntary Laboratory Accreditation Program.
- H. Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this project.
- I. Preconstruction Testing: Where testing agency is indicated to perform preconstruction testing for compliance with specified requirements for performance and test methods, comply with the following:
 - 1. Contractor responsibilities include the following:
 - a. Provide test specimens representative of proposed products and construction.
 - b. Submit specimens in a timely manner with sufficient time for testing and analyzing results to prevent delaying the work.
 - c. Provide sizes and configurations of test assemblies, mockups, and laboratory mockups to adequately demonstrate capability of products to comply with performance requirements.
 - d. Build site-assembled test assemblies and mockups, where indicated, using installers who will perform same tasks for Project.
 - e. Build laboratory mockups at testing facility using personnel, products, and methods of construction indicated for the completed work.

- f. When testing is complete, remove test specimens, assemblies, mockups, and laboratory mockups; do not reuse products on project.
- Testing Agency Responsibilities: Submit a certified written report of each test, inspection, and similar quality-assurance service to OCTA, with copy to Contractor. Interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from the contract documents.
- J. Mockups: Before installing portions of the work requiring mockups, build mockups for each form of construction and finish required to comply with the following requirements, using materials indicated for the completed work:
 - 1. Build mockups in location and of size indicated or, if not indicated, as directed by OCTA.
 - 2. Notify OCTA seven days in advance of dates and times when mockups will be constructed.
 - 3. Demonstrate the proposed range of aesthetic effects and workmanship.
 - 4. Obtain OCTA's approval of mockups before starting work, fabrication, or construction.
 - 5. Allow seven days for initial review and each re-review of each mockup.
 - 6. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed work.
 - 7. Demolish and remove mockups when directed, unless otherwise indicated.
- K. OCTA Quality Assurance Inspection and Testing:
 - The Authority will select and pay for an independent testing and inspection laboratory or agency, to conduct test and inspection for quality assurance purposes. Contractor is fully responsible for all quality control testing and inspection as required on contract drawings and/or specifications, required by AHJ, and as standard industry practice.
 - 2. Contractor shall coordinate and notify OCTA when work is ready for quality assurance testing and inspection.
 - Contractor shall provide OCTA Project Manager, independent testing and inspection personnel, and OCTA's Consultant with full access to the work and reasonable time for inspection for ascertaining whether or not the work is performed in accordance with the requirements and intent of the contract. No work shall be covered and no materials shall be installed

without making the work and materials available for inspection by OCTA. If OCTA Project Manager so requests, Contractor shall, at any time before acceptance of the work, remove and uncover such portions of the finished work as may be directed for quality assurance testing and inspection.

- 4. After quality assurance testing and inspection, Contractor shall restore the work to the standard required by the contract document.
- 5. Costs for additional tests, inspection and related services, due to the following, shall be reimbursed to the Authority by the Contractor and no change in Contract Time shall result.
 - a. Failure to properly schedule or notify OCTA for testing and inspection.
 - b. Changes in sources, lots or suppliers of products after original quality assurance tests or inspections.
 - c. Changes in means, methods, techniques, sequences and procedures of constructions which necessitate additional testing, inspections, and additional services.
 - d. Changes in materials after review and acceptance of submittals.

PART 2 - PRODUCTS

Not Used

PART 3 – EXECUTION

Not Used

PART 4 - MEASUREMENT AND PAYMENT

No separate measurement will be made for the work of this section.

END OF SECTION

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SECTION 01 43 01

CONTRACTOR QUALIFICATIONS AND REQUIREMENTS

PART 1 – GENERAL

1.01 CONTRACTOR DUTIES

- A. Except as specifically noted otherwise, provide:
 - A Construction Project Manager, who shall serve as the Contractor's Representative for the Contract, at or beyond the requirements described in this section.
 - 2. Other labor, supervision, and materials required for the work.
 - 3. Other tools, equipment, and machinery required for the work.
 - 4. Water, heat, and utilities required for the work.
 - 5. Support facilities and services, including fully furnished field office facilities, necessary for the proper execution and completion of the work.
- B. Pay legally required sales, consumer, and use taxes.
- C. Secure and pay for fees, surcharges, taxes, permits, and licenses necessary for the proper execution of the work.

1.02 REFERENCE STANDARDS

A. OSHA: Occupational Safety and Health Administration regulations.

1.03 CONSTRUCTION PROJECT MANAGER

- A. Provide for the work a Construction Project Manager who will manage and coordinate the overall aspects of the work. The Construction Project Manager's qualifications and experience shall include:
 - 1. A minimum of five years of progressing work responsible experience on public works construction projects that include coordination, and scopes, types, and characters of work directly related to the scope of work of this contract.
 - 2. Demonstrated ability to work safely and supervise individuals in safe work.
 - 3. Previous positions and experience supervising and planning work activities of construction superintendents, project engineers, and support personnel foreman and crews.

- 4. Ability to read and understand survey, grading, paving, striping, utility, and structural plans.
- 5. Ability to develop and work from construction schedules.
- B. The Construction Project Manager must:
 - 1. Visit the site daily during the work to verify the work is proceeding per contract documents.
 - 2. Be on the job during the work week to manage and coordinate all aspects of work for the full duration of the project.
 - 3. Be able to respond immediately to emergency or problem calls, 24 hours a day, 7 days a week.
- C. The Construction Project Manager shall have the necessary authority to provide instructions and orders to his authorized representatives. The Construction Project Manager shall not be replaced without advance approval by the OCTA Project Manager; OCTA Project Manager will have sole approval of the replacement. The Contractor may propose a supervisory personnel such as superintendent to serve as Construction Project Manager.

1.04 SITE SAFETY REPRESENTATIVE

- A. Provide Site Safety Representative.
- B. Site Safety Representative qualifications and experience must include:
 - 1. Meeting qualifications set forth in the General Provision. Pass OCTA Level 3 Health, Safety and Environmental Requirements.
- C. The Site Safety Representative must be headquartered for the duration of the project at Contractor's construction field office.
- D. The Site Safety Representative will be required to train and test Contractor's employees as described in Section 01 35 23, Owner Safety Requirements.

1.05 SUBMITTALS

A. Contractor shall submit for OCTA Project Manager's approval the name and professional history of each of the key positions identified in this specification section.

PART 2 - PRODUCTS

Not Used

PART 3 – EXECUTION

3.01 PERSONNEL QUALIFICATION

- A. Within five calendar days after Notice to Proceed, submit to OCTA Project Manager resumes of personnel listed above in Part 1 above. Each resume shall provide sufficient detail to demonstrate compliance with requirements. Submit a schedule showing, for each employee classification, number of personnel to be assigned to the work and duration of their assignments.
- B. The OCTA Project Manager will review resumes to determine acceptability of qualifications and experience. The OCTA Project Manager's decision is final. Do not resubmit resumes of personnel deemed unacceptable by the OCTA Project Manager.
- C. Substitutions: To replace any personnel identified in Part 1, follow this section's procedures for obtaining approval of the original personnel. This qualification process, shall be completed before the vacancy occurs. Provision for substitutions does not relieve Contractor of the responsibility to provide personnel as provided in Part 1.

PART 4 – MEASUREMENT AND PAYMENT

No separate measurement or payment will be made for work of this section.

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SECTION 01 45 00

QUALITY CONTROL

PART 1 – GENERAL

1.01 SUMMARY

- A. Section Includes:
 - 1. Authority of OCTA Project Manager.
 - 2. Responsibilities of the Contractor.
 - 3. Inspection and testing by OCTA Project Manager.
- B. Related Sections:
 - 1. Section 01 14 23, Coordination with OCTA and Local Agencies.
 - 2. Section 01 33 00, Submittal Procedures.
 - 3. Section 01 41 00, Regulatory Requirements.
 - 4. Section 01 43 00, Quality Assurance.
 - 5. Section 01 60 00, Product Requirements.

1.02 AUTHORITY OF OCTA PROJECT MANAGER

- A. OCTA Project Manager will determine whether the work is completed in accordance with the contract documents. OCTA Project Manager will decide all questions that may arise as to the quality or acceptability of materials furnished and work performed, and interpretations of the contract documents.
- B. OCTA Project Manager may require the Contractor to finish a section on which work is in progress before work is started on any additional section. Refer to Section 01 14 22, Rules and Hours of Operation for requirements.
- C. OCTA Project Manager may require the Contractor to submit additional shop drawings or documents to demonstrate the Contractor's understanding the intents of contract plans and specifications as part of quality control.

1.03 REFERENCES

A. ASTM D3740 - Practice for Evaluation of Agencies Engaged in Testing and/or Inspection Used in Engineering Design and Construction.

1.04 REGULATORY REQUIREMENTS FOR TESTING AND INSPECTION

- A. Regulatory Requirements for Testing and Inspection: Inspections, testing and approvals as required by authorities having jurisdiction. Refer to Section 01060 Regulatory Requirements.
 - 1. California Code of Regulations (CCR) Title 24, State Building Code (Uniform Building Code with State of California Amendments), latest edition, as adopted and interpreted by authorities having jurisdiction.
 - 2. California Code of Regulations (CCR) Title 22, Sections 94065, 94067 and 94069.

1.05 RESPONSIBILITIES OF THE CONTRACTOR

- A. Cooperate with OCTA Project Manager and with other contractors as detailed in Section 01 14 24, Coordination with OCTA and Local Agencies.
- B. Ensure that products, services, workmanship and site conditions comply with requirements of the Drawings and Specifications by coordinating, supervising, testing and inspecting the Work and by utilizing only suitably qualified personnel.
- C. Perform the work to achieve the level of quality prescribed in the contract documents, including by reference, all Codes, laws, rules, regulations and standards. The no quality basic is prescribed, the quality shall be in accordance with the best accepted practices of the construction industry for the locale of the Project, for projects of this type.
- D. Perform the work in the proper sequence in relation to the requirements of the OCTA and other contractors, all as may be directed by OCTA Project Manager.
- E. Employ and assign knowledgeable and skilled personnel as necessary to perform quality control functions to ensure that the Work is provided as required.
- F. Be responsible for any damage done by it or its agents to the work performed by the OCTA or another contractor.

1.06 SUPERVISION AND CONSTRUCTION PROCEDURES

- A. Give the work the constant attention necessary to facilitate the progress of the work.
- B. Be solely responsible for all construction means, methods, techniques, and procedures and for coordinating all portions of the work under the contract. Permission given by OCTA Project Manager to use any particular methods, equipment, or appliances shall not be construed to relieve the Contractor from furnishing other equipment or other appliances or adopting other methods when those in use prove unsatisfactory, or as to bind OCTA Project Manager to accept work which does not comply with the contract.

- C. Immediately remove from the work, when so ordered by OCTA Project Manager, and do not re-employ on any of the work, without written permission from OCTA Project Manager, any contractor or subcontractor employee doing unsafe, improper, or defective work; who, in OCTA Project Manager's judgment, refuses or neglects the direction of OCTA Project Manager given to the Contractor; who is deemed incompetent or disorderly; or who commits trespassing on public or private property in the vicinity of the work.
- D. Be responsible for securing all work areas by barricade in accordance with local and State requirements as applicable at the end of each day.

1.07 QUALITY OF THE WORK

- A. Quality of Products: Unless otherwise indicated or specified, all products shall be new, free of defects and fit for the intended use.
- B. Quality of Installation: All Work shall be produced plumb, level, square and true, or true to indicated angle, and with proper alignment and relationship between the various elements. New material shall be installed so that drainage merges with existing flow patterns on the site towards the drains.
- C. Protection of Existing and Completed Work: Take all measures necessary to preserve and protect existing and completed Work free from damage, deterioration, soiling and staining, until Acceptance by the Authority.
- D. Standards and Code Compliance and Manufacturer's Instructions and Recommendations: Unless more stringent requirements are indicated or specified, comply with manufacturer's instructions and recommendations, reference standards and building code research report requirements in preparing, fabricating, erecting, installing, applying, connecting and finishing Work.
- E. Deviations from Standards and Code Compliance and Manufacturer's Instructions and Recommendations: Document and explain all deviations from reference standards and building code research report requirements and manufacturer's product installation instructions and recommendations, including acknowledgement by the manufacturer that such deviations are acceptable and appropriate for the Project.
- F. Verification of Quality: Work shall be subject to verification of quality by the Authority or Engineer in accordance with provisions of the Conditions of the Contract.
 - 1. Contractor shall cooperate by making Work available for inspection by the Authority or Engineer or their designated representative.
 - 2. Such verification may include mill, plant, shop, or field inspection as required. OCTA designated Inspector shall access to material inspection.
 - 3. Provide access to all parts of the Work, including plants where materials or equipment are manufactured or fabricated.

- 4. Provide all information and assistance as required, including that by and from subcontractors, fabricators, materials suppliers and manufacturers, for verification of quality by the Authority or Engineer.
- 5. Contract modifications, if any, resulting from such verification activities shall be governed by applicable provisions in the Conditions of the Contract.
- G. Observations by the Engineer and Engineer's Consultants: Periodic and occasional observations of Work in progress may be made by the Engineer and Engineer's consultants as deemed necessary to review progress of Work and general conformance with design intent.
- H. Limitations on Inspection, Test and Observations: Neither employment of an Inspector of Record, independent testing and inspection agency, or observations by the Engineer and Engineer's consultants shall in no way relieve Contractor of obligation to perform Work in full conformance to all requirements of Contract Documents and applicable Building Code and other regulatory requirements.
- I. The Engineer's Acceptance and Rejection of Work: The Engineer reserves the right to reject all Work not in conformance to the requirements of the Drawings and Specifications.
- J. Correction of Non-Conforming Work: Non-conforming Work shall be modified, replaced, repaired or redone by the Contractor at no change in Contract Sum or Contract Time.
- K. Acceptance of Non-Conforming Work: Acceptance of non-conforming Work, without specific written acknowledgement and approval of the Authority, shall not relieve the Contractor of the obligation to correct such Work.
- L. Contract Adjustment for Non-conforming Work: Should the Authority or Engineer determine that it is not feasible or in Authority's interest to require non-conforming Work to be repaired or replaced, an equitable reduction in Contract Sum shall be made by agreement between the Authority and Contractor. If equitable amount cannot be agreed upon, a Construction Change Directive will be issued and the amount in dispute resolved in accordance with the Conditions of the Contract.
- M. Non-Responsibility for Non-Conforming Work: The Engineer and the Engineer's consultants disclaim any and all responsibility for Work produced not in conformance with the Drawings and Specifications.

1.08 INSPECTION AND TESTING

A. The work is to be completed in accordance with the specifications, the drawings, and such instructions or directions as OCTA Project Manager may give to supplement drawings and specifications. Wherever the words "directed," "permitted," "approved," "acceptable," "satisfactory to," or similar words or phrases occur in the contract documents, they shall be understood to be functions of OCTA Project Manager to be exercised at his discretion.

- B. The OCTA shall not be responsible for and shall not have control or charge over the acts or omissions of the Contractor, subcontractors, or any of their agents or employees, or any other persons performing any of the work.
- C. Inspections and Tests by Authorities Having Jurisdiction: Contractor shall cause all tests and inspections required by authorities having jurisdiction to be made for Work under this Contract, Public Works Department, Fire Department, Health Department, AQMD, SCE and similar agencies. Except as specifically noted, scheduling, conducting and paying for such inspections shall be solely the Contractor's responsibility.
- D. Inspections and Tests by Serving Utilities: Contractor shall cause all tests and inspections required by serving utilities to be made for Work under this Contract. Scheduling, conducting and paying for such inspections shall be solely the Contractor's responsibility.
- E. Inspections and Tests by Manufacturer's Representatives: Contractor shall cause all tests and inspections specified to be conducted by materials or systems manufacturers to be made. Additionally, all tests and inspections required by materials or systems manufacturers as conditions of warranty or certification of Work shall be made, the cost of which shall be included in the Contract Sum.
 - 1. Test and Inspection Reports: After each inspection and test, one copy of report shall be promptly submitted to the Engineer, Engineer's consultant (as applicable), Authority, Contractor, City Inspector, and to agency having jurisdiction (if required by Code).
 - a. Reports shall clearly identify the following:

Date issued.

Project name and number.

Identification of product and Specifications Section in which Work is specified.

Name of inspector.

Date and time of sampling or inspection.

Location in Project where sampling or inspection was conducted.

Type of inspection or test.

Date of test.

Results of tests.

Comments concerning conformance with Contract Documents and other requirements.

- b. Test reports shall indicate specified or required values and shall include statement whether test results indicate satisfactory performance of products.
- c. Samples taken, but not tested, shall be reported.
- d. Test reports shall confirm that methods used for sampling and testing conform to specified test procedures.

- F. Contractor shall provide OCTA Project Manager, independent testing and inspection agency personnel, inspector of record and OCTA's consultant with full access to the work and reasonable time for inspection for ascertaining whether or not the work is performed in accordance with the requirements and intent of the contract. No work shall be covered or materials used without making the work or materials available for inspection by OCTA Project Manager. If OCTA Project Manager so requests, the Contractor shall, at any time before acceptance of the work, remove or uncover such portions of the finished work as may be directed.
- G. After examination, Contractor shall restore the work to the standard required by the contract documents. Inspection will not relieve the Contractor from the responsibility for the quality of this work and to perform the work in accordance with the requirements of the contract documents.
- H. All materials and every process of manufacture and construction shall be subject to inspection at all times. OCTA Project Manager and his designated representatives shall have free access to all operations. Contractor shall provide necessary materials and OCTA Project Manager shall have the right to select suitable samples of materials for testing or examination which the contractor shall supply without charge. In case such samples must be shipped to some other point for inspection or testing, Contractor shall box or crate samples as necessary and shall deliver them at points designated for shipment without charge. Omission of inspection shall not relieve the Contractor of its obligations to produce the work required by the contract documents. Materials not in compliance with contract requirements shall be removed promptly from the vicinity of the work, and the Contractor, at its expense, shall promptly remove, reconstruct, replace, and make good any defective work as directed in writing by OCTA Project Manager. Oversight or error in judgment of inspectors, or previous acceptance of the work, shall not relieve Contractor from the obligation to correct defects whenever discovered.
- I. If the Contractor does not correct nonconforming work or remove rejected materials within a reasonable time fixed by written notice, OCTA Project Manager may direct that removals and corrections be performed by other contractors. Charges for such removals and corrections shall be deducted from the Contractor's payment due under this contract or may be paid for by the Contractor's bonds held for this contract.
- J. All inspection by OCTA Project Manager is for the protection of the OCTA and its interest and shall not relieve the Contractor of responsibility for providing work in accordance with the contract documents. After completion of the work, a final inspection will be made and any previous inspection or acceptance will not preclude rejection at the final inspection of any item that is not satisfactory to OCTA Project Manager or is not in accordance with the contract documents.
- K. If, within the period of time prescribed by law or by the terms of any applicable special warranty required by the contract documents, whichever is longer, any of the work is found to be defective or not in accordance with the contract documents, the Contractor shall correct it promptly after receipt of a written notice from OCTA Project Manager. This obligation shall survive acceptance of the work or termination of the

contract. In the event the OCTA prefers to accept or not require correction of defective or nonconforming work, the OCTA may do so instead of requiring its removal and correction, in which case OCTA Project Manager shall determine an appropriate sum to be deducted from the contract price or otherwise charged against the Contractor, which determination shall be final and binding upon the parties. Such adjustment shall be effected whether or not final payment has been made.

- L. All defective work which has been rejected shall be remedied or removed and replaced by the Contractor at its own expense, in a manner acceptable to OCTA Project Manager.
- M. Whenever all of the work provided for in the contract or authorized as force account work has been completed and the final cleaning-up performed, OCTA Project Manager will make the final inspection, and, if the work is found to be satisfactory, Contractor will be notified in writing of the acceptance. All portions of the work shall be maintained by the Contractor at the standards required by the contract documents until final acceptance.
- N. At OCTA Project Manager's discretion, portions of the work that are determined to be substantially complete may be accepted before all the project work is completed. After acceptance of substantially completed work, Contractor shall not use the finished product for any purpose without permission of OCTA Project Manager.

PART 2 - PRODUCTS

Not Used

PART 3 – EXECUTION

3.01 FIELD QUALITY CONTROL/QUALITY ASSURANCE

- A. Give minimum of 48 hour advance notice of each test and inspection to OCTA Project Manager when ready for testing, observation and inspection.
- B. Should any compaction density/strength test or inspection fail to meet specification requirements, necessary corrective work shall be performed by the Contractor. Additional testing shall be required to determine that corrective work provides compaction in the failed area meeting requirements of these Specifications.
- C. Contractor shall provide a record of testing results including corrective actions taken if necessary on the approved form to the OCTA Project Manager.
- D. Contractor's corrective work to meet requirements and retesting resulting from failing tests shall be at no additional cost to OCTA.

E. Obtain all inspections required by the local regulatory agencies and provide the Authority with the final sign-off cards for the project from the local regulatory agencies.

PART 4 - MEASUREMENT AND PAYMENT

No separate measurement or payment shall be made under this section.

END OF SECTION

SECTION 01 50 00

TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes:
 - 1. Temporary facilities and controls used during construction.
- B. Related Sections:
 - 1. Section 01 14 25, Procedures in Construction.
 - 2. Section 01 14 27, Legal Relations and Responsibility.
 - 3. Section 01 14 43, Environmental Resource Protection.
 - 4. Section 01 71 13, Mobilization and Demobilization
 - 5. Section 01 74 19, Construction Waste Management and Disposal.

1.02 SUBMITTALS

- A. Submit in accordance with Section 01 33 00, Submittal Procedures.
- B. Site Plans: Show temporary facilities, utility hookups, staging areas, and parking areas for construction personnel.
- C. Moisture Protection Plan: Describe procedures and controls for: protecting materials and construction from water absorption and damage, including delivery, handling, and storage; discarding water-damage materials; protocols for mitigation of water into completed work; and replacing water-damaged work.

1.03 QUALITY ASSURANCE

A. Tests and Inspections: Arrange for authorities having jurisdiction to test and inspect each temporary utility before use. Obtain required certifications and permits.

PART 2 - PRODUCTS

2.01 TEMPORARY FACILITIES, PRODUCTS, AND CONTROL

- A. Common-Use Field Office: not required.
- B. Storage and Fabrication Sheds: No equipment or tools are allowed to be stored at the jobsite without the OCTA Project Manager's written permission. If on-site storage is permitted, provide access and orderly provision for maintenance and for inspection of products.
- C. Telephone Service: Provide mobile telephone service for project superintendent.
- D. Temporary Electricity:
 - Connect to existing power service at location as directed. Power consumption shall not disrupt Owner's need for continuous service. Exercise measures to conserve energy.
 - 2. Provide power outlets for construction operations, with branch wiring and distribution boxes. Provide flexible power cords as required.
 - 3. Provide main service disconnect and over current protection at convenient location.
 - 4. Comply with NECA, NEMA, and UL standards and regulations for temporary electric service.
 - 5. Permanent convenience receptacles may be utilized during construction.

E. Temporary Fire Protection:

- 1. Maintain temporary fire protection facilities of the types needed until permanent facilities are installed. Fire Extinguishers shall be portable, UL rated; with class and extinguishing agent as required by locations and classes of fire exposures.
- 2. Comply with NFPA 10 "Standard for Portable Fire Extinguishers" and NFPA 241 "Standard for Safeguarding Construction, Alterations, and Demolition Operations".
- 3. Fire safety during construction shall comply with CFC California Fire Code (CCR) California Code of Regulations, Title 24, Part 9, Article 87.
- 4. Store combustible materials in containers in fire-safe locations.
- 5. Maintain unobstructed access to fire extinguishers, fire hydrants, temporary fire-protection facilities, stairways, and other access routes.

6. Provide supervision of welding operations, combustion-type temporary heating units, and similar sources of fire ignition.

F. Barriers, enclosures and fencing:

- Provide traffic cones to prevent unauthorized entry to construction areas and to protect existing facilities and adjacent properties from damage from construction operations.
- 2. Provide protection for plant life and trees designated to remain and for soft and hardscape areas adjacent to work, replace damaged materials in kind.
- 3. Protect non-owned vehicular traffic, stored materials, if allowed, site and structures from damage.
- G. Noise Control: Provide methods, means, and facilities to minimize noise produced by construction operations.

H. Pollution Control:

- 1. Provide methods, means, and facilities to prevent contamination of soil, water, and atmosphere from discharge of noxious, toxic substances, and pollutants produced by construction operations.
- Conform to Best Management Practices for waste management and material controls as defined in Section 4 of the Construction Activity Handbook published by the Storm Water Quality Association.
- 3. Coordinate construction activities with control procedures established in the Storm Water Pollution Prevention Plan (SWPPP).

I. Security:

- 1. Provide security and facilities to protect Work, from unauthorized entry, vandalism, or theft.
- 2. Coordinate with Owner's security program.
- J. Parking: No Contractor's employees' parking is allowed on site.

K. Traffic Control:

- 1. Comply with requirements of authorities having jurisdiction.
- 2. Obtain all required permits, provide all materials and maintain controls as required of authorities having jurisdiction.
- 3. Maintain access for fire-fighting equipment and access to hydrants.

L. Progress Cleaning:

- 1. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces, and other closed or remote spaces, prior to enclosing the space.
- 2. Broom and vacuum clean interior areas prior to start of surface finishing, and continue cleaning to eliminate dust.
- 3. Provide walk-off mats at each building entry affected by construction activities.

M. Waste Disposal:

- 1. Waste Management: In compliance with City regulations.
- 2. Maintain work areas free of waste materials, debris, and rubbish.
- 3. Remove waste materials, debris, and rubbish from site periodically during a work day and legally dispose of off-site at the end of each work day at 3:30 pm.
- 4. Maintain site area in a clean and orderly condition.

PART 3 - EXECUTION

3.01 INSTALLATION, GENERAL

- A. Locate facilities where they will serve project adequately and result in minimum interference with performance of the work. Relocate and modify facilities as required by progress of the work.
 - 1. Locate facilities to avoid protected areas as specified in Section 01 14 43, Environmental Resource Protection.

3.02 TEMPORARY UTILITIES

A. Provide and pay for temporary utility services and facilities such as sanitary facilities, telephone service and internet service adequate for construction and related activities.

3.03 TEMPORARY ROADS, PAVING, PARKING, AND SIMILAR IMPROVEMENTS, AND USE OF SITE

- A. See Section 01 14 25, Procedures in Construction.
- B. See Section 01 14 27, Legal Relations and Responsibility

3.04 PROTECTION OF AIR AND WATER RESOURCES AND OTHER ENVIRONMENTAL RESOURCES

- A. See Section 01 14 25, Procedures in Construction.
- B. See Section 01 14 27, Legal Relations and Responsibility.
- C. See Section 01 14 43, Environmental Resource Protection.

3.05 CONSTRUCTION WASTE

A. See Section 01 74 19, Construction Waste Management and Disposal.

3.06 SECURITY AND FIRE PROTECTION

A. See Section 01 14 27, Legal Relations and Responsibility.

PART 4 - MEASUREMENT AND PAYMENT

Work of this section is incidental to other work and no separate measurement or payment will be made.

END OF SECTION

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SECTION 01 57 13

TEMPORARY EROSION AND SEDIMENTATION CONTROL

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes:
 - 1. Temporary erosion and sedimentation control.
 - 2. Accessories required for a complete installation.
- B. Related Sections:
 - 1. Section 01 14 25, Procedures in Construction.
 - 2. Section 01 50 00, Temporary Facilities and Controls.
 - 3. Section 01 14 43, Environmental Resource Protection

1.02 REFERENCE STANDARDS

- A. Caltrans: State of California Department of Transportation, Standard Specifications.
- B. Standard Specifications for Public Works Construction (SSPWC).
- C. California Stormwater Quality Association (CASQA)

1.03 SUBMITTALS

- A. Submit in accordance with Section 01 33 00, Submittal Procedures.
- B. Working drawings and data on proposed straw bales and fiber rolls, including physical properties of various products.

1.04 DELIVERY, STORAGE, AND HANDLING

A. Deliver, handle, and store materials in accordance with recommendations of manufacturer.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Miscellaneous Materials:

- 1. Plastic sheeting: Clear polyethylene plastic sheeting at least 10 mils thick, secured with anchor restrainers (gravel filled bags) per the Construction Best Management Practices (BMP) handbook prepared by the California Stormwater Quality Association (CASQA), www.cabmphandbooks.com.
- 2. Temporary Fiber Rolls and Straw Bales: Provide fiber rolls and straw bales with staking per the Construction BMP handbook prepared by the CASQA, www.cabmphandbooks.com. If staking is not feasible, contractor shall develop other suitable methods of anchoring that will be acceptable to OCFCD.
- 3. Temporary concrete washout facility, per the Construction BMP handbook prepared by the CASQA, www.cabmphandbooks.com.
- 4. Gravel bags per the Construction BMP handbook prepared by the CASQA, www.cabmphandbooks.com

PART 3 - EXECUTION

3.01 GENERAL

- A. Conform to all applicable local, state and Federal Regulations and laws pertaining to water pollution control and as specified in SSPWC section 7-8.6.
- B. Accomplish erosion and sediment control through use of berms, dikes, swales, dams, fiber mats, plastic sheeting, netting, gravel, storm drain inlet protection, slope drains, sediment fences, and other sediment barriers; gravel construction entrances; and other erosion control devices or methods. Cover material stockpiles with plastic sheeting.
- C. Coordinate temporary pollution control provisions with permanent erosion control features specified elsewhere in the contract documents to the extent practicable to assure economical, effective, and continuous erosion control throughout the construction and post-construction period.
- D. OCTA Project Manager may limit surface area of erodible earth material exposed by clearing, grubbing, excavation, borrow, embankment, and fill operations
 - 1. Provide immediate, permanent or temporary pollution control measures to prevent contamination of adjacent streams or other watercourses, lakes, ponds, or other areas of water impoundment.

- 2. Work may involve construction of temporary berms, dikes, dams, sediment basins, and slope drains; use of temporary mats; or other control devices or methods as necessary to control erosion.
- E. Construct facilities required for clearing, grading, and land alteration activities, to ensure that sediment-laden water does not enter drainage systems or violate applicable water standards. Conform to requirements of Section 01 14 43, Environmental Resource Protection.

F. Permanent Features:

- Incorporate permanent erosion control features at earliest practicable time. Use temporary pollution control measures to correct unforeseen conditions that develop during construction, to provide measures that are needed prior to installation of permanent pollution control features, or to temporarily control erosion that develops during normal construction.
- 2. Where erosion interferes with clearing and grubbing operations, schedule and perform work so that grading operations and permanent erosion control features can follow immediately; otherwise, provide temporary erosion control measures between successive construction stages.

G. Areas of Work:

- Limit the area of clearing, grubbing, excavation, borrow, and embankment operations in progress commensurate with progress. Should seasonal limitations result in unrealistic coordination of operations, take temporary erosion control measures immediately.
- 2. Flag boundaries of clearing limits prior to construction.
 - a. Do not disturb or permit disturbance of ground beyond flagged boundary. Conform to requirements of Section 01 14 43, Environmental Resource Protection
 - b. Maintain flagging for duration of work.
- 3. Temporary soil erosion and sediment control may include construction work outside right of way where work is necessary as a result of project construction such as borrow pit operations, haul roads, and equipment storage sites.

H. Maintenance:

- Maintain erosion control features installed, including replacement and upgrading of facilities when needed, until work is completed and notice of Final Acceptance issued.
- 2. Maintain catch basins (inlets with sumps or inverted siphons) so that not more than one foot depth of sediment is allowed to accumulate within a trap (or sump).

- a. Clean catch basins and storm drains prior to paving and prior to Substantial Completion.
- b. Remove sediment. Do not flush sediment-laden water into downstream system.
- 3. Keep paved areas clean for the duration of the project.
- 4. Measures in addition to those indicated may be required.
- 5. Do not permit more than a one-foot depth of sediment to accumulate behind a silt fence.
 - a. Remove sediment or regrade it into slopes, and repair and reestablish silt fences as needed.
- 6. Remove silt fences in entirety when no longer required. Fences are required until uphill area has been permanently stabilized.
- 7. Remove pipes, end sections, drainage curbs, silt fences, and other materials from temporary erosion control devices; those not incorporated into permanent work become property of Contractor.

3.02 STORM DRAIN INLET PROTECTION

- A. Storm drain inlet protection must prevent sediment from entering storm drain systems prior to permanent stabilization of disturbed areas.
- B. Use storm drain inlet protection per the Construction BMP handbook prepared by the CASQA, www.cabmphandbooks.com:
 - 1. Where storm drain inlets are operational before permanent stabilization of disturbed drainage area.
 - 2. Adjacent to and immediately downhill of utility type construction in existing paved areas with catch basin drainage.
 - 3. When cleaning streets.
- C. Use berms when required to direct drainage to flow through filters and prevent bypassing of inlets.
- D. Do not permit more than one-foot depth of sediment to accumulate against storm drain inlet protection.
 - 1. Remove sediment and restore inlet protection as needed to maintain sediment trapping and filtering capability.

PART 4 - MEASUREMENT AND PAYMENT

No separate measurement or payment will be made for the work of this section.

END OF SECTION

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SECTION 01 60 00

PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.01 SUMMARY

A. This section includes administrative and procedural requirements for selection of products for use in the project; product delivery, storage, and handling.

1.02 SOURCE OF SUPPLY AND QUALITY OF MATERIALS

- A. OCTA Project Manager shall approve the source of supply of each of the materials supplied by the Contractor before the purchase or delivery of materials to the work site. Promptly after receiving the Contract award, the Contractor shall notify OCTA Project Manager of all proposed material sources. If it is found after trial that sources of supply previously approved do not produce uniform and satisfactory products, or if the product from any source proves unacceptable at any time, the Contractor shall furnish materials from other sources as approved by OCTA Project Manager.
- B. Only materials conforming to Specifications and approved in advance by OCTA Project Manager shall be used in the work. All material being used shall be subject to inspection or test at any time during their preparation or use. No material that after approval has in any way become unfit for use shall be used in the Work.

1.03 UNLOADING, HAULING AND STORING MATERIALS

- A. The Contractor shall, at its expense, deliver, unload, store, handle, and be responsible for all materials whether furnished by the OCTA or by the Contractor.
- B. Store and protect products in accordance with manufacturer's instructions, with seals and labels intact and legible.
 - 1. Periodically inspect to ensure products are undamaged, and are maintained under required conditions.
 - 2. Products damaged by improper storage or protection shall be removed and replaced with new products at no change in Contract Sum or Contract Time.
- C. Store products to facilitate inspection and measurement of quantity or counting of units.
- D. The unloading, storing and hauling of all the OCTA's or Contractor's material shall be considered as incidental to contract pricing.

- E. When permission to do so is given in writing by OCTA Project Manager, the Contractor may store materials and erect temporary buildings on OCTA property provided such property is not required for the OCTA's use or is not under lease to other parties.
- F. Store moisture-sensitive products in a weathertight enclosure or covered with an impervious sheet covering. Provide adequate ventilation to avoid condensation. Maintain product storage within temperature and humidity ranges required by manufacturer's instructions.
 - 1. For exterior storage of fabricated products, place on sloped supports above ground.
 - 2. Store loose granular materials on solid surfaces in a well-drained area. Prevent mixing with foreign matter. Prevent material from flowing or blowing away to other areas of the site. Provide covers for sand, aggregate base, and debris so that wind does not cause it to blow away.
 - 3. Arrange storage to provide access for inspection. Periodically inspect to assure products are undamaged, and are maintained under required conditions.
- G. All electrical and mechanical equipment shall be stored so as to be protected from rain, sun, wind, sand, dust, moisture, etc. The equipment shall be stored on supports off the ground or on concrete slabs with all factory provided dust and moisture protection left in place until equipment is installed.
- H. Electrical and mechanical equipment shall be maintained in accordance with the manufacturer's operation and maintenance instructions until the Contractor is relieved of the responsibility by OCTA Project Manager.
- I. Store heavy materials away from the structure in a manner that will not endanger supporting construction.
- J. Building materials shall be stored in a protected environment safe from sun, rain and excessive dust. Store cementitious products and materials on elevated platforms. Damaged or excessively dirty materials will not be permitted to be installed.

K. Protection:

- 1. Provide barriers, flashing lights, substantial coverings and notices to protect installed Work from traffic and subsequent construction operations.
- 2. Remove protective measures when no longer required and prior to Acceptance of the Work.

L. Delivery Requirements:

1. Schedule delivery to minimize long-term storage at project site and to prevent overcrowding of construction spaces.

- 2. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.
- Comply with manufacturer's instructions and recommendations for transportation, delivery and handling. Provide equipment and personnel to handle products by methods to prevent soiling, marring or other damage.
- 4. Deliver products to project site in an undamaged condition in manufacturer's original sealed container or other packaging system, complete with manufacturer's labels and instructions for handling, storing, unpacking, protecting, and installing.
- Contractor is responsible and shall be present at work side for receiving his
 material delivery at the work site. Promptly inspect products on delivery to ensure
 compliance with the contract documents and to ensure that products are
 undamaged and properly protected.
- 6. Contractor shall give OCTA a 48 hours notice prior to delivery of any products and materials.

1.04 PRODUCT SELECTION PROCEDURES

- A. Products: Items purchased for incorporation in the Work, whether purchased for the Project or taken from previously purchase stock, and include material, equipment, assemblies, fabrications and systems.
- B. General Product Requirements: Provide products that comply with the contract documents, that are undamaged and, unless otherwise indicated, that are new at time of installation.
 - 1. It is OCTA policy that all manufactured products and supplies be provided by United States manufacturing industries in agreement with related Union organizations. Therefore in the performance of the contract, Contractor shall give United States made products preference.
 - 2. Named Product: Items identified by manufacturer's product name, including make or model designations indicated in the manufacturer's published product data.
 - 3. Specific Product Requirements: Refer to requirements of Section 01 45 00 Quality Control and individual product Specifications Sections in the project specifications for specific requirements for products.
 - 4. Materials: Products that are shaped, cut, worked, mixed, finished, refined or otherwise fabricated, processed or installed to form a part of the Work.
 - Product Completeness: Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.

- 6. Minimum Requirements: Specified requirements for products are minimum requirements.
- 7. Standard Products: Where specific products are not specified, provide standard products of types that are suitable for the intended use in similar conditions and that have been produced and used successfully in similar situations on similar projects. Products shall be selected by the Contractor and subject to review and acceptance by the Engineer.
- 8. Code Compliance: All products, other than commodity products prescribed by Code, shall have a current ICBO Evaluation Service (ICBO ES) Research Report or CABO National Evaluation Report (NER).
- 9. Interchangeability: To the fullest extent possible, provide products of the same kind from a single source. Products required to be supplied in quantity shall be the same product and interchangeable throughout the Work. When options are specified for the selection of any of two or more products, the product selected shall be compatible with products previously selected.

10. Nameplates:

- a. Except for require labels and operating and safety instructions, do not attach manufacturer's identifying nameplates or trademarks on surfaces exposed to view in occupied spaces or to the exterior.
- b. Provide a permanent nameplate on each item of service-connected or poweroperated equipment. Nameplates shall contain identifying information and essential operating data such as the following example:

Name of manufacturer Name of product Model and serial number Capacity Power Characteristics Speed

- 11. OCTA reserves the right to limit selection to products with warranties not in conflict with requirements of the contract documents.
- 12. Where products are accompanied by the term "as selected" or similar, OCTA Engineer will make selection.
- 13. Where products are accompanied by the term "match sample" or similar, sample to be matched is OCTA Project Manager's.
- 14. Descriptive, performance, and reference standard requirements in the specifications establish salient characteristics of products.

C. General Product Selection Requirements:

- 1. Where products or manufacturers are identified in the specifications, the intent is not to limit competition or to restrict the work to only those products or manufacturers named. Rather, the intent is to establish the level of quality required and the product characteristics important to the success of the work. Subject to compliance with requirements, products of any manufacturer may be incorporated into the work, if shown to be equal to those listed to the satisfaction of OCTA Project Manager.
- 2. "Or Equal" Provision: Where "or equal" is included after named manufacturer(s) and product(s), equivalent products of unnamed manufacturers will be considered in accordance with requirements specified in Section 01 25 00 Substitution Procedures.
 - a. Prior to submitting "Or Equal" product(s) for consideration, Contractor shall review and determine that product(s) meet or exceed the minimum quality and warranty provisions of the specified product.
 - b. Cost and time considerations will be waived for products and manufacturers submitted under the "Or Equal" provision, except no increase in Contract Sum or Contract Time shall result.
 - c. Contractor's attention is called to the substitution provisions of the Conditions of the Contract.
- 3. Products Specified by Description: Where Specifications describe a product, listing characteristics required, with or without use of a brand name, provide a product that provides the characteristics and otherwise complies with the specified requirements.
- 4. Products Specified by Performance Requirements: Where Specifications require compliance with performance requirements, provide product(s) that comply with performance requirements and are recommended by the manufacturer for the intended application. Verification of manufacturer's recommendations may be by product literature or by certification of performance from manufacturer.
- 5. Products Specified by Reference to Standards Only: Where Specifications require compliance with a standard, provided product shall fully comply with the standard specified.
- 6. Products Specified by Combination of Methods: Where products are specified by a combination of described characteristics, performance characteristics, reference standards and manufacturer identification, provide products conforming to all such characteristics.
- 7. Use of products or manufacturers, whether listed or not, is subject to demonstrated compliance with requirements of the contract documents.

D. Product Selection Procedures:

- Basis of Design: Where products or manufacturers are identified as "basis of design" or where sizes, profiles, and dimensional requirements on drawings are based on a specific product or system, comply with provisions for comparable products to obtain approval for listed alternate products or manufacturers.
 Comply with provisions for substitutions to obtain approval for use of an equal unnamed product or manufacturer.
- 2. Specified Products: Where the specifications indicate that a product or manufacturer is to be selected from those listed, comply with the provisions for substitutions to obtain approval for use of an equal unnamed product.
- Other Named Products: Where products or manufacturers are indicated without qualification, or with the words "or approved equal" or similar terms, comply with provisions for comparable products to obtain approval for use of an equal unnamed product.
- 4. Visual Matching Specification: Where specifications require matching an established sample, select a product that complies with requirements and matches Engineer's sample. OCTA Project Manager's decision will be final on whether a proposed product matches.
- 5. Visual Selection Specification: Where specifications include the phrase "as selected from manufacturer's colors, patterns, textures" or a similar phrase, Contractor shall select a product that complies with other specified requirements.
- 6. Full Range: Where specifications include the phrase "to match existing colors, patterns, textures" or similar phrase, OCTA Project Manager will select color, pattern, density, or texture from manufacturer's product line submitted by the Contractor, that includes both standard and premium items.

PART 2 - PRODUCTS

Not used.

PART 3 – EXECUTION

Not Used.

PART 4 - MEASURMENT AND PAYMENT

No separate measurement or payment will be made for the work of this section.

END OF SECTION

SECTION 01 71 13

MOBILIZATION AND DEMOBILIZATION

PART 1 - GENERAL

1.01 DESCRIPTION

A. This section consists of the Contractor furnishing all transportation, labor, materials and equipment necessary and incidental to mobilization and demobilization to perform the work of this contract. Work for mobilization and demobilization as specified in this section consists of preparatory work and operations at the start of the Contract Work and removal of those items at Contract completion. Contractor shall provide written construction notices to residents and tenants adjacent to the project site per City requirements.

1.02 **DEFINITIONS**

- A. Mobilization is operations necessary for the movement and arrival at the worksite of personnel, equipment, supplies, and appurtenances, all in ready and satisfactory working and operational order, which the Contractor intends to use for the work; for the establishment of all temporary offices and Contractor-owned structures and other temporary facilities necessary to perform the work; proper safety training of project personnel; and for incidental work and operations which must be performed prior to beginning work on the various contract items.
- B. Demobilization is operations necessary for the removal of all personnel, equipment, supplies, appurtenances, Contractor-owned structures, temporary facilities, materials, and debris from the worksite and restoration of site and surrounding properties, affected by the Contractor's activities, to pre-construction conditions, as approved by OCTA Project Manager.

1.03 SUBMITTALS

- A. Shop Drawing showing the installation of any pollution control/SWPPP features required for the Project to be established on the site prior to initiating construction, maintained for the duration of construction and removed upon completion of construction.
- B. Copies of all required permits obtained prior to starting Work covered by the permit.
- C. List of tenants that need to get the construction notice.
- D. Proof from the post office that all letters (construction notices) got sent.

PART 2 - PRODUCTS

Not Used

PART 3 – EXECUTION

3.01 GENERAL

- A. The Contractor shall provide personnel, equipment, temporary facilities, construction materials, tools, and supplies at the worksite at the time they are scheduled to be required.
- B. The Contractor shall locate plant or equipment appropriately close to the portion of the work for which it will be used.
- C. The Contractor shall obtain all necessary permits required by the local jurisdictions to perform the work of this Contract. The Contractor shall provide OCTA Project Manager copies of all permits obtained prior to starting work covered by the permit.
- D. The Contractor shall install pollution control features required by permits for the construction. These features shall be maintained throughout the duration of construction and removed at the completion of construction.
- E. Upon completion of the work, the Contractor shall remove all equipment, temporary facilities, construction tools, apparatus, equipment, unused materials and supplies, plant, and personnel from the worksite and shall leave the worksite in a clean and satisfactory condition as approved by OCTA Project Manager.

PART 4 – MEASUREMENT AND PAYMENT

Work is considered incidental to work under other payment items and no separate payment will be made.

END OF SECTION

SECTION 01 71 23

FIELD ENGINEERING

PART 1 – GENERAL

1.01 DESCRIPTION

A. Work Includes:

- Employ land surveyors and professional engineers, licensed in the State of California, to perform surveying and field engineering as required per Contract Documents.
- 2. Establish and maintain baselines and field control points as required for construction layout survey.
- 3. Perform survey and measurement to establish design lines and grades.
- 4. Layout of the Work.
- 5. Other engineering services, as necessary, to accomplish the Work.

1.02 GENERAL

- A. Contractor shall locate and protect all adjacent areas, utilities, equipment, buses, cars, and appurtenances.
- B. Control area of work, so that it does not interrupt bus maintenance and operations activities, or bus or car traffic flow on the site. Provide barricade and traffic signs around work area, excavations, and contractor's equipment. Provide flashing lights from dusk to dawn on all sides of construction work.
- C. Promptly report and repair to the Engineer's satisfaction disruption in utilities caused by construction work. Repair disruption of utilities immediately.
- D. Make no changes without prior written notice to the Engineer.

1.03 SUBMITTALS

- A. Submit for OCTA's approval the name and professional history of the land surveying firm designated by the Contractor as its project surveyor.
 - 1. At a minimum the project surveyor must have five to ten years of verifiable experience performing field survey.

- B. On request, submit to OCTA Project Manager documentation that verifies accuracy of field engineering work and surveying work. Submit data certifying the all dimensions, elevations, and locations of improvement are in conformance, or non-conformance, with Contract Documents at end of Project.
- C. Prior to completion of project and when requested by OCTA Project Manager, submit a copy of site drawing prepared by California registered engineer and signed by land surveyor verifying that the elevations and locations of the work are in conformance with contract documents.
- D. Contractor shall submit a complete copy of the baseline survey field notes and final layout.
- E. Contractor shall provide As-built redline drawings to the Authority at the completion of the Project.

1.04 REQUIREMENTS

- A. Field Engineering: Provide field engineering services, as necessary. Utilize recognized engineering practices.
- B. Verification: Verify all existing dimensions before starting work. Record all existing pavement striping and markings and submit this record to OCTA before commencing any demolition work.
- C. Layout and Control of the Work: Establish elevations, lines, and grade for all Work under this Contract. Locate and lay out by instrumentation and similar appropriate means. Contractor is responsible for all construction field survey and setting of grades and slopes. New asphalt or concrete paving flow patterns should merge with existing flow patterns on the site so that flow of water is directed towards existing gutters, swales, and storm drains on site. Protect in place existing storm drain system, swales, gutters, concrete walk, storm drain inlets, channel wall, fencing, on-site storage, OCTA equipment, and property during construction.
- D. Verification of Work: Periodically verify layout and completed conditions of the Work by same means.
- E. Project area shall be cordoned off using traffic cones during each construction phase on all sides at end of work day. Traffic cones shall be removed by the end of each work day.

1.05 QUALITY CONTROL

A. Contractor shall maintain a complete and accurate log of control and survey work as it progresses.

- B. OCTA Project Manager reserves the option to check Contractor's survey measurements and calculations. Whether OCTA Project Manager exercises this option or not, the requirement for accuracy will not be waived.
- C. On completion of construction and major site improvements, Contractor shall prepare a final certified survey illustrating dimensions, locations, angles, and elevations of construction and work site.

PART 2 - PRODUCTS

Not Used

PART 3 – EXECUTION

3.01 EXAMINATION

- A. Verify locations of survey control points prior to starting any work on the project site. Contractor shall field verify all existing dimensions, conditions, layout, grading that will affect the project before commencing any work.
- B. Review OCTA record drawings for underground utilities and field verify all utilities that may affect construction activities before demolition work and excavation. Contractor shall utilize an independent utility locator company to survey and map any and all utilities that may affect construction activities and determine if there are any utility lines in conflict with construction of this project.
- C. Contractor shall conduct survey (line and grade) of existing improvements such as top of curb, finished surface, flow lines etc. before any demolition or removal is undertaken. Areas where pavement has failed or settled shall be documented.
- D. Immediately notify OCTA Project Manager of any discrepancies discovered.
- E. Finished grade shall match existing grade and ensure positive drainage is provided.

3.02 SURVEYS AND RECORDS

- A. Working from lines and grades established by baseline survey as shown in relation to work, establish and maintain bench marks and other dependable markers to set lines and levels for work on site as needed to locate each element of the project.
- B. Contractor shall inform tradesmen performing the work of marked lines and grades provided for their use in layout work.

- C. Contractor shall provide a complete copy of baseline survey field notes and final layout to OCTA Project Manager prior to starting construction.
- D. Certify all lines and grades to OCTA.

3.03 SURVEY REFERENCE POINTS

- A. Contractor shall locate and protect survey control and reference points. Preserve permanent reference points during construction.
- B. Contractor shall establish appropriate control datum for construction survey.
- C. Contractor shall report to OCTA Project Manager the loss or destruction of any reference points or relocation required because of changes in grades or other reasons.
- D. Contractor shall replace dislocated survey control points based on original survey control and shall make no changes without prior written notice to and approval by OCTA Project Manager.

PART 4 - MEASUREMENT AND PAYMENT

No separate measurement or payment will be made under this section.

END OF SECTION

SECTION 01 73 29

CUTTING AND PATCHING

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Requirements and limitations for cutting and patching of Work.

1.02 RELATED SECTIONS

- A. Section 01 11 00 Summary of Work.
- B. Individual Product Specification Sections:
 - 1. Cutting and patching incidental to Work specified in the Section.
 - 2. Coordination with Work specified in other Sections for openings required to accommodate Work specified in those other Sections.

C. Include:

- 1. Identification of Project.
- 2. Location and description of affected Work.
- 3. Explanation of necessity for irregular cutting and patching procedures.
- 4. Description of proposed special work and alternate products to be used.
- 5. Alternatives to cutting and patching.
- 6. Effect on existing construction and, if applicable, work being performed for the Authority under separate contracts.
- 7. Date and time Work will be executed.
- 8. Written permission of affected separate contractor.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Primary Products: As required for original installation and to match surrounding construction.

B. Product Substitution: For each proposed change in materials, submit request for substitution under provisions of Section 01 60 00 - Product Requirements.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examination, General: Inspect existing conditions prior to commencing Work, including elements subject to damage or movement during cutting and patching.
- B. After uncovering existing Work, inspect conditions affecting proper accomplishment of Work.
- C. Beginning of cutting or patching shall be interpreted to mean that existing conditions were found by Contractor to be acceptable.

3.02 PREPARATION

A. Temporary Supports: Provide devices and methods to protect other portions of Project from damage by providing temporary supports.

3.03 CUTTING AND PATCHING

- A. Cutting and Patching:
 - 1. Execute cutting, fitting, patching, excavation, and fill, to complete Work.
 - 2. Coordinate installation or application of products for integrated Work.
- B. Remedial Work: Remove and replace defective or non-conforming Work.

3.04 PERFORMANCE

- A. Cutting and Patching:
 - Execute demolition, cutting and patching by methods to avoid damage to adjoining Work, and which will provide appropriate surfaces to receive final finishing.
 - 2. Saw cut asphalt concrete or Portland cement concrete paving for smooth edges. Do not overcut corners.
 - 3. Contractor is required to take all precautions during construction to prevent damage to OCTA buses, property, equipment, utilities, and OCTA personnel. All

precautions are to taken per CAL-OSHA code to prevent accidents, and damage to adjacent OCTA property and appurtenances.

B. Restoration:

- 1. Restore Work with new products as specified in individual Sections.
- 2. Where affected or uncovered by construction work, finish adjacent surfaces and background to condition before construction. Match material, paint, and finish to nearest joint. Re-paint all curbs, traffic striping, legends, parking stalls, numbers, and paving as existed before construction. Damage to adjacent or OCTA property shall be repaired, at the Contractor's expense, to a condition as existed before construction and to OCTA's Project Manager's satisfaction.
- C. Finishing: Refinish (material and paint) surfaces to match adjacent and similar finishes as used for the Project. (match material and paint finish). For continuous surfaces, refinish with material and paint to nearest intersection or natural break or joint. Replace equipment or appurtenances damaged due to demolition, cutting or patching work during construction. Provide material quality to level equal to or better than that which existed before construction started.

PART 4 - MEASUREMENT AND PAYMENT

No separate measurement or payment will be made under this section.

END OF SECTION

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SECTION 01 74 19

CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

PART 1 - GENERAL

1.01 DESCRIPTION

A. Work Includes: Procedures for ensuring optimal diversion of construction and demolition waste generated by the Project, and documentation procedures for tracking waste generation and diversion.

1.02 **DEFINITIONS**

- A. Certified Mixed Debris Processing Facility: A solid waste processing facility that accepts loads of mixed debris for the purpose of recovering re-usable and recyclable materials and disposing of the non-recyclable residual material.
- B. Class III Landfill: A landfill that accepts non-hazardous solid waste such as household, commercial, and industrial solid waste. A Class III landfill shall have a California Integrated Waste Management Board (CIWMB) solid waste facilities permit and is regulated by the Local Enforcement Agency.
- C. Construction and Demolition (C&D) Debris: Solid waste and recyclable materials that result directly from construction and demolition of buildings and other structures, do not contain hazardous waste (as defined in CCR Title 22, Section 66621.3, et seq.), and contain no more than 1 percent putrescible wastes by volume, calculated on a monthly basis. C&D debris includes, but is not limited to: asphalt, concrete, portland cement, brick, lumber, wallboard, roofing material, ceramic tile, pipe, glass and associated packaging.
- D. Disposal: Acceptance of solid waste at a legally operating facility for the purpose of landfilling.
- E. Diversion: Activities that result in reducing the amount of waste disposed at a landfill. This can include source reduction activities, composting, recycling, and reuse.
- F. Inert Backfill Site: A location, other than inert fill or other disposal facility, to which inert waste is taken for the purpose of filling an excavation, shoring, or another soils engineering operation.
- G. Inert Fill: A facility that can legally accept inert waste such as asphalt and concrete exclusively for the purpose of disposal.
- H. Inert Debris/Inert Waste: Solid waste and recyclable materials that are source separated or separated for reuse, do not contain hazardous waste (as defined in

CCR, Title 22, section 66261.3 et. seq.) or soluble pollutants at concentrations in excess of applicable water quality objectives, and do not contain significant quantities of decomposable waste. Inert debris may not contain more than 1 percent putrescible wastes by volume calculated on a monthly basis. Gravel, rock, soil, sand and similar materials, whether processed or not, that have never been used in connection with any structure, development, or other human purpose are not inert debris.

- I. Mixed Debris: Material that includes commingled recyclable and non-recyclable construction and demolition debris.
- J. Mixed Debris Processing Facility: A solid waste processing facility that accepts loads of mixed debris for the purpose of recovering re-usable and recyclable materials and disposing of the non-recyclable residual materials. Refer also to Certified Mixed Debris Processing Facility.
- K. Permitted Waste Hauler: A company that possesses a valid and current permit from the County of Riverside to collect and transport solid waste from individuals or businesses in the County of Riverside.
- L. Recycling: The process of sorting, cleaning, treating, and reconstituting materials for the purpose of using the altered form in the manufacture of a new product. Recycling does not include burning, incinerating, or thermally destroying solid waste.
 - 1. On-site recycling materials that are sorted and processed for use in an altered form in the Project, (e.g. concrete is crushed for use as base for a parking lot on the site).
 - 2. Off-site recycling source-separated materials hauled to another location and used in an altered form in the manufacture of a new product.
- M. Recycling Facility: An operation that can legally accept materials for the purpose of processing the materials into an altered form for the manufacture of a new product. Depending on the types of materials accepted and operating procedures, a recycling facility may or may not be required to have a Solid Waste Facilities permit from the CIWMB or be regulated by the Local Enforcement Agency.
- N. Reuse: Materials that are recovered for use in the same form. This includes materials that are reused on-site or off-site.
- O. Salvage: Materials recovered for reuse or sale or donation to a third party.
- P. Source Reduction: Any action causing a net reduction in the generation of solid waste. Source reduction includes, but is not limited to, reducing the use of non-recyclable materials, replacing disposable materials and products with reusable materials and products, reducing packaging, and reducing the amount of yard waste generated.

- Q. Source-Separated Materials (Construction and Demolition Debris): Material that is sorted at the site of generation by individual material type for the purpose of reuse or recycling, i.e., loads of concrete that are source-separated for delivery to a base course recycling facility to be crushed into road base material.
- R. Solid Waste: Shall mean waste that the CIWMB has deemed acceptable for disposal at a Class III landfill and shall not include source-separated material.
- S. Transfer Station: A facility that can legally accept solid waste for the purpose of temporarily storing the materials for re-loading onto other trucks and transporting materials to a landfill for disposal, or recovering some materials for reuse or recycling. Transfer stations must be permitted by the CIWMB and regulated by the Local Enforcement Agency.

1.03 SUBMITTALS

- A. Waste Management Plan (WMP): Conduct a site assessment and estimate the types and quantities of materials, under the Project, that are anticipated for on-site or off-site processing, recycling, reuse, or disposal.
 - 1. Not more than 10 working days after Notice to Proceed, submit to OCTA Project Manager a written WMP. The plan shall show the percentage of recycling for inert debris expected from the Project and the percentage recycling for the remaining C&D debris expected from the Project. While no minimum amounts of recycling have been established for this project, Contractor shall make every reasonable effort to achieve a minimum of 50% by weight of material that is recycled, re-used, salvaged or otherwise diverted from landfill.
 - 2. OCTA Project Manager's approval of the Contractor's WMP will not otherwise relieve the Contractor of responsibility for adequate and continuing control of pollutants and other environmental protection measures.
 - 3. Dirt and excavation spoils, whether reused as fill or not, will not be counted in the calculation of diverted and disposed materials.
- B. Solid Waste Diversion and Disposal Report (SWDD Report): One week prior to the first of every month, and prior to Contractor's monthly progress estimate for payment, Contractor shall prepare and submit to OCTA Project Manager a written SWDD report quantifying all material generated in the Project which was either disposed or diverted from disposal through reuse or recycling during the time period covered by the SWDD report and progress payment. Include in the Report a cumulative history of the diversion and disposal for the Project. Attach supporting documentation including manifests, weigh tickets, receipts, reports, invoices, and other supporting documents specifically identifying the project, the recyclables and solid waste generated by the Project, and where the material was sent. The final SWDD report shall cover the complete time period of the Project and shall contain a list of the total waste disposed and/or diverted for each reporting period. The final

SWDD report and supporting documentation shall be submitted within 30 Calendar Days of Project completion.

1.04 WASTE MANAGEMENT PLAN SUBMITTAL MEETING

A. On or about 5 working days after Notice to Proceed, OCTA Project Manager will schedule and attend a meeting with the Contractor to discuss the proposed WMP submittal. This meeting shall be held to allow the OCTA and the Contractor an opportunity to develop a mutual understanding regarding the recycling and reuse requirements and programs.

1.05 REUSE, SALVAGE, AND RECYCLING OPTIONS

- A. Contractor shall make use of as many reuse and salvage options as is feasible. One option is the California Materials Exchange (CalMAX), a free program sponsored by the CIWMB.
- B. Recycling shall include both on-site and off-site recycling of source-separated materials, as well as mixed debris recycling efforts.
- C. On-site recycling program shall produce a quality product to meet the specifications identified in the Contract Documents, subject to approval. Estimate the amount of material to be used in the Project and include a program for off-site recycling of any excess material that cannot be used in the Project.
- D. Develop and implement a program to include source separation of solid waste, to the greatest extent feasible, of the following types:
 - 1. Asphalt
 - 2. Concrete and concrete block
 - 3. Rock
 - 4. Wood (lumber)
 - 5. Green material (i.e. tree trimmings)
 - 6. Metals
- E. Mixed Debris Recycling: Develop and implement a program to transport loads of commingled construction and demolition materials that cannot be feasibly source separated to a mixed debris recycling facility.

1.06 HAULING AND DISPOSAL OPERATIONS

- A. Hauling: Arrange the collection and hauling of C&D debris by a waste hauler that is permitted by the County of Orange Waste Management Department and Agencies as applicable.
- B. Recycling And Processing Facilities: Transport C&D debris to recycling or processing facilities. Contractor shall be familiar with the requirements for acceptance of C&D materials at the recycling and processing facilities before the material is delivered. Always call facilities in advance to verify requirements.
- C. Disposal Facilities: Transport C&D debris that cannot be delivered to a recycling or processing facility, to a transfer station or disposal facility that can legally accept the materials for the purpose of disposal.
- D. Site Disposal: Do not burn, bury, or otherwise dispose of solid waste on the Project job-site. All trash, debris, and removed materials shall be hauled away and legally disposed off-site on the same day they are removed.

PART 2 - PRODUCTS

Not Used

PART 3 – EXECUTION

Not Used

PART 4 – MEASUREMENT AND PAYMENT

No separate measurement or payment will be made under this section.

END OF SECTION

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SECTION 01 74 23

CLEANING

PART 1 - GENERAL

1.01 DESCRIPTION.

- A. Work Included:
 - 1. Execute cleaning, during progress of the work, and at completion of the work.
- B. Related Work Specified Elsewhere:
 - 1. Cleaning for specific products or work; the respective specification section for that work.
 - 2. Refer to Section 01 14 25, Procedures in Construction for requirements for restoration of project site(s), including but not limited to photographic documentation.
 - 3. Refer to Section 01 71 13, Mobilization and Demobilization for requirements for removal of all of Contractors facilities, equipment and tools.

1.02 DISPOSAL REQUIREMENTS.

- A. Conduct cleaning and disposal operations to comply with all applicable codes, local codes, ordinances, regulations and laws, rules and practices.
- B. Conform to requirements of 01 74 19, Construction Waste Management and Disposal.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Use only those cleaning materials which will not create hazards to health or property and which will not damage surfaces.
- B. Use only those cleaning materials and methods recommended by manufacturer of the surface material to be cleaned.
- C. Use cleaning materials only on surfaces recommended by cleaning material manufacturer.

PART 3 - EXECUTION

3.01 CLEANING DURING CONSTRUCTION

- A. Provide all labor and equipment required to remove trash and broom clean project sites as required, including surrounding areas affected by construction activities.
- B. Provide all labor and equipment required to load, haul, and legally dispose of all construction trash and debris at the end of each work day throughout the duration of the project.
- C. Pay all dump fees required to legally dispose of materials.
- D. Clean streets adjacent to the project site as required to meet the requirements of all local, City, County and State authorities.
- E. Clean and wash parking lots and driveways.
- F. Provide labor to clean the office trailer once a week.
- G. Clean up all excess concrete from site concrete work.
- H. Wet down dry materials and rubbish to prevent blowing dust.
- At reasonable intervals during progress of work and at the end of each work day, remove waste materials, debris and rubbish from site and dispose of legally away from site.
- J. Handle waste materials and debris in a controlled manner with as few handlings as possible; do not drop or throw materials from heights.
- K. Schedule cleaning operations so that dust and other contaminants resulting from cleaning process will not fall on wet or newly painted surfaces.
- L. Do not place in fills or backfills or burry at site any waste material, rubbish or debris. Remove such material from project to a lawful disposal area by the end of each work day; pay all associated hauling and dumping charges.
- M. Perform any additional cleaning or cleaning at shorter intervals when instructed to do so by OCTA Project Manager.

3.02 FINAL CLEANING

- A. SUBSTANTIAL COMPLETION REVIEW CLEANING, GENERAL
 - 1. Substantial Completion Review Cleaning, General: Execute a thorough cleaning prior to Substantial Completion review by the Engineer.

- a. Clean surrounding areas affected by construction. Clean and repair all surrounding areas and appurtenances such as curbs, gutters, swales, storm drain, platforms, equipment, vents, buses, fences, Apex boxes, light concrete pedestal, landscaping, and driveways. Repair equipment, curbs, surrounding driveways, landscaping, and site affected by the construction work by thorough brooming and washdown. Remove all oil, concrete, debris, and paint from the surfaces mentioned.
- b. Remove waste and surplus materials, rubbish and temporary construction facilities, utilities and controls from site.
- 2. Employ experienced workmen, or professional cleaners, for final cleaning.
- 3. In preparation for occupancy, conduct final inspection of sight-exposed surfaces, and of concealed spaces.
- 4. Remove grease, dust, dirt, stains, labels, fingerprints, and other foreign materials, from sight-exposed finished surfaces; polish surfaces so designated to shine finish.
- 5. Wash and shine glazing and mirrors.
- 6. Repair, patch and touch up marred surfaces to specified finish, to match adjacent surfaces.
- 7. Water-jet clean paved surfaces; rake clean other surfaces of grounds. Comply with SWPPP BMP measures.
- 8. Remove all protective construction coverings and coatings.
- 9. Contaminated Earth: Final clean-up operations shall include removal and lawful disposal of earth that is contaminated or unsuitable for support of plant life in planting areas, as well as filling of resulting excavations with suitable soil. Contaminated areas include those used for disposal of waste concrete, mortar, plaster, masonry and similar materials; areas in which washing out of concrete and plaster mixes or washing of tools and other similar cleaning operations have been performed; and areas that have been oiled, paved or chemically treated. Do not dispose of waste oil, solvents, paints, solvents and similar material of a penetrating nature by depositing or burying on OCTA's property.
- 10. Maintain cleaning until project is occupied.
- 11. Final cleaning shall be done to the satisfaction of OCTA Project Manager.

B. FINAL COMPLETION INTERIOR CLEANING

1. Final Completion Cleaning, General: Complete final cleaning before submitting final Application for Payment.

- a. Remove asphalt, oil, grease, mastic, adhesives, dust, dirt, stains, fingerprints, labels, concrete material, and other foreign materials from all visible exterior surfaces.
- b. Remove dust from all horizontal surfaces not exposed to view, including equipment, light standards, ledges, utilities, buses, apex boxes, and plumbing fixtures on site affected by construction.
- c. Repair all disrupted or broken appurtenances which were damaged during construction to a new condition to the OCTA's Project Manager's satisfaction.
- 2. Clean all adjacent walls, equipment, and other appurtenances mentioned in article 3.1.A.1 above affected by construction work including areas adjacent to construction and on site.
- 3. Clean construction area in which phase has been completed and re-stripe before begin of next phase of work

C. FINAL COMPLETION SITE CLEANING

- 1. Site Cleaning: Broom clean exterior paved surfaces. Rake clean other surfaces of the grounds affected by construction material.
 - a. Wash down and scrub where necessary all paving soiled as a result of construction activities. Thoroughly remove material droppings, asphalt splatters, stains, oil, and adhered soil.
 - b. Remove from the site all construction waste, unused materials, excess soil and other debris resulting from the Work.

PART 2 - PRODUCTS

Not Used

PART 3 – EXECUTION

Not Used

PART 4 - MEASUREMENT AND PAYMENT

No separate measurement or payment will be made under this section.

END OF SECTION

SECTION 01 77 00

CLOSEOUT PROCEDURES

PART 1 – GENERAL

1.01 SUMMARY

A. Section Includes:

- 1. Administrative and procedural requirements for contract closeout, including, but not limited to, the following:
 - a. Substantial Completion procedures.
 - b. Final Acceptance procedures.

B. Related Sections:

- 1. Section 01 74 23, Cleaning, for final cleaning of project site(s).
- 2. Section 01 78 00, Closeout Submittals, for operation and maintenance manual requirements.
- 3. Section 01 78 00, Closeout Submittals, for submitting record drawings, record specifications, and record product data.
- 4. Section 01 78 36, Warranties and Guarantees and Bonds, for submitting Warranties.
- 5. Divisions 02 through 48 sections for any specific closeout requirements for the work in those sections.

1.02 SUBSTANTIAL COMPLETION

A. Preliminary punch list review: At Contractor's request, the Engineer will attend a preliminary Contract closeout review, not earlier than 14 days prior to anticipated Substantial Completion review day. The Engineer and Contractor shall conduct a brief walk-though of Project to review scope, adequacy and completeness of the Work. The Engineer will prepare a typewritten list of items to be completed and corrected (preliminary punch list).

- B. Before requesting review/inspection for determining date of Substantial Completion, the Contractor shall complete the following:
 - Execute cleaning and clear site of temporary facilities and controls, as specified in Section 01 50 00 Temporary Facilities and Controls and in Section 01 74 23 Cleaning.
 - 2. Prior to Substantial Completion review, complete all testing, inspection, balancing, sterilization and cleaning of the Work. Obtain final City Inspection and City sign-off required for the Project. Provide original of final sign-off cards to the Authority.
 - 3. Advise OCTA of pending insurance changeover requirements.
 - Submit specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents. Refer to Section 01 78 00, Closeout Submittals for requirements.
 - 5. Obtain and submit releases permitting OCTA unrestricted use of the work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
 - 6. Prepare and submit project record documents, operation and maintenance manuals, final completion construction photographic documentation, damage or settlement surveys, property surveys, and similar final record information. Refer to Section 01 78 00, Closeout Submittals for requirements.
 - 7. Deliver tools, spare parts, extra materials, and similar items to location designated by Owner. Label with manufacturer's name and model number where applicable.
 - 8. Make final changeover of permanent locks and deliver keys to OCTA Project Manager. Advise OCTA's personnel of changeover in security provisions.
 - 9. Complete startup testing of systems.
 - 10. Submit test/adjust/balance records.
 - 11. Terminate and remove temporary facilities from project site, along with mockups, construction tools, and similar elements. Refer to Section 01 71 13, Mobilization and Demobilization for requirements.
 - 12. Advise OCTA Project Manager of changeover in utilities.

- 13. Submit changeover information related to OCTA's occupancy, use, operation, and maintenance.
- 14. Complete final cleaning requirements, including touchup painting. Refer to Section 01 74 23, Cleaning for requirements.
- 15. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.
- C. Contractor's Certification: The Contractor shall submit to the Engineer written certification that Contract Documents have been reviewed, Work has been inspected, and that Work is complete in accordance with Contract Documents and ready for Substantial Completion review by the Engineer. Provide five working days notice to the Engineer that Work is substantially complete.
- D. Punch List Review: The Authority's Engineer, and the responsible design consultants, as may be necessary, will attend a Contract closeout review and conduct a walk-thorough of Project to review the updated list of items to be completed and corrected (Punch List).
 - 1. Contractor shall prepare a list and record additions, deletions, and revisions as noted by the Engineer for completion or correction.
 - 2. The Contractor shall complete all items on the punch list and notify the Engineer the completed items. The Engineer will update and distribute the revised Punch List after his next walk-through.
 - Costs of additional visits caused by incomplete scope of work or punch list items
 after the second visit to the site by the Engineer and the design consultants, to
 review completion and correction of Work, shall be reimbursed to the Authority by
 the Contractor.
- E. Inspection: Submit a written request for inspection for Substantial Completion. On receipt of request, OCTA Project Manager will either proceed with inspection or notify Contractor of unfulfilled requirements. OCTA Project Manager will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by OCTA Project Manager, that must be completed or corrected before certificate will be issued.
 - 1. Re-inspection: Request re-inspection when the work identified in previous inspections as incomplete is completed or corrected.

2. Results of completed inspection will form the basis of requirements for final completion.

1.03 FINAL ACCEPTANCE

- A. Preliminary Procedures: Before requesting final inspection for determining final acceptance, complete the following:
 - 1. A final Application for Payment according to Section 01 29 00, Payment Procedures and the General Provisions of the Contract.
 - Submit certified copy of OCTA Project Manager's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by OCTA Project Manager. The certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
 - 3. Submit evidence of final, continuing insurance coverage complying with insurance requirements.
 - 4. Instruct OCTA's personnel in operation, adjustment, and maintenance of products, equipment, and systems.
- B. Inspection: Submit a written request for final inspection for final acceptance. On receipt of request, OCTA Project Manager will either proceed with inspection or notify Contractor of unfulfilled requirements. OCTA Project Manager will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.
 - 1. Re-inspection: Request re-inspection when the work identified in previous inspections as incomplete is completed or corrected.
- C. Engineer's Certification: The Engineer determines that the list of items to be completed and corrected (Punch List) is sufficiently complete for the Authority to occupy the Project area for the use to which it is intended.
- D. Notice of Completion: The Authority, after receipt of the Engineer's certification, will record a Notice of Completion with the county.

PART 2 - PRODUCTS

Not Used

PART 3 - EXECUTION

Not Used

PART 4 - MEASUREMENT AND PAYMENT

No separate measurement or payment shall be made under this section.

END OF SECTION

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SECTION 01 78 00

CLOSEOUT SUBMITTALS

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

- 1. Maintain at the site for OCTA Representative one record copy of Project record documents, including:
 - a. Record drawings.
 - b. Record specifications.
 - c. Addenda.
 - d. Change Orders and other Modifications to the Contract.
 - e. OCTA's field orders and written instructions.
 - f. Reviewed and Accepted Shop Drawings, Product Data and Samples.
 - g. Field Test Reports.
 - h. Referenced Documents.

B. Related Sections:

- 1. Section 01 77 00, Closeout Procedures.
- 2. Section 01 78 36, Warranties and Guarantees and Bonds.
- 3. Section 01 33 00, Submittal Procedures.
- 4. Sections in Division 02-49 for specific requirements related to work of those sections.
- 5. General Conditions for all financial and payment requirements.

1.02 SUBMITTALS

- A. At Contract close-out, deliver Record Documents to the OCTA's representative.
- B. Accompany submittal with transmittal letter in duplicate, containing:

1. Date;

- 2. Project title and contract number;
- 3. Contractor's name and address;
- 4. Title and number of each Record Document; and
- 5. Signature of Contractor or his authorized representative.
- C. Submit in accordance with Section 01 33 00, Submittal Procedures.
- D. Record Drawings: Submit one set of full size marked-up record prints. Submit also as pdf electronic file on electronic media acceptable to OCTA Project Manager.
- E. Record Specifications: Submit one set of contract specifications, including addenda and contract modifications. Submit also as pdf electronic file on electronic media acceptable to OCTA Project Manager.
- F. Record Product Data: Submit one marked-up copy of each product data submittal. Submit also as pdf electronic file on electronic media acceptable to OCTA Project Manager.
 - 1. Product data need not be submitted separately if included in operation and maintenance manuals.
- G. Shop Drawings: Submit one hard copy of reviewed and accepted shop drawings. Also submit as PDF files and AutoCAD files on a CD ROM.
- H. Operations and Maintenance Manual:
 - Manual content is specified in individual specification sections to be reviewed at the time of section submittals. Submit review manual content formatted and organized as required by the section. Where applicable, clarify and update reviewed manual content to correspond to modifications and field conditions.
 - 2. Submit three paper copies of each Operations and Maintenance Manual. Include a complete operation and maintenance directory. Enclose tile pages and directories in clear plastic sleeves.
 - 3. Submit PDF electronic file on digital media acceptable to OCTA Project Manager. Assemble each manual into a composite electronically-indexed file.
 - 4. Initial Manual Submittal: Submit draft copy of each manual at least 30 calendar days before commencing demonstration and training. OCTA Project Manager will comment on whether general scope and content of manual are acceptable.
 - a. Correct or modify each manual to comply with OCTA Project Manager's comments. Submit copies of corrected manual within 15 calendar days of receipt of comments and prior to commencing demonstration and training.

- Final Manual Submittal: Submit each manual in final form before requesting inspection for Substantial Completion and at least 15 calendar days before commencing demonstration and training.
- I. Other Documents: Unless otherwise specified, submit one (1) hard copy and a PDF electronic file of each document required herein.

1.03 FINAL COMPLETION SUBMITTALS:

- A. Final Submittals: Submit to the Engineer all documents and products required by Specifications to be submitted, including the following which apply:
 - 1. Project record drawings and specifications.
 - 2. Operations and Maintenance data.
 - 3. Guarantees, warranties and bonds.
 - 4. Test reports and certificates of compliance.
 - Local Regulatory Jurisdiction(s) final Sign-off, including any and all documents required by governing authorities, utilities and other agencies, building permit cards, inspection cards signed-off as final by the inspectors, and certifications of inspections and tests.
- B. Certificates of Compliance and Test Report Submittals: Submit to the Engineer certificates and reports as specified, as required by manufacturers for warranty and guarantee purposes, and as required by authorities having jurisdiction.
- C. Subcontractor List: Submit to the Engineer five copies of updated Subcontractor and Materials Supplier List.
- D. Warranty Documents: Prepare and submit to the Engineer warranties and bonds as specified in Section 01 78 36 Warranties and Guarantees and Bonds.
- E. Final Payment: A final Application for Payment will be furnished by the Authority. The Authority will process the final payment per the General Provisions of the Contract.

1.04 PROJECT RECORD DOCUMENTS - GENERAL

- A. Maintain on site, one set of the following record documents and record actual construction and all revisions to the Work:
 - 1. Contract Drawings.

- 2. Project Manual, with Specifications, Addenda, Change Orders and other instruments modifying the Contract.
- 3. Reviewed shop drawings, product data and samples.
- 4. Store Record Documents separate from documents used for construction.

1.05 RECORD DRAWINGS:

- A. Record Prints: Maintain one set of black-line white prints of the contract drawings and shop drawings for the sole purpose of recording all as-built changes to the work.
- B. Preparation: Record information continuously as Work progresses. Do not conceal Work permanently until all required information is recorded. Require individual or entity who obtained record data, where individual or entity is installer, subcontractor, or similar entity, to prepare the marked-up record prints. Legibly and to scale, mark a reproducible set of Contract Drawings to record actual construction where installation varies from that shown on contract drawings, including:
 - 1. Measured dimensions and cross section of work.
 - 2. Measured horizontal and vertical locations of underground utilities, ducts, and vents from specific wall locations, including all new utilities installed and utilities found, abandoned or left in place, referenced to permanent surface improvements and to visible and accessible features of the structure.
 - 3. Field changes of dimensions and details.
 - 4. Details not on original Contract Drawings and any other changes to the original Contract Drawings (Changes of location of utilities, equipment, and other accessories).
 - 5. As-Built information shall be shown along with RFIs, Submittals, Change Orders, or other indicating source of changes. References to written changes such as RFI's of Field Directives should be clouded on the drawings with a copy of the written direction attached to the set of drawings.
 - 6. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.
 - 7. Accurately record information in an understandable drawing technique.
 - 8. Record data as soon as possible after obtaining it. Record and check the markup before enclosing concealed installations.
- C. Mark record sets in red ink. Use other colors as required to distinguish between changes for different categories of the work at same location.

- 1. Mark important additional information that was either shown schematically, such as conduit runs, or omitted from original drawings.
- 2. Note work change RFI numbers, directive numbers, alternate numbers, change order numbers, and similar identification, where applicable.

1.06 RECORD SPECIFICATIONS

- A. Preparation: In PART 2 PRODUCTS in each specification section, legibly mark in red ink and record actual products installed or used
 - 1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
 - 2. Mark copy with the proprietary name and model number or catalog number of products, materials, and equipment furnished, including substitutions or alternates utilized and product options selected.
 - 3. Record the name of manufacturer, supplier, installer, and other information necessary to provide a record of selections made.
 - 4. For each principal product, indicate whether record product data has been submitted in operation and maintenance manuals instead of submitted as record product data.
 - 5. Note related addenda, change orders, record product data, and record drawings, and other instruments modifying the Contract, where applicable.

1.07 SHOP DRAWINGS

- A. Maintain as record documents.
 - 1. Legibly annotate drawings to record changes made after review.
 - 2. Record Shop Drawings:
 - a. Revise shop drawing CAD files to reflect annotations made on record copy.
 - b. Submit hard copies, PDF files and CAD files compatible with AutoCAD 2012 and in accordance with paragraph 1.02.

1.08 OPERATIONS AND MAINTENANCE DOCUMENT DIRECTORY

- A. Organization: Include a section in the directory for each of the following:
 - 1. List of documents.

- 2. List of systems.
- 3. List of equipment.
- 4. Tables of contents.
- B. List of systems and subsystems: List systems alphabetically. Include references to operation and maintenance manuals that contain information about each system.
- C. List of Equipment: List equipment for each system, organized alphabetically by system. For pieces of equipment not part of system, list alphabetically in separate list.
- D. Tables of Contents: Include a table of contents for each emergency, operation, and maintenance manual.
- E. Identification: In the document directory and in each operation and maintenance manual, identify each system, subsystem, and piece of equipment with same designation used in the contract documents. If no designation exists, assign a designation according to ASHRAE Guideline 4, Preparation of Operating and Maintenance Documentation for Building Systems.

1.09 REQUIREMENTS FOR OPERATION AND MAINTENANCE MANUALS

- A. Organization: Unless otherwise indicated, organize each manual into a separate section for each system and subsystem, and a separate section for each piece of equipment not part of a system. Each manual shall contain the following materials, in the order listed:
 - 1. Title page.
 - 2. Table of contents.
 - Manual contents.
- B. Title Page: Include the following information:
 - 1. Subject matter included in manual.
 - 2. Name and address of project.
 - 3. Name and address of OCTA.
 - 4. Date of submittal.
 - 5. Name and contact information for Contractor.
 - 6. Name and contact information for OCTA Project Manager.

- 7. Names and contact information for major consultants to OCTA Project Manager that designed the systems contained in the manuals.
- 8. Cross-reference to related systems described elsewhere in the operation and maintenance manuals.
- C. Table of Contents: List each product included in manual, identified by product name, indexed to the content of the volume, and cross-referenced to specification section number in project manual.
 - 1. If operation or maintenance documentation requires more than one volume to accommodate data, include comprehensive table of contents for all volumes in each volume of the set.
- D. Manual Contents: Provide manuals for each piece of equipment including individual components and subsystems of complete assembly. Organize into sets of manageable size. Arrange contents alphabetically by system, subsystem, and equipment. If possible, assemble instructions for subsystems, equipment, and components of one system into a single binder. Line out non-applicable text and illustration. The section of the manual on operation shall describe the functions and limitations of each component and its relationship to the system of which it is a part. Where several models, options, or styles are described, the manual shall identify the items actually provided.
- E. Manuals, Electronic Files: Submit manuals in the form of a multiple file composite electronic PDF file for each manual.
 - 1. Electronic Files: Use electronic files prepared by manufacturer where available. Where scanning of paper documents is required, configure scanned file for minimum readable file size.
 - 2. File Names and Bookmarks: Enable bookmarking of individual documents based upon file names. Name document files to correspond to system, subsystem, and equipment names used in manual directory table of contents. Group documents for each system and subsystem into individual composite bookmarked files, then create composite manual, so that resulting bookmarks reflect the system, subsystem, and equipment names in a readily navigated file tree. Configure electronic manual to display bookmark panel upon opening file.
- F. Manuals, Paper Copy: Submit manuals in the form of hard copy, bound and labeled volumes.
 - 1. Binders: Heavy-duty, three-ring, vinyl-covered, loose-leaf binders, in thickness necessary to accommodate contents, sized to hold 8-1/2 by 11 inch paper; with clear plastic sleeve on cover to hold label and cover sheet describing contents and with pockets inside covers to hold folded oversize sheets.
 - a. If two or more binders are necessary to accommodate data of a system, organize data in each binder into groupings by subsystem and related

- components. Cross-reference other binders if necessary to provide essential information for proper operation or maintenance of equipment or system.
- b. Identify each binder on front and spine, with printed title "Operation and Maintenance Manual," project name, subject matter of contents, and specification section number (on bottom of spine). Indicate volume number for multiple-volume sets.
- Dividers: Heavy paper dividers with plastic covered tabs for each section of manual. Mark each tab to indicate contents. Include typed list of products and major components of equipment included in the section on each divider, crossreferenced to specification section number and title of project manual.
- 3. Protective Plastic Sleeves: Transparent plastic sleeves designed to enclose diagnostic software storage media for computerized electronic equipment.
- 4. Supplementary Text: Prepared on 8-1/2 by 11 inch white bond paper.
- 5. Drawings: Attach reinforced, punched binder tabs on drawings and bind with text.
 - a. If oversize drawings are necessary, fold drawings to same size as text pages and use as foldouts.
 - b. If drawings are too large to be used as foldouts, fold and place drawings in labeled enveloped and bind envelopes in rear of manual. At appropriate locations in manual, insert typewritten pages indicating drawing titles, descriptions of contents, and drawing locations.
- G. Manuals shall contain the following minimum information for each product or system:
 - 1. List of equipment furnished for project with name, address, and telephone number of each vendor.
 - 2. Name, address and telephone number for nearest manufacturer's service representative.
 - 3. Catalog, model and serial number for the installed equipment.
 - 4. Description of the normal and emergency operations of the equipment.
 - 5. Statement of warranty and date warranty begins and ends.
 - 6. Standard starting, stopping and operating instructions.
 - 7. Emergency and special operating instructions and a list of service organizations (including addresses and telephone numbers) capable of rendering emergency service to the various parts of the system.
 - 8. Copy of each wiring and control diagram.

- 9. Routine maintenance procedures.
- 10. Servicing and lubrication schedule.
- 11. Manufacturer's printed operating and maintenance instructions and part lists. Operating and maintenance instructions for each and every item of equipment, setting forth in detail and step-by-step the procedure of starting, stopping, operating, and maintaining the entire system as installed. Include a schedule of recommended maintenance intervals.
- 12. Manufacturer's recommended special maintenance tools.
- 13. List of spare parts to include recommended stock quantities for one year of routine maintenance.
- 14. Tabulation of motor nameplate horsepower, nameplate current, field-measured current, overlay relay setting, and catalog number for polyphase motors.
- 15. List of fuses, lamps, seals, and other expendable equipment and devices. Specify size, type, and ordering description. List name, address, email address, fax number, and telephone number of vendor.
- 16. A copy of shop drawings for mechanical, electrical, and instrument equipment in final form.
- 17. Certified equipment drawings or reviewed shop drawing data clearly marked for equipment furnished.
- H. Brochures shall be loose leaf with durable plastic or fiberboard covers. Each sheet shall be reinforced to prevent tearing from continued use, and each brochure shall have the following information clearly printed on its cover:
 - 1. Project name, name of Owner, and address.
 - 2. Name and address of Owner's Representative.
 - 3. Name and addresses of contractors and subcontractors and department to
 - 4. Telephone number of contractors, including night and emergency numbers.
 - 5. Major equipment vendors' names and telephone numbers.
- I. Equipment Data Sheet: Provide six sets of equipment data sheets, bound in three-ring binders, summarizing the equipment manufacturer's maintenance instructions and recommendations. A blank data sheet and a sample data sheet are attached at the end of this specification section.

1.10 PHOTOGRAPHS

- A. Prior to performing any work on the site, the Contractor shall take a minimum of twenty (20) photographs of each project site. Each major area of work shall be the subject of at least one photograph.
- B. After construction operations have been started at the site, the Contractor shall periodically take color photographs to show general site condition and progress of work. A minimum of twenty (20) photos shall be taken throughout each month and submitted to the OCTA Project Manager by the 5th of the following month. Each major area of work shall be the subject of at least one photograph.
- C. The photo submittals shall be a read-only compact disk (CD-ROM) containing high-resolution electronic files of the color photographs. Each photograph will be captioned with date taken, location, and general description. In addition to the electronic file, the Contractor shall submit two (2) (8"X10") prints of each photograph

PART 2 - PRODUCTS

Not Used

PART 3 - EXECUTION

3.01 RECORDING AND MAINTENANCE OF PROJECT RECORD DOCUMENTS

- A. Recording: Post changes and modifications to project record documents as they occur; do not wait until the end of project.
- B. Maintenance of Record Documents: Store record documents in the field office apart from the contract documents used for construction. Do not use project record documents for construction purposes. Maintain one copy of each submittal during the construction period for project record document purposes. Maintain record documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to project record documents for OCTA Project Manager's reference during normal working hours.
- C. Label each document "PROJECT RECORD" in two-inch high printed letters, or a height appropriate to document size.

PART 4 - MEASUREMENT AND PAYMENT

No separate measurement or payment will be made for the work of this section.

SAMPLE

Preventive Maintenance and Operating Requirement Sheets

Preventive Maintenance Program	Equipment Record Number	
EQUIPMENT DESCRIPTION	ELECTRICAL OR MECHANICAL DATA	
Name:	Size:	
Serial No.:	Model:	
Vendor:		
Vendor Address:	Type:	
	Mfr.:	
Vendor Rep:	Voltage:	Amps:
Phone:	Phase:	rpm:
Maintenance Work to be Done		Frequency*
OPERATING REQUIREMENTS AND REFERENCE		

^{*}D - Daily; W - Weekly; B - Biweekly; M - Monthly; Q - Quarterly; S - Semiannually; A - Annually.

SAMPLE Preventive Maintenance and Operating Requirement Sheets

Downstine Maintenance Downston			
Preventive Maintenance Program	Equipment Record Nu	imber	
EQUIPMENT DESCRIPTION	ELECTRICAL OR ME	CHANICAL DATA	
Name: Pump No. 1 Tag No.: P01-1			
Serial No.: 123456ABC	Model: 140T Frame Serial No. 987654ZY Class F Insulation W/Space Heater		
Vendor: ABC Pump Co.			
Vendor Address:	Type:		
1111 Pump Circle Newport Beach, CA 92663	Mfr.: DEF Motors, Inc	:.	
Vendor Rep: XYZ Equipment, Inc.	Voltage: 460	Amps: 20	
Phone: 714/752-0505	Phase: 3	RPM: 1,800	
Maintenance Work to be Done		Frequency*	
Operate all valves and check such things as a) bearing temperature, b) changes in running sound, c) suction and discharge gauge readings, d) pump discharge rate, and e) general condition of the drive equipment.			
2. Check packing.			
3. Checking pumping unit for any dust, dirt, or debris.		D	
(Continued on attached sheet)		W	
OPERATING REQUIREMENTS AND REFERENCE			
For manufacturer's instructions regarding installation, operation, maintenance, and trouble shooting of this equipment, see Volume, Section			

^{*}D - Daily; W - Weekly; B - Biweekly; M - Monthly; Q - Quarterly; S - Semiannually; A - Annually.

01 78 00 - 12 Closeout Submittals

<u>SAMPLE</u>

Preventive Maintenance and Operating Requirement Sheets

Preventive Maintenance Program	Equipment Record Number		
EQUIPMENT DESCRIPTION	ELECTRICAL OR MECH.	LECTRICAL OR MECHANICAL DATA	
Name:	Size:		
Serial No.:	Model:		
Vendor:			
Vendor Address:	Туре:		
	Mfr.:		
Vendor Rep:	Voltage:	Amps:	
Phone:	Phase:	RPM:	
Maintenance Work to be Done		Frequency*	
Lubricate bearing frame and motor bearings (consult manufacturer's instructions for type of grease or oil).		Q	
5. Disassemble and change or repair the followinga) impeller, b) shafts, c) shaft sleeve,d) rotary seals, and e) sleeve bearings.		A	
OPERATING REQUIREMENTS AND REFERENCE			

*D - Daily; W - Weekly; B - Biweekly; M - Monthly; Q - Quarterly; S - Semiannually; A - Annually.

Closeout Submittals 01 78 00 - 13

END OF SECTION

Closeout Submittals 01 78 00 - 14

SECTION 01 78 36

WARRANTIES, GUARANTEES, AND BONDS

PART 1 - GENERAL

1.01 DESCRIPTION

A. Work Included:

- General administrative and procedural requirements for preparation and submission of warranties and bonds required by the Contract Documents, including manufacturer's standard warranties on products and special Project warranties. This section specifies the general requirements for written warranties and guarantees required by the Contract Documents.
 - a. Refer to the Conditions of the Contract for terms of Contractor's special warranty of workmanship and materials.
 - b. Certifications and other commitments and agreements for continuing services to the Authority are specified elsewhere in the Contract Documents.

1.02 RELATED DOCUMENTS AND SECTIONS

- A. Section 01 33 00 Submittal Procedures: General administrative requirements for submittals, applicable to warranties and bonds.
- B. Section 01 77 00 Closeout Procedures: General requirements for closeout of the Contract.
- C. Section 01 78 00 Closeout Submittals: Operating and Maintenance data binders to include copies of warranties and bonds documents.
- D. Individual Product Specifications Sections: Special Project warranty requirements for specific products or elements of the Work; commitments and agreements for continuing services to Authority.

1.03 WARRANTIES AND GUARANTEES

- A. General: Provide all warranties and manufacturer's guarantees with OCTA named as the beneficiary. For equipment, products, or components bearing a manufacturer's warranty of guarantee that extends for a period of time beyond the Contractor's warranty and guarantee, so state in the warranty or guarantee.
- B. Warranty: Assurance to the Authority by the Contractor, installer, supplier, manufacturer or other party responsible as warrantor, for the quantity, quality, performance and other representations of a product, system service of the Work, in

- whole or in part, for the duration of the specified period of time. Warranty shall be an agreement to repair to repair or replace, without cost and undue hardship to the Authority, work performed under the Contract which is found to be defective during the warranty or guaranty period (correction period).
- C. Guaranty: Assurance to the Authority by the Contractor or product manufacturer or other specified party, as guarantor, that the specified warranty will be fulfilled by the guarantor in the event of default by the warrantor.
- D. Standard Product Warranty: Preprinted, written warranty published by product manufacturer for particular products and specifically endorsed by the manufacturer to the Authority.
- E. Special Project Warranty: Written warranty required by or incorporated into Contract Documents, to extend time limits provided by standard warranty or to provide greater rights for the Authority. For provisions for special warranties, refer to the Conditions of the Contract for terms of the Contractor's special warranty of the workmanship and materials.
- F. Specific Warranty and Guarantee Requirements: Refer to Divisions 02 and higher.
- G. Disclaimers and Limitations: Manufacturer's disclaimers and limitations on product warranties shall not relieve the Contractor of warranty on the work that incorporates the products, nor shall they relieve suppliers, manufacturers and installers required to countersign special warranties with Contractor.
- H. Related Damages and Losses: When correcting warranted work that has been found defective, remove and replace other work that has been damaged as a result of such defect or that must be removed and replaced to provide access for correction of warranted work.
- I. Correction Period: The Correction Period shall be synonymous with warranty period and guaranty period used in the Contract Specifications. All defective work shall be initiated with 12 hours for critical system operations, as determined solely by the Authority, and within 3 calendar days for all other warranty work.
- J. Reinstatement of Warranty: When work covered by a warranty has been found defective and has been corrected by replacement or rebuilding, reinstate the warranty by written endorsement. The reinstated warranty shall be equal to the original warranty with an equitable adjustment for depreciation.
- K. Replacement Cost: Upon determination that work covered by a warranty has been found to be defective, replace or reconstruct the work to a condition acceptable to the OCTA, complying with applicable requirements of the Contract Documents. Contractor shall be responsible for all costs for replacing or reconstructing defective work regardless of whether the OCTA has benefited from use of the work through a portion of its anticipated useful service life.

- L. The OCTA's Recourse: Written warranties made to the OCTA are in addition to implied warranties and shall not limit the duties, obligations, rights, and remedies otherwise available under law nor shall warranty periods be interpreted as limitations on time in which the OCTA can enforce such other duties, obligation, rights, or remedies.
- M. Rejection of Warranties: The OCTA reserves the right to reject warranties and disallow the use of products with warranties in conflict with contract document requirements.
- N. Warranty as Condition of Acceptance: The OCTA reserves the right to refuse to accept work for the project where a special warranty, certification or similar commitment is required until evidence is presented that those required to countersign such commitments are willing to do so.

1.04 PREPARATION OF WARRANTY AND GUARANTEE SUBMITTALS

- A. Number of Copies: Two, unless otherwise specified or directed.
- B. Special Project Warranty and Manufacturer's Guarantee Forms: Forms for Special Project Warranties and for Manufacturer's Guarantees are included in the Conditions of the Contract at the end of this Section. Prepare a written document utilizing the appropriate form, ready for execution by the Contractor or the Contractor and subcontractor, supplier or manufacturer. Submit a draft to the OCTA though OCTA Project Manager for approval prior to final execution.
 - 1. Refer to Division 02 and higher for specific content requirements and particular requirements for submittal of special project warranties.
 - Prepare standard product warranties and product guarantees, excepting
 manufacturer's standard printed warranties and guarantees, on Contractor's,
 subcontractor's, material supplier, or manufacturer's own letterhead, addressed
 to the OCTA
 - 3. Warranty and guarantee letters shall be signed by all responsible parties and by Contractor in every case, with modifications only as approved by OCTA Project Manager to suit the conditions pertaining to the warranty or guarantee.
- C. Manufacturer's Guarantee Forms: Manufacturer's guarantee forms may be used in lieu of special project forms included at the end of the Section. Manufacturer's guarantee forms shall contain appropriate terms and identification, ready for execution by the required parties.
 - 1. If proposed terms and conditions restrict guarantee coverage or require actions by the OCTA beyond those specified, submit draft of guarantee to the OCTA through Engineer for review and acceptance before performance of the work.
 - 2. In other cases, submit draft of guarantee to OCTA Project Manager for approval prior to final execution of guarantee.

- D. Signatures: By persons authorized to sign warranties, guarantees, and bonds on behalf of entity provided the warranty, guarantee, and bonds. All signatures shall be notarized.
- E. Co-Signature: the Contractor shall cosign all installer's warranties and bonds Manufacturer's printed guarantees will not require co signatures.

1.05 FORM OF WARRANTY SUBMITTALS

- A. Form of warranty and bond submittals: At final completion, compile 2 copies of each required warranty and guaranty and bond, properly executed by the Contractor, or by the Contractor and subcontractor, supplier or manufacturer. Collect and assemble all written warranties and guarantees into binders and deliver binders to OCTA Project Manager for final review and acceptance.
- B. Prior to submission, verify that documents are in proper form, contain all required information and are properly signed.
- C. Organize the warranty documents into an orderly sequence based on the table of contents of the Specifications.
- D. Include a table of contents for the binder, neatly typed, following order, section names, and numbers of the Specifications.
- E. Bind warranties and guarantees in heavy-duty, commercial quality, 3-ring vinyl covered loose-leaf binders, thickness as necessary to accommodate contents, with clear front and spine to receive inserts, and sized for 8 ½" by 11" paper.
- F. Provide heavy paper dividers with celluloid or plastic covered tabs for each separate warranty. Mark tabs to identify products or installation, and the name, address, telephone number and responsible person for applicable installer, supplier and manufacturer.
- G. Include on a separate typed sheet, if information is not contained in warranty or guarantee form, a description of the product or installation, and the name, address, telephone number, and responsible person for applicable installer, supplier, and manufacturer.
- H. Identify each binder on front and spine with typed or printed inserts with title, "WARRANTIES, GUARANTEES, AND BONDS", the project title, and the name of the Contractor. If more than one volume of warranties and guarantees is produced, identify volume number of binder.
- I. When operating and maintenance data manuals are required for warranted construction, include additional copies of each required warranty in each required manual. Coordinate with requirements specified in Section 01 78 00 Closeout Submittals.

1.06 TIME OF WARRANTY AND GUARANTEE SUBMITTALS

- A. Preliminary Submittal: Unless otherwise specified, obtain preliminary copies of warranties and guarantees within ten (10) calendar days of completion of applicable item or work. Prepare and submit preliminary copies for review as specified herein.
- B. Final Submittal: Submit fully executed copies of warranties and guarantees within ten (10) days of date of substantial completion but not later than three (3) days prior to date of application for final payment.
- C. Date of Warranties and Guarantees: Unless otherwise directed, the commencement date for warranty and guarantee periods shall be the date of established in Certificate of Completion.
- D. For warranties for work such as designated systems, equipment, component part or other portion of the Work is completed, accepted, and occupied or put to beneficial use by the Authority, by a separate agreement with Contractor, prior to Final Completion, submit properly executed warranties to the Engineer within ten (10) calendar days of completion of that designated portion of the Work. List date of commencement of warranty, guaranty, or bond period as date of Acceptance.
- E. For warranties for Work not accepted as of the date of substantial completion, submit documents within ten (10) calendar days after acceptance. List the commencement date as the date of acceptance of such Work and as beginning of warranty, guaranty, and bond period.
- F. Duration of Warranties and Guarantees: Unless otherwise specified or prescribed by law, warranty and guaranty periods (Correction Period) for all work shall not be less than one year from the filing date of notice of completion. See product specifications Sections in contract specifications for extended warranty and guaranty beyond the minimum duration.

PARTS 2 - PRODUCTS

Not used.

PART 3 – EXECUTION

Not used.

PART 4 – MEASUREMENT AND PAYMENT

No separate measurement or payment shall be made under this Section.

END OF SECTION

WARRANTY/GUARANTEE

FOR WORK

We, the undersigned, do hereby warranty and guarantee that the parts of the Work described above which we have furnished and/or installed for the OCTA is in accordance with the Contract Documents and that all said Work as installed will fulfill or exceed all of the Warranty and Guarantee requirements. We agree to repair or replace Work installed by us, together with any adjacent Work, which is displaced or damaged by doing so, that proves to be defective in Workmanship, material, or operation within a period of one (1) year from the date of final acceptance by the OCTA or from the date of Certificate of Substantial Completion, whichever is the earlier. Ordinary wear and tear and unusual neglect or abuse is accepted.

In the event of our failure to comply with the above-mentioned conditions within a reasonable time period determined by the OCTA, after notification in writing, we, the undersigned, all collectively and separately, hereby authorize the OCTA to have said defective Work repaired and/or replaced and made good, and agree to pay to the OCTA upon demand all moneys that the OCTA may expend in making good said defective Work, including all collection cost and reasonable attorney fees.

(Subcontractor, Sub subcontractor, Ma	anufacturer, or Supplier)
Ву	
Title	
State License No	
(Contractor)	
(Contractor)	
By	
State License No	Date
Local Representative. For maintenance	e, repair, or replacement service, contact:
Name:	
Address:	
Phone Number	

SECTION 01 79 00

DEMONSTRATION AND TRAINING

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

- 1. Administrative and procedural requirements for instructing OCTA's personnel, including the following:
 - a. Demonstration of operation of systems, subsystems, and equipment.
 - b. Training in operation and maintenance of systems, subsystems, and equipment.
 - c. Demonstration and training video recordings.

B. Related Sections:

1. Divisions 02 through 49 sections for specific requirements for demonstration and training for products in those sections.

1.02 INFORMATIONAL SUBMITTALS

- A. Instruction Program: Submit outline of instructional program for demonstration and training, including a list of training modules and a schedule of proposed dates, times, length of instruction time, and instructors' names for each training module. Include learning objective and outline for each training module.
 - 1. Indicate proposed training modules utilizing manufacturer-produced demonstration and training video recordings for systems, equipment, and products in lieu of video recording of live instructional module.
- B. Qualification Data: For instructor.
- C. Attendance Record: For each training module, submit list of participants and length of instruction time.
- D. Evaluations: For each participant and for each training module, submit results and documentation of performance-based test.

1.03 CLOSEOUT SUBMITTALS

- A. Demonstration and Training Video Recordings: Submit two copies on CD within seven days of end of each training module.
 - 1. Identification: On each copy, provide an applied label with the following information:
 - a. Name of Project.
 - b. Name and address of videographer.
 - c. Name of OCTA Project Manager.
 - d. Name of Contractor.
 - e. Date of video recording.
 - Transcript: Prepared on 8-1/2-by-11-inch paper, punched and bound in heavyduty, three-ring, vinyl-covered binders. Mark appropriate identification on front and spine of each binder. Include a cover sheet with same label information as the corresponding video recording. Include name of project and date of video recording on each page.
 - 3. At completion of training, submit complete training manual(s) for OCTA's use.

1.04 QUALITY ASSURANCE

- A. Instructor Qualifications: A factory-authorized service representative, complying with requirements in Section 01 43 00, Quality Assurance, experienced in operation and maintenance procedures and training.
- B. Videographer Qualifications: A professional videographer who is experienced photographing demonstration and training events similar to those required.
- C. Preinstruction Conference: Conduct conference at project site to comply with requirements in Section 01 31 00, Project Management and Coordination. Review methods and procedures related to demonstration and training including, but not limited to, the following:
 - 1. Inspect and discuss locations and other facilities required for instruction.
 - 2. Review and finalize instruction schedule and verify availability of educational materials, instructors' personnel, audiovisual equipment, and facilities needed to avoid delays.
 - 3. Review required content of instruction.
 - 4. For instruction that must occur outside, review weather and forecasted weather conditions and procedures to follow if conditions are unfavorable.

1.05 COORDINATION

- A. Coordinate instruction schedule with OCTA's operations. Adjust schedule as required to minimize disrupting OCTA's operations.
- B. Coordinate instructors, including providing notification of dates, times, length of instruction time, and course content.
- C. Coordinate content of training modules with content of approved emergency, operation, and maintenance manuals. Do not submit instruction program until operation and maintenance data has been reviewed and approved by OCTA Project Manager.

PART 2 - PRODUCTS

2.01 INSTRUCTION PROGRAM

- A. Program Structure: Develop an instruction program that includes individual training modules for each system and for equipment not part of a system, as required by individual specification sections.
- B. Training Modules: Develop a learning objective and teaching outline for each module. Include a description of specific skills and knowledge that participant is expected to master. For each module, include instruction for the following as applicable to the system, equipment, or component:
 - 1. Basis of System Design, Operational Requirements, and Criteria: Include the following:
 - a. System, subsystem, and equipment descriptions.
 - b. Performance and design criteria if Contractor is delegated design responsibility.
 - c. Operating standards.
 - d. Regulatory requirements.
 - e. Equipment function.
 - f. Operating characteristics.
 - g. Limiting conditions.
 - h. Performance curves.
 - 2. Documentation: Review the following items in detail:
 - a. Emergency manuals.
 - b. Operations manuals.
 - c. Maintenance manuals.
 - d. Project record documents.
 - e. Identification systems.
 - f. Warranties and bonds.
 - g. Maintenance service agreements and similar continuing commitments.

- 3. Emergencies: Include the following, as applicable:
 - Instructions on meaning of warnings, trouble indications, and error messages.
 - b. Instructions on stopping.
 - c. Shutdown instructions for each type of emergency.
 - d. Operating instructions for conditions outside of normal operating limits.
 - e. Sequences for electric or electronic systems.
 - f. Special operating instructions and procedures.
- 4. Operations: Include the following, as applicable:
 - a. Startup procedures.
 - b. Equipment or system break-in procedures.
 - c. Routine and normal operating instructions.
 - d. Regulation and control procedures.
 - e. Control sequences.
 - f. Safety procedures.
 - g. Instructions on stopping.
 - h. Normal shutdown instructions.
 - i. Operating procedures for emergencies.
 - j. Operating procedures for system, subsystem, or equipment failure.
 - k. Seasonal and weekend operating instructions.
 - I. Required sequences for electric or electronic systems.
 - m. Special operating instructions and procedures.
- 5. Adjustments: Include the following:
 - a. Alignments.
 - b. Checking adjustments.
 - c. Noise and vibration adjustments.
 - d. Economy and efficiency adjustments.
- 6. Troubleshooting: Include the following:
 - a. Diagnostic instructions.
 - b. Test and inspection procedures.
- 7. Maintenance: Include the following:
 - a. Inspection procedures.
 - b. Types of cleaning agents to be used and methods of cleaning.
 - c. List of cleaning agents and methods of cleaning detrimental to product.
 - d. Procedures for routine cleaning
 - e. Procedures for preventive maintenance.
 - f. Procedures for routine maintenance.
 - g. Instruction on use of special tools.

- 8. Repairs: Include the following:
 - a. Diagnosis instructions.
 - b. Repair instructions.
 - c. Disassembly; component removal, repair, and replacement; and reassembly instructions.
 - d. Instructions for identifying parts and components.
 - e. Review of spare parts needed for operation and maintenance.

PART 3 – EXECUTION

3.01 PREPARATION

- A. Assemble educational materials necessary for instruction, including documentation and training module. Assemble training modules into a training manual organized in coordination with requirements in Section 01 78 00, Closeout Submittals.
- B. Set up instructional equipment at instruction location.

3.02 INSTRUCTIONS

- A. Engage qualified instructors to instruct OCTA's personnel to adjust, operate, and maintain systems, subsystems, and equipment not part of a system.
- B. OCTA Project Manager will furnish Contractor with names and positions of participants.
- C. Scheduling: Provide instruction at mutually agreed on times. For equipment that requires seasonal operation, provide similar instruction at start of each season.
 - 1. Schedule training with OCTA personnel, through OCTA Project Manager, with at least seven days' advance notice.
- D. Evaluation: At conclusion of each training module, assess and document each participant's mastery of module by use of a demonstration/performance-based review.
- E. Cleanup: Collect used and leftover educational materials and remove from project site. Remove instructional equipment. Restore systems and equipment to condition existing before initial training use.

3.03 DEMONSTRATION AND TRAINING VIDEO RECORDINGS

A. General: Engage a qualified commercial videographer to record demonstration and training video recordings. Record each training module separately. Include

classroom instructions and demonstrations, board diagrams, and other visual aids, but not student practice.

- 1. At beginning of each training module, record each chart containing learning objective and lesson outline.
- B. Video Recording Format: Provide high-quality color video recordings with menu navigation in format acceptable to OCTA Project Manager.
- C. Recording: Mount camera on tripod before starting recording, unless otherwise necessary to show area of demonstration and training. Display continuous running time.
- D. Narration: Describe scenes on video recording by audio narration by microphone while video recording is recorded. Include description of items being viewed.
- E. Transcript: Provide a transcript of the narration. Display images and running time captured from videotape opposite the corresponding narration segment.
- F. Pre-Produced Video Recordings: Provide video recordings used as a component of training modules in same format as recordings of live training.

PART 4 - MEASUREMENT AND PAYMENT

No separate measurement or payment will be made for this section.

END OF SECTION

SECTION 02 41 00

DEMOLITION

PART 1 - GENERAL

1.01 <u>SECTION INCLUDES</u>

- A. Site clearing within the areas indicated on the plan, including surface and subsurface removal or capping of public utility connections, and installing and removing temporary fence. All materials indicated on the plans are to be removed from the site and recycled or disposed of.
- B. Completely remove site hardscape, except as otherwise indicated.
- C. Prior to start of demolition of facilities, confirm that all utility services have been shut off, notify respective utility agencies and coordinate this work in accordance with the governing agency.
- D. Demolish only to the extent indicated.

1.02 RELATED SECTIONS

- A. Section 01 33 00: Submittal Procedures
- B. Section 01 43 20: Project Quality Program Requirements Design/Bid/Build
- C. Section 01 35 43: Environmental Procedures for Hazardous Materials
- D. Section 01 35 69: Lead-Related Construction Work
- E. Section 01 35 70: Asbestos-Related Construction Work
- F. Section 01 56 28: Construction Fencing (Chain Link)
- G. Section 01 57 19: Temporary Environmental Control
- H. Section 31 20 00: Earthwork

1.03 REFERENCES

- A. South Coast Air Quality Management District (SCAQMD):
 - 1. Rule 402 Nuisance
 - 2. Rule 403 Fugitive Dust
 - 3. Rule 1403 Asbestos Emissions from demolition/Renovation Activities

1.04 **QUALITY ASSURANCE**

- A. Comply with Project Quality Program Requirements (see 1.02 above).
- B. Perform Work in compliance with requirements of governing authorities having jurisdiction, and as specified. OCTA will provide written authorization to commence Work.
- C. Provide temporary fence and gates complying with Section 01 56 28, Construction Fencing (Chain Link), or otherwise secure the work area in a method approved by OCTA.

1.05 SUBMITTALS

- A. Refer to Section 01 33 00 Submittal Procedures, for submittal requirements and procedures.
- B. Plan containing methods and schedule of demolition in conformance with Demolition Article, CAL/OSHA Construction Safety Orders, and other regulatory authorities; South Coast Air Quality Management District, Rule 1403, City Of Los Angeles, California Environmental Protection Agency (Cal/EPA).
- C. Permits obtained by Contractor for demolition, removal, transport and disposal of debris.
- D. Letter documenting arrangements for disposing of waste and excess materials at a legally licensed landfill/disposal facility outside Worksite.
- E. All non-hazardous and hazardous waste manifests will be signed by and managed by OCTA. Manifests to be provided by the Contractor, demolition Contractor or transporter. Copies of manifests and landfill documents will be provided to the Contractor.

1.06 <u>DEFINITIONS (NOT USED)</u>

1.07 WORKSITE CONDITIONS

- A. Protection of Persons and Property:
 - Post warning lights at perimeters of open depressions and excavations occurring as part of Work; when accessible through adjacent property or through public access. Operate warning lights during hours from dusk to dawn each day and as otherwise required.
 - a. Excavations and depressions Barricade in accordance with CAL-OSHA standards.
 - 2. Protect utilities, pavements and facilities from damage caused by demolition vehicle equipment, settlement, lateral movement, undermining, washout, and other hazards created by the demolition operations.

3. Repair damage to sidewalks, driveways, curbs, fences, shrubs, and trees, adjacent to Worksite that are the result of the Contractor's activities.

B. Unknown Conditions:

Contract Drawings may not represent all surface nor sub-surface conditions at Worksite. Compare with actual conditions before commencing of Work. Pot-hole and locate the critical sub-surface utilities prior to performing any excavation.

C. Dust Control

1. As specified in Section 01 57 19, Temporary Environmental Control and South Coast Air Quality Management District Rule 402 and 403, and other regulatory requirements.

PART 2 - PRODUCTS

2.01 MATERIALS USED FOR BACKFILL

A. As specified in Section 31 20 00, Earthwork.

2.02 TEMPORARY FENCE AND GATES

A. As specified in Section 01 56 28, Construction Fencing (Chain Link).

PART 3 - EXECUTION

3.01 **DEMOLITION**

- A. Do not start demolition until submittals are reviewed and accepted and all permits are obtained.
- B. Install and remove temporary fence and gates as noted on drawings.
- C. Minimize construction noise at demolition Worksite close to residential areas.
- D. Demolish existing facilities and site work as indicated on the plans. Demolish only to the extent indicated.
 - 1. Perform demolition and removal by means approved by OCTA.
 - 2. Proceed with demolition Work in a systematic manner in accordance with Demolition Plan.
 - 3. Remove Hazardous Materials in accordance with Sections 01 35 69, Lead Related Construction Work and Section 01 35 70, Asbestos Related Construction Work, and in accordance with Industry Standards.
 - 4. Demolish concrete and masonry in small sections.
 - 5. Break up and remove concrete slabs on-grade, unless otherwise shown to remain.

- 6. Remove poles, signs and fences, including footings unless otherwise noted to remain.
- 7. Remove trees and shrubs as indicated on the plans.
- E. Break up and remove asphalt and concrete pavement, walks, steps, walls, slabs and aprons, unless indicated otherwise on the drawings.
- F. Backfill and compact depressions caused by any excavations, demolition and removal, or as called out on the Contract Drawings in accordance with Section 31 20 00 Earthwork except that separate measurement or payment will not be made.

3.02 SALVAGE OR DISPOSAL OF MATERIALS

- A. Materials indicated to be removed or demolished become property of Contractor. Remove from Worksite and recycle or dispose of at legal disposal sites. Arrange for and pay required fees.
- B. Do not allow non-salvageable material demolished or removed to accumulate at Worksite. Remove from OCTA's property at frequent intervals, or as directed by OCTA.
- C. Burning of materials at the Worksite is not allowed.
- D. Achieve a minimum of 80% for recycling of all demolition waste. Recycling facilities acceptance of concrete, brick, stone, metal, glass, wood, interior and exterior architectural details, etc. are to be provided to OCTA.

E. Cleanup:

- 1. Leave worksite clean and orderly at the end of each day. There shall be no off site migration of dust, dirt, water, or demolition debris. Each Worksite shall have access and egress swept and clean at all times.
- 2. Contractor shall be responsible for the removal of dirt tracked out onto public streets or OCTA parking areas.

3.03 SECURITY

A. Fence gates shall be locked and secured except when Contractor is working on that parcel. Doors to individual rooms, buildings, and structures shall be locked except when work is occurring within the room or building.

END OF SECTION

SECTION 03 05 15

PORTLAND CEMENT CONCRETE

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Developing and Controlling Concrete Mix Design; controlling storage and quality of concrete ingredients; and batching, and mixing. Furnishing and delivering Portland Cement Concrete which meets the approved mix design. The section also includes the following:
 - 1. Portland cement.
 - 2. Aggregates.
 - 3. Drying shrinkage of concrete.
 - 4. Concrete admixtures and cementitious materials.
 - 5. Tests and analysis of materials.
 - 6. Mix designs.
 - 7. Batching, mixing, and transporting.
 - 8. Inspection and Testing.

1.02 RELATED SECTIONS

A. Section 01 33 00: Submittal Procedures

B. Section 01 43 20: Project Quality Program Requirements - Design/Bid/Build

C. Section 01 66 00: Product Storage and Handling Requirements

D. Section 03 20 00: Concrete Reinforcement

E. Section 03 30 00: Cast-In-Place Concrete

F. Section 03 35 00: Concrete Finishing

G. Section 04 05 13: Mortar and Grout

1.03 REFERENCES

A. American Concrete Institute (ACI):

1. ACI 116R - Cement and Concrete Terminology

Portland Cement Concrete 03 05 15 - 1

2.	ACI 211.1 -	Selecting Proportions for Normal, Heavyweight, and Mass Concrete
3.	ACI 301 -	Structural Concrete
4.	ACI 304R -	Measuring, Mixing, Transporting, and Placing Concrete
5.	ACI 304.2R -	Placing Concrete by Pumping Methods
6.	ACI 305R -	Hot Weather Concreting
7.	ACI 318 -	Building Code Requirements for Structural Concrete
AS	TM International (AST	M):
1.	ASTM C31 -	Making and Curing Concrete Test Specimens in the Field
2.	ASTM C33 -	Concrete Aggregates
3.	ASTM C39 -	Compressive Strength of Cylindrical Concrete Specimens
4.	ASTM C40 -	Organic Impurities in Fine Aggregates for Concrete
5.	ASTM C87 -	Effect of Organic Impurities in Fine Aggregate on Strength of Mortar
6.	ASTM C88 -	Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate
7.	ASTM C94 -	Ready-Mixed Concrete
8.	ASTM C131 -	Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine
9.	ASTM C136 -	Sieve Analysis of Fine and Coarse Aggregates
10.	ASTM C138 -	Density (Unit Weight), Yield, and Air Content (Gravimetric) of Concrete
11.	ASTM C143 -	Slump of Hydraulic Cement Concrete
12.	ASTM C150 -	Portland Cement
13.	ASTM C157 -	Length Change of Hardened Hydraulic Cement Mortar and Concrete
14.	ASTM C173 -	Air Content of Freshly Mixed Concrete by the Volumetric Method
15.	ASTM C231 -	Air Content of Freshly Mixed Concrete by the Pressure Method
16.	ASTM C260 -	Air-Entraining Admixtures for Concrete
17.	ASTM C289 -	Potential Alkali-Silika Reactivity of Aggregates (Chemical Method)
18.	ASTM C470 -	Molds for Forming Concrete Test Cylinders Vertically
19.	ASTM C494 -	Chemical Admixtures for Concrete
20.	ASTM C535 -	Resistance to Degradation of Large-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine

B.

21. ASTM C618 - Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in

Concrete

22. ASTM D75 - Sampling Aggregates

C. National Ready Mix Concrete Association (NRMCA):

1. NRMCA - Certification of Ready Mix Concrete Production Facilities,

Checklist

D. Standard Specifications for Public Works Construction (SSPWC)

1.04 QUALITY ASSURANCE

- A. Comply with Project Quality Program Requirements (see 1.02 above).
- B. Concrete Supplier Furnish concrete from a plant which has recently furnished specified concrete for a large project, or furnish evidence of plant's capacity to produce and deliver concrete conforming to specified requirements at required rate and which has laboratory capability to develop acceptable concrete mix designs and to control quality of concrete production, in accordance with a preapproved quality control plan.
 - Use semi-automatic batching systems as described in National Ready-Mix Concrete Association (NRMCA) checklist for Certification of Ready Mix Concrete Production Facilities.
 - 2. Use NRMCA currently certified batch plant.

C. Mix Design Criteria:

- 1. Design concrete mixes to conform to ACI 318
- 2. Design mixes to produce concrete having workability, durability, strength, maximum density, minimum shrinkage and permeability as specified.
- 3. Develop the proportioning of concrete ingredients in accordance with ACI 211.1 for normal weight concrete.
- Workability Use approved admixtures to improve Workability, maximize density, reduce water and cement contents, and minimize shrinkage and permeability of concrete, provided admixtures do not adversely affect other required properties of concrete.

5. Strenath

- a. Design concrete mix for specified strength based on required overdesign factor of 1.24 according to ASTM C94, and assuming a coefficient of variation equal to 15. Design each class of concrete so that not more than 10 percent of strength tests will have values less than specified strength, and average of any three consecutive strength tests will be equal to or greater than specified strength.
- b. Nominal compressive strength of concrete Class 4000, unless otherwise indicated or specified for cast-in-place concrete, Class 5000 minimum for precast concrete, and Class 2500 for fill concrete.

- 6. Adjustments of mix designs For every change in source and type of ingredient and class of concrete test new trial mixes and submit for review and acceptance.
- Do not vary proportions of ingredients of approved mix without submitting results of laboratory tests of new proposed mix and obtaining written acceptance of OCTA or its designee.
- 8. Concrete indicated to be air-entrained Verify required air content, as determined by ASTM C173 or ASTM C231, conforms to value and is within tolerance recommended by ACI 301 and ACI 318, corresponding to maximum size of coarse aggregate.
- Do not exceed following slump for concrete without water reducer admixtures, of average of three successive batches of concrete at placement, as determined by ASTM C143.

a. Concrete Classes:

Class 3000 4 inches
Class 4000 4 inches
b. Paving 2 inches
c. Non-reinforced concrete, 3 inches

other than paving

d. Reinforced concrete slabs, 5 inches

after addition

of high-range water reducer

e. Concrete placed by pumping 6 inchesf. Drilled-pier concrete 6 inches

g. Concrete encasing structural steel

10. Maximum Laboratory Drying Shrinkage as determined by ASTM C157 Class 3000 - 0.065% after 28-days Class 4000 - 0.0548% after 28-days

- D. Concrete Pump Plant Conform to ACI 304. Maintain equipment in quantities to preclude stopping concreting because of failed equipment.
- E. Perform field job control tests as specified and accepted by OCTA or its designee.
- F. Quality Control For Batch Plant
 - 1. Provide continuous batch plant quality control inspection during batching operations by an independent laboratory for structural placements of 150 cubic yards or greater and when required by the Project Quality Manager, for performing tests in accordance with reference standards listed. Provide concrete from batching plant, reviewed and accepted by OCTA or its designee and meeting the following requirements:
 - a. Arrangement:
 - 1) Provide separate bins or compartments for each size or classification of aggregate and for each type of bulk portland cement.

- 2) Provide compartments of ample size and constructed to maintain materials separately under Working conditions. Equip batching plant such that flow of each material into batcher is stopped automatically when designated weight has been reached. Weigh aggregates in a separate scale in a separate weight batcher. Water may be measured by weight.
- 3) Arrange plant to facilitate inspection of operations. Provide suitable access for obtaining representative samples of aggregate from each of the bins or compartments for test purposes. Provide delivery of materials from batching equipment to within accuracies specified in ASTM C94.
- 4) Batching In accordance with ACI 304 subject to review and acceptance by OCTA or its designee.
- 5) Do not use aluminum bins, compartments, hoppers or equipment.
- b. Water Batcher and Dispensers for Admixtures:
 - Provide equipment for batching water and air-entraining or other admixtures at batching plant except in cases where mixing is performed at Worksite in paving mixers or in truck mixers.
 - 2) Provide a suitable water measuring device capable of weighing mixing water within specified requirements for each batch.
 - 3) Provide measuring devices for addition of admixtures capable of ready adjustment that have at least three percent accuracy, to permit varying quantity of admixture batched.
 - 4) Calibrate dispensers at intervals required by the NRMCA. Record results of calibration and make available for inspection by OCTA or its designee.
- c. Aggregates Moisture Control Independent testing laboratory shall perform tests of moisture content of aggregates as frequently as they deem necessary for adjustment of the amount of water required by design in the concrete mix.
- d. Scales Provide adequate facilities for accurate measurement and control of each material entering each batch of concrete. Conform to applicable requirements of NBS, Handbook 44.

e. Recorders

- Provide accurate graphical or digital printout record of scale readings, including initial readings, after each of the aggregates, water, cement and admixtures have been batched before delivery to mixer, using accurate recorder or recorders.
- Record Data Show on each printout, date and time of batching; identification number - identical to concrete ticket and codes for mix design and for Contract Section.
- 3) House each recorder in a locked, dust-tight cabinet.
- 4) Clearly indicate different types of mixes used by stamped letters, numerals, colored ink or other suitable means on charts or tapes so that variations in batch weights of each type of mix can be readily observed.

- a) Show on charts or tapes, date and time of day (stamped or preprinted) at intervals of not more than 15 minutes.
- b) Provide recorders of a type that prints required information in duplicate. One copy of recorded batch weights for each load shall accompany each delivery ticket as supplied by producer. Verify that the identification number is identical to concrete delivery ticket. Deliver one copy with its corresponding concrete ticket to OCTA or its designee at time and site of concrete placement.
- 5) Place recorders in a position convenient for observation by plant operator and OCTA or its designee.
- f. Protect weighing, indicating and control equipment against exposure to dust and weather and insulate against vibration or movement caused by operating equipment in plant.
- g. Dry batching
 - When bulk cement and aggregates are hauled from a central batching plant to mixer, place cement for each batch in an individual compartment which, during transit, will prevent cement from intermingling with aggregates and will prevent loss of cement.
 - 2) Provide bins of batch trucks with suitable covers to protect materials from wind and wet weather.
 - 3) Provide batch compartments of sufficient capacity to prevent loss in transit and to prevent spilling and intermingling of batches as compartments are being emptied.

2. Aggregates:

- a. Coarse Aggregate
 - 1) Use one source of coarse aggregate only. Coarse aggregate to conform with ASTM C33, maximum size 1 inch.
 - 2) Deleterious Substances Do not allow amount of deleterious substances present in coarse aggregate to exceed following:

SUBSTANCE	MAXIMUM PERCENT BY WEIGHT
Soft particles	5.0
Coal and lignite particles	0.5
Friable particles	0.25
Material passing a No. 200 sieve	1.5
Thin or elongated pieces (length 15.0 greater than five times the smallest dimensions of a circumscribing rectangular prism)	
Other deleterious substances	1.0

- 3) Abrasion Do not exceed 52 percent of wear when coarse aggregate is tested in accordance with ASTM C131 or ASTM C535.
- 4) Soundness Do not exceed 15 percent of weighted percentage of loss when coarse aggregate is subjected to five cycles of magnesium sulphate soundness test in accordance with ASTM C88.

b. Fine Aggregate

- 1) Use one source of fine aggregate only. Fine aggregate to conform with ASTM C33.
- 2) Do not allow the fineness modulus of fine aggregate from a given source to vary more than 0.2 from base fineness modulus. The base fineness modulus shall be that value that is used by the independent testing laboratory for the trial batch or for mix design.
- Provide fine aggregate gradation represented by a smooth granulometric curve within the limits specified, using U.S. standard sieves, square openings.

SIEVE SIZE	PERCENT PASSING BY
	WEIGHT
3/8 inch	100
No. 4	95-100
No. 8	80-100
No. 16	50-85
No. 30	25-60
No. 50	10-30
No. 100	2-10
No. 200	0-5

- 4) Soundness Do not exceed 12 percent by weight of weighted percentage of loss when fine aggregate is subjected to five cycles of magnesium sulphate soundness test in accordance with ASTM C88.
- 5) Deleterious Substances Do not allow following substances to be present individually in amounts exceeding following:

-
BY WEIGHT
1.0
0.5
5.0
2.0

6) Organic Impurities - Provide fine aggregate free from harmful injurious amounts of organic impurities as determined by ASTM C40. Should material fail to pass test for organic impurities in sand for concrete, material will be acceptable after passing test described in ASTM C87. If fine aggregate

shows by colorimetric test a darker color than sample originally approved for Work, withhold use until tests have been made to determine whether change in color is indicative of harmful injurious amount of deleterious substances.

G. Ready-Mixed Concrete - Conform to ASTM C94.

1.05 SUBMITTALS

- A. Refer to Section 01 33 00 Submittal Procedures, for submittal requirements and procedures.
- B. Mix design for each concrete class and for each change of ingredients and ingredient sources, including admixtures, and at least 10 cylinder compression test of past record of mix.
- C. Mix design to include test report of compression strength at time of form removal as indicated in Article 3.06B.
- D. Methods for hot weather mixing capable of producing concrete with a temperature not over 90F nor under 55F at time of placement. Refer to ACI 305R for hot weather concreting.
- E. NRMCA batch plant certification to OCTA or its designee 30 days before prior to delivery of concrete to Worksite.
- F. Mix design, laboratory test reports, and mill or manufacturer's certificates attesting the conformance of ingredients with these Specifications. Use ingredients in design mix which are representative samples of materials used in Work. Provide one design mix for each class of concrete. Establish mix design through an approved testing laboratory.
- G. Certifications by concrete supplier of design mixes to specified requirements in respect to strength, unit weight, maximum size aggregate, air-entrainment, slump and water-cement ratio.
- H. If source, brand or characteristic properties of ingredients need to be varied during term of Contract, submit compliance with Article 1.04.B.7 to OCTA or its designee for review and acceptance.
- I. Copy of recorder printout with corresponding concrete delivery ticket.
- J. Manufacturer's product data.
- K. Batch Tickets Certification or delivery tickets before unloading at Worksite in accordance with ASTM C94 from concrete supplier with each batch delivered to Worksite listing following information in addition to ASTM C94 requirements:
 - 1. Name of supplier
 - 2. Name of batching plant and location
 - 3. Serial number of ticket

- 4. Date
- 5. Truck number
- 6. Specific job designation (Contract number and location)
- 7. Volume of concrete in cubic yards
- 8. Specific class and type of concrete, in conformance with specification requirement
- 9. Time loaded and amount of water added
- 10. Type and brand of cement
- 11. Weight of cement
- 12. Weight of water
- 13. Maximum size of aggregates
- 14. Weights of coarse and fine aggregates, respectively
- 15. Type and amount of admixtures
- 16. Certification that mix complies with reviewed and accepted laboratory design mix and quality control plan.
- 17. Mix design designation.
- 18. Class and weight of mineral admixtures.
- 19. Batch weight of mix
- L. Certificate of nonreactive aggregates: fine and coarse aggregate.

1.06 DEFINITIONS

- A. The word "concrete" followed only by a class designation (that is, Concrete Class 3000-1-inch) indicates normal weight aggregate concrete, such as concrete having a 28- day compressive strength of 3,000 psi, a maximum coarse aggregate size of 1 inch, and a minimum unit weight of 145 pounds per cubic foot (without reinforcement) at 28 days.
- B. The term "fill concrete" indicates a concrete containing sufficient cement to develop a 28-day compressive strength of 2500 psi.
- C. The term "lean concrete" indicates a concrete containing the equivalent of two 94-pound sacks of cement per cubic yard.
- D. The term "controlled density fill" indicates a flow-able mixture of aggregate and cementitious materials containing sufficient cement to develop a 28-day compressive strength of 50 to 150 psi.
- E. Except for the foregoing definitions, the words and terms used in these Specifications conform to the definitions given in ACI 116R.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Refer to Section 01 66 00 Product Storage and Handling Requirements, for general requirements for product delivery, storage, and handling prodedures.
- B. Deliver packaged materials in manufacturer's original, unopened containers bearing manufacturer's name and brand.
- C. Load, transport, handle, store and batch concrete materials in a manner to ensure materials are not contaminated, unclean, segregated or affected in any way detrimental to final product.

D. Aggregates:

- 1. Transport and stockpile aggregates separately according to sources and gradations. Handle aggregates in manner to prevent segregation and loss of fines, and contamination with earth and foreign materials.
- 2. If aggregates show segregation or different grades become mixed, rescreen aggregates before placing in proportioning bins.
- 3. Do not use aggregates from different sources or of different gradations alternately. Mix aggregates only to obtain different gradations.
- 4. Do not transfer aggregates directly from trucks or railroad cars to proportioning bins when moisture content will affect accuracy of proportioning of concrete mixture. In such cases, stockpile aggregates until excess moisture drains off.

E. Packaged Cement:

- 1. Deliver packaged cement to mixing site in original sealed packages labeled with weight, name of manufacturer, brand and type specified.
- 2. Store packages on raised platforms in a manner to protect from moisture and contamination (in watertight enclosures).
- 3. Do not use cement which has been reclaimed by cleaning bags.
- 4. Do not use cement which has been damaged by exposure or overstocking.
- 5. Do not use packages varying more than three percent from specified weight.
- 6. Packaged cement Subject to test at any time.
- 7. Do not store packaged cement more than six months.
- 8. Use packaged cement on basis of first received, first used.

F. Bulk Cement:

- 1. Store bulk cement separately from other cement and protect to prevent deterioration from exposure to moisture and intrusion of foreign matter.
- 2. Provide facilities in ready-mix plant to maintain separation of cement meeting specified requirements from other cement.
- 3. Provide facilities in cement manufacturer's plant for sampling of cement at weighing hopper or in feed line immediately before entering hopper.
- 4. Use only the brands of cement approved in the concrete mix design.

5. Store admixtures to prevent contamination, evaporation or damage. Protect liquid admixtures from harmful temperature ranges.

1.08 TRANSPORTATION

A. Verify each transit mix truck used for delivery of concrete to Worksite has been satisfactorily inspected by the Contractor's inspector.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Portland Cement: Confirm to ASTM C150, Type II, low alkali. Type III portland cement may be used where high early strength concrete is a requirement as approved by OCTA or its designee.

B. Coarse Aggregates:

- Coarse Aggregate: ASTM C33, clean and uniformly graded from 3/8 inch to maximum size indicated or specified. When not specified, provide 1 inch maximum size (ASTM C33, Size No. 57). Deleterious materials in aggregates shall not exceed the limits specified in ASTM C33.
- 3. Source of Aggregates: Aggregates shall be obtained from a selected aggregate source, known to produce aggregates complying with the specified requirements, as approved by OCTA or its designee.
- 4. Coarse aggregate shall consist of hard, dense, durable crushed or uncrushed gravel or crushed aggregate conforming to ASTM C33 and the herein specified requirements. Deleterious substances in aggregates shall not exceed the following limits:

Percent Deleterious Material		By Weight
a.	Material Passing No. 200 Sieve (ASTM C117):	
	1) Nominal size range No. 4 to 3/4 inch:	0.5
	2) Nominal size range 3/4 inch to 1 inch:	0.4
b.	Shale (ASTM C123, specific gravity of heavy liquid 1.95):	1.0
C.	Clay lumps (ASTM C142):	0.5
d.	Other deleterious substances:	1.0
e.	Total of all deleterious substances:	3.0

- 5. Coarse aggregate shall conform to the following requirements when tested in accordance with the specified ASTM Test Methods:
 - a. Resistance to Abrasion (ASTM C131): The loss for aggregate size range 3/4 inch to 3/16 inch after 100 revolutions and 500 revolutions shall not exceed 10

- percent and 40 percent, respectively. The test sample shall consist of 7 parts of grading B and 3 parts of grading C.
- b. Resistance to Abrasion (ASTM C535): The loss for aggregate size range 1 inch to 3/4 inch (grading 3) after 200 revolutions and 1000 revolutions shall not exceed 10 percent and 40 percent, respectively.
- c. Soundness (ASTM C88): Weighted average loss after 5 cycles shall not exceed 12 percent when tested with sodium sulfate.
- d. Specific Gravity (ASTM C127): Bulk specific gravity on the basis of saturated surface-dry aggregate shall be not less than 2.60.
- e. Absorption (ASTM C127): Absorption shall not exceed 3 percent.
- f. Potential Reactivity (ASTM C33): Only aggregates considered innocuous in accordance with Appendix XI shall be used in the work.

C. Fine Aggregate:

 Fine aggregate shall consist of hard, dense, durable, stone or rock fragments uniformly graded from 3/8-inch to fines, washed clean, conforming to ASTM C33 and the herein specified requirements. Deleterious substances in aggregate shall not exceed the following:

Percent Deleterious Material		By Weight
a.	Material passing No. 200 sieve (ASTM C117):	3.0
b.	Shale (ASTM C123, specific gravity of heavy liquid 1.95):	1.0
C.	Clay lumps (ASTM C142):	1.0
d.	Total of other deleterious substances, (such as alkali, mica, coated grains, soft flaky particles, and loam):	2.0
e.	Total of all deleterious substances:	5.0

- 2. Fine aggregate shall conform to the following requirements when tested in accordance with the specified ASTM Test Methods:
 - a. Specific Gravity (ASTM C128): Not less than 2.60 on a saturated surface-dry basis.
 - b. Organic Impurities (ASTM C40): Supernatant liquid must be lighter in color than the reference standard color solution.
 - c. Soundness (ASTM C88): Loss in 5 cycles of sodium sulfate test shall not exceed 12 percent.
 - d. Potential Reactivity (ASTM C289): Only fine aggregate considered innocuous shall be used in the work.
 - e. Fineness Modulus (ASTM C33): Fineness modulus shall be in the range of 2.30 to 3.00, however, the variation of the fineness modulus shall not exceed 0.20.

D. Drying Shrinkage of Concrete:

1. A trial batch of the proposed (mix design) concrete shall be prepared using the aggregates, cement, and admixture proposed for this work. From the trial batch,

three specimens (4 inches by 4 inches by 11 inches) for determining "Drying Shrinkage" shall be prepared, cured, dried, and measured as specified in ASTM C157 and ASTM C490, with the following modifications:

- a. Cast-in-place concrete shall be moist cured for 10 days.
- b. Measurements shall be made and reported for 7, 14, 21, and 28 days of drying after 9 days of moist curing and 1 day of steam curing. Measurements for HFVAC shall also be made and reported for 56 days of drying.
- Shrinkage of specimens for cast-in-place concrete shall not exceed 0.040 percent when measured in accordance with ASTM C157 and ASTM C490 after 21 days of drying.
- E. Concrete Admixtures and Cementitious Materials: The Contractor may include accepted concrete admixtures and cementitious materials in the mix to improve the water-cement ratio or water-cementitious ratio or workability of the concrete, providing the strengths specified and other desirable characteristics of the concrete can be achieved and maintained. Admixtures require OCTA or its designee acceptance before they may be used, and shall be included in the design mix, introduced in solution form. Admixtures shall be added at the batch plant, except as directed by OCTA or its designee.
 - 1. Demonstrate that admixtures have minimum three years history of demonstrable satisfactory performance on major public projects under equivalent conditions.
 - 2. Chemical Admixtures, Water-Reducing: ASTM C494, Type A.
 - 3. Air-entraining admixtures Conform to ASTM C260
 - 4. Pozzolanic Admixtures: ASTM C618. Class N or F.
 - 5. Fly Ash: ASTM C618, Class F, with a maximum of 25 percent retained on the No. 325 mesh sieve and a loss on ignition of 1.0 percent maximum.
 - 6. Chemical Admixtures, Plasticizing: ASTM C1017, or ASTM C494 Type F or Type G, high-range water-reducing admixtures. Introduce chemical admixture in solution form, in accordance with manufacturer's recommendations.
 - 7. Prohibited Admixtures: Admixtures containing chlorides or sulfides are not acceptable.
 - 8. Use admixtures that are compatible with each other.

F. Water:

- 1. Water for concrete mixes, curing, and cleaning shall be clean and potable.
- 2. Does not contain impurities, suspended particles, algae or dissolved natural salts in quantities that will cause:
 - a. Corrosion of reinforcing steel.
 - b. Volume change that will increase shrinkage cracking.
 - c. Efflorescence.
 - d. Excessive air-entraining.

3. Free from substance which would interfere with chemical action by which concrete is formed, detract from concrete strength and durability, cause variations of concrete color, or cause a combination of such defects. Chloride concentrations in total concrete mix to not exceed 250 ppm. Wash aggregates with potable water and do not use recycled wash water for mixing concrete.

2.02 COMPONENTS

- A. AGGREGATES FOR FILL AND LEAN CONCRETE Conform to SSPWC, Subsection 200, 1.4 and 1.5.5.
- B. AGGREGATES FOR PUMPED CONCRETE Conform to ACI 304.2R, Chapter 4.
- C. TEST EQUIPMENT Provide six cylinders conforming to ASTM C470 for casting test specimens in accordance with ASTM C31, as specified herein, for each 150 cubic yards and fractions thereof, of each class of concrete, and for daily pours less than 150 cubic yards, of structural concrete.

PART 3 - EXECUTION

3.01 MATERIAL PREPARATION - Mixing Concrete

A. Operations:

- 1. Provide concrete mixers that discharge concrete from mixer that is uniform in composition and consistency throughout mixed batch.
- 2. Reduce size of batch to be mixed or increase mixing time when charging and mixing operations fail to produce a concrete batch which conforms to above criteria.
- 3. Add water before, during and following mixer charging operations. Amount of water to be as indicated by mix design; do not add water more than in excess of the weight indicated by mix design.

B. Central-mixed Concrete:

- Arrange mixers in centralized mixing plants so mixing action in mixers can be observed by plant operator from a location convenient to mixing plant operator's station.
- Do not load mixers more than in excess of rated capacity. Mix concrete ingredients in a batch mixer for not less than time specified for various mixer capacities after ingredients, except full amount of water, are in mixer. Mixing time may be reduced if thorough mixing, can be obtained in less time, as determined by testing.
- 3. Mixing Time

CAPACITY OF MIXER TIME OF MIXING

2 cu. yd. or less 1 1/2 minutes

3 cu. yd. 2 minutes

4 cu. yd. 2 1/2 minutes

Larger than 4 cu. yd. Determined by mixer performance tests by

OCTA or its designee.

4. Equip each mixer with a mechanically operated batch counter, and a timing and signaling device to indicate completion of required mixing period.

C. Truck-mixed Concrete - Conform equipment and procedures to ASTM C94.

3.02 EXAMINATION

- A. Verify aggregates from different sources are not mixed, except as required to satisfy accepted mix design.
- B. Verify mix designs and sources of aggregates are not changed without written review and acceptance by OCTA or its designee.
- C. Verify aggregate mixtures have not become segregated.

3.03 TEMPERATURE CONTROL

- A. Prepare aggregates by methods which produce concrete having a temperature of not more than 90°F and not less than 55°F immediately before placing.
- B. Cool concrete ingredients as required and by methods acceptable to OCTA or its designee.

3.04 PROPORTIONING

A. Verify concrete ingredients are proportioned in conformance with established mix design, as accepted by OCTA or its designee, for particular strength class and usage.

3.05 INSTALLATION

A. MEASURING, BATCH PLANT, MIXERS AND AGITATORS, MIXING AND DELIVERY - Verify ASTM C94, Sections 7, 8, 9 and 10 are satisfied by concrete supplier.

B. ADMIXTURES

- 1. Verify admixtures are dispensed for each batch from a dispenser having capacity to measure quantity required for one batch.
- 2. Chemical admixtures Use water-reducing admixtures in concrete which will be below grade and in contact with rock, earth, ribs and lagging or fill and concrete that will be placed by pumping.
- 3. Consistency Maintain slump range at point of delivery for concrete compacted by approved mechanical vibrators within specified limits. Do not use concrete in Work if slump exceeds maximum allowable by one inch or more.
- 4. Color Pigments for Integrally Coloring Concrete

- a. Use same type and brand cement from same mill for entire project.
- b. Supply fine or coarse aggregate from one source, non-reactive.
- c. Provide a concrete mix of consistent quality. Maintain uniform weight ratio of pigment to cement. Do not change mix design without acceptance by OCTA or its designee. Vary ratio of pigment to cement only when mix design significantly affects color.
- d. Do not exceed five inch slump. Use a three inch to four inch slump or lowest slump compatible with a Workable and placeable mix.
- e. Rinse mixer drum thoroughly before batching colored concrete and after colored concrete has been discharged.
- f. Determine pigment amount introduced to batch by weight, not volume. Do not estimate.
- g. Add color by weight directly into mixer along with aggregate, cement and water.
- h. Operate transit mixer at charging or mixing speed (50 to 100 revolutions) for five to 10 minutes while adding color.

3.06 FIELD QUALITY CONTROL

A. Perform field job quality control tests in accordance with the test method and at the frequency specified below.

TEST DESCRIPTION	STANDARD MINIMUM FREQUENCY PROCEDURE	
Material Qualifications		
Manufacturer's Product Data of Certifications of Compliance - Each material/ component used	As Specified in Part 2	Once - Initial acceptance; each shipment used on Worksite
Aggregate	ASTM D75, C33	Once - Initial acceptance and at each change in source of supply
Potential Reactivity	ASTM C289	Once - Initial acceptance and at each change in source of supply
Cement	ASTM C150	Once - Initial acceptance and at each change in source of supply
Water	Paragraph 2.3	Once - Initial acceptance and at each change in source of supply
Admixtures	Paragraph 2.2	Once - Initial acceptance and at each change in source of supply

SECURITY GATES INSTALLATION AT ANAHEIM, GARDEN GROVE, AND SANTA ANA BUS BASES

C-3-2279 EXHIBIT B

Concrete Mix Design	ASTM C94	Once - Initial acceptance and each revision; each class of concrete used
Job Control		
Aggregate Gradation	ASTM C136	Monthly, as a minimum or as directed by OCTA or its designee
Cement	ASTM C150	Once per month or every 1000 tons
Chemical Admixture	ASTM C494	Once - Initial acceptance and at each change in source of supply
Mineral Admixture	ASTM C618	Once - Initial acceptance and at each change in source of supply
Slump	ASTM C143	First load and each set of cylinders
Compressive Strength	ASTM C31 and C39	Six cylinders per each 150 cu. yd. or portion thereof
Air Content	ASTM C231	First load and each set of cylinders when required by mix design
Temperature	ASTM C177	Paragraph 3.3 First load and each set of cylinders
Compressive Strength	ACI 318	Continuous throughout job moving Average

B. Concrete Testing

- 1. For each 150 cubic yards of structural concrete, or less, placed in one operation take six 6 inch by 12 inch cylinders to be tested for compression strength per ASTM C39 as follows:
- 2. Test two one cylinders at seven days and record compressive strength.
- 3. Test two cylinders at 28 days to determine compressive strength. Record average of two cylinders. Concrete represented by sample Acceptable if:
 - a. Average of all sets of three consecutive strength tests per shift equals or exceeds design strength.
 - b. No individual strength test (average of two cylinders) falls below design strength by more than 500 psi.
 - c. Maintain two cylinders as a spares. Discard after acceptance of 28 day test.

- 4. Prepare and test trial mixes. From trial mixes, prepare a combined particle distribution curve for concrete mix.
- 5. Construction mixes not conforming to combined particle distribution curve, or with unacceptable water/cement ratio, total mix water, or total cementitious material, or yielding concrete of unsatisfactory unit weight, will be rejected and will require adjustments in concrete mix and new test trial, for review and acceptance of adjusted mix.
- 6. Conduct a proof test for pumpability of design mix. Reproduce job conditions by introducing "U" turns in steel pipe laid on ground. Pumped concrete may be deposited in another mixer. Use accepted concrete mix only. OCTA or its designee may elect to conduct independent testing of materials to verify actual properties.

END OF SECTION 03 05 15

SECTION 03 20 00

CONCRETE REINFORCEMENT

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Work specified in this Section consists of furnishing, fabricating, installing reinforcing steel for concrete structures. Section includes the following:
 - 1. Steel reinforcing bars.
 - 2. Epoxy-coated reinforcing bars.
 - 3. Welded steel wire reinforcement.
 - 4. Steel bar mats.
 - 5. Accessories included but not limited to, chain and tie wires.

1.02 RELATED SECTIONS

A.	Section 01 33 00:	Submittal Procedures

B. Section 01 43 20: Project Quality Program Requirements - Design/Bid/Build

C. Section 01 66 00: Product Storage and Handling Requirements

D. Section 03 05 15: Portland Cement Concrete

E. Section 03 30 00: Cast-In-Place Concrete

1.03 REFERENCES

- A. American Concrete Institute (ACI):
 - 1. ACI 117 & ACI 117R -Tolerances for Concrete Construction and Materials

2. ACI 301 - Structural Concrete

3. ACI 315 - Details and Detailing of Concrete Reinforcement

4. ACI 318 - Building Code Requirements for Structural Concrete

5. ACI SP-66-04 - ACI Detailing Manual

B. ASTM International (ASTM):

1. ASTM A82 - Steel Wire, Plain, For Concrete Reinforcement

2. ASTM A123 - Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products

ASTM A184/A184M - Welded deformed steel bar mats for concrete reinforcement

ASTM A185/A185M - Steel Welded Wire Reinforcement, Plain, for Co.

5. ASTM A370 - Test methods and Definitions for Mechanical Testing of Steel Products

6. ASTM A496 - Steel Wire, Deformed, For Concrete Reinforcement

7. ASTM A497 - Steel Welded Wire Reinforcement, Deformed, For Concrete

8. ASTM A568 - Steel, Sheet, Carbon, Structural and High-Strength, Low-Alloy,

Hot-Rolled and Cold-Rolled, General Requirements

9. ASTM A615 - Deformed and Plain Carbon-Steel Bars for Concrete

Reinforcement

10. ASTM A706 - Low-Alloy Steel Deformed and Plain Bars for Concrete

Reinforcement

11. ASTM E8 - Tension Testing of Metallic Materials

C. American Welding Society (AWS):

1. AWS D1.1 - Structural Welding Code Steel

2. AWS D12.1 - Recommended Practices for Welding Reinforcing Steel Metal Inserts and Connections in Reinforced Concrete Construction.

D. Concrete Reinforcing Steel Institute (CRSI):

CRSI - Manual of Standard Practice and documents 63 and 65

- E. Federal Highway Work Administration (FHWA):
 - 1. FHWA-N 5080.33 Coated Reinforcing Steel
 - 2. FHWA-RD-74-18 Nonmetallic Coating for Concrete Reinforcing Bars NBS

1.04 QUALITY ASSURANCE

- A. Comply with Project Quality Program Requirements (see 1.02 above).
- B. Provide supervisor experienced in placing reinforcing bars for concrete who has been in responsible charge of Work similar to Work of this Contract.
- C. Construction tolerances allowed for various type of reinforcement installation shall be per ACI 117, ACI 117R and CRSI.
- D. Adjustments: Bars may be moved as necessary to avoid interference with other reinforcing steel, conduits, or embedded items. If bars are moved more than the tolerances specified in ACI 318 Section 7.5.2, the resulting arrangement of bars shall require Metro or its designee's approval. Minimum spacings shall not be decreased, and the required number of bars shall be placed. Bars moved to permit access for cleanup operations shall be properly replaced and secured before the start of concrete placement.

- E. For general quality control refer to Section 01 43 20 Project Quality Program Requirements Design/Bid/Build, and to following paragraphs for specific procedures. Testing laboratory shall perform following performance testing, shall select test sample of bars from the materials at the site or from place of distribution, each sampling including at least two 18" long pieces and perform following tests according to ASTM A706;
 - Identified bars. If samples are obtained from bundles as delivered from the mill, identified as to heat number, accompanied by mill analysis and mil test reports, and properly tagged with identification certificate so as to be readily identified, perform one tensile and one bond test for each 10 tones or fraction thereof of each size of rebar. Submit mill report when samples are selected.
 - 2. Unidentified bars. When positive identification of reinforcing bars cannot be made and when random samples are obtained, perform tests for each 2.5 tons or fraction thereof, one tension and one bent test for each size of bar.
- F. Perform welding operations in accordance with requirements specified in AWS D1.4 and Section 05 05 33 Basic Welding Requirements.
- G. Certification of welders:
 - 1. All welding both in shop and in field shall be performed by certified welding operator.

1.05 SUBMITTALS

- A. Refer to Section 01 33 00 Submittal Procedures, for submittal requirements and procedures.
- B. Manufacturer's specifications and installation instructions for proprietary materials and reinforcement accessories.
- C. Shop Drawings for fabrication, bending and placement of concrete reinforcement in conformance with ACI 315 and showing bar schedules, stirrup spacing, diagrams of bent bars, arrangements and assemblies, as required for fabrication and placement of concrete reinforcement. Indicate dimensions and location of reinforcing steel. Include number of pieces, sizes and markings of reinforcing steel, laps and splices, supporting devices and accessories, and any other information required for fabrication and placement.
- D. Certified copies of mill reports; include steel sources and heat number, and indicate chemical and physical analysis for each heat, including tensile yield and strength tests, and bend tests results.
- E. Certification and necessary documentation specified in Section 05 05 33 Basic Welding Requirements.
- F. Sample couplers made by each installation crew using actual reinforcing bar sizes will be static tested by Metro or its designee in accordance with ASTM A370 and ASTM E8. Provide coupled reinforcing bars each containing at least three deformation patterns. Three splice specimens will be tested for each installation crew and reinforcing bar size.

- G. Manufacturer's catalog data and printed requirements for application and repair of epoxy coating.
- H. Catalog cuts for the stray current monitoring assembly, including reference electrode suitability for placement in concrete.

1.06 DEFINITIONS (Not Used)

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Refer to Section 01 66 00 Product Storage and Handling Requirements, for general requirements for product delivery, storage and handling procedures.
- B. Ship concrete reinforcement from source, securely tied and identified with tags indicating grade and size of bar, melt or heat number, bundle number, and name and location of mill. Deliver bars to Worksite properly identified in accordance with reviewed and accepted Shop Drawings.
- C. Deliver steel reinforcement to the jobsite, store, and cover in a manner which will ensure that no damage shall occur to it from moisture, dirt, grease, oil, or other cause which might impair bond with concrete.
- D. Handle and store galvanized reinforcement in manner to prevent excessive sagging of bars and damage to coating. Reinforcement with damaged epoxy coating will be rejected, comply with the requirements of ASTM D3963/D3963M.
- E. Store concrete reinforcement off ground and support as required to prevent formation of kinks, distortions, excessive rusting, contamination by oil, mud or other material that will damage bars or adversely affect bond with concrete.
- F. Comply with AWS codes and the recommendations of the electrode manufacturer regarding storage and care of electrodes. Do not use electrodes that have been exposed to moisture.
- G. Maintain identification of steel reinforcement after bundles are broken.
- H. Provide special facilities for the storage and handling of exothermic materials as recommended by the splicing system manufacturer.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Reinforcing Steel Bars:
 - 1. Billet-Steel Bars: ASTM A615, Grade 60, except that the maximum yield strength shall be 78,000 psi, and the tensile strength shall be not less than 1.25 times the actual yield

- strength. ASTM A615 bars may be welded only if the more stringent requirements of ANSI/AWS D1.4 are followed.
- Low-Alloy Steel Bars: ASTM A706. Provide ASTM A706 bars for bars to be welded.
- 3. Weights of Bars: Refer to ACI 318, Appendix on Steel Reinforcement Information.
- B. Wire and Spiral Reinforcement: ASTM A82 for plain wires and ASTM A496 for deformed wire.
- C. Welded Steel Wire Reinforcement: ASTM A185 for plain wires and ASTM A497 for deformed wire. Minimum tensile strength shall be 60 ksi. Provide mesh in flat sheets only.
- D. Galvanized Reinforcing Bars: ASTM A706 or ASTM A615, as applicable, galvanized in accordance with ASTM A767/A767M, Class I coating. Bars shall be cut and bent cold before galvanizing.
- E. Steel Bar Mats: Deformed Bars: ASTM A184/A184M, using ASTM A706 deformed bars, sizes and spacings of members as indicated, welded or clipped at intersections.

2.02 COMPONENTS

- A. Welding Electrodes: E90XX low hydrogen electrodes (for shielded metal arc welding.)
- B. Mechanical Sleeve Coupler:
 - 1. Capable of developing in tension 125 percent of yield strength of adjoining reinforcing bars.
 - 2. Connection: Produced by threaded reinforcing bar ends and threaded coupler or by metal sleeves hydraulically pressed or forged onto butt-ended reinforcing bars.
 - 3. Couplers: Comply with local building codes if reinforcement is used in private building modifications.
 - 4. Capable of being installed in clear space indicated.
- C. "No-Slip" as manufactured by Fox-Howlett Industries, 722 Fogler Avenue, Berkeley, CA 94710; "Bar-Grip" as manufactured by Dayton Barsplice Inc., P.O. Box 366, Miamisburg, OH 45324; "Sylgab Stricon" as manufactured by Sylgab Steel & Wire Corp., 19-26 Steinway Street, Long Island City, NY 11105; or approved equivalent.

2.03 ACCESSORIES

- A. Accessories: Provide reinforcement accessories, consisting of bar supports, spacers, hangers, chairs, ties, and similar items as required for spacing, assembling, and supporting reinforcement in place. Conform with CRSI referenced standards and the following requirements:
 - 1. For footings, grade beams, and slabs on grade, provide supports with precast concrete or mortar bases or plates or horizontal runners where wetted base materials will not support chair legs.

- 2. For exposed-to-view concrete surfaces, where legs of supports are in contact with forms or are in close proximity to finish surfaces, provide supports with legs which are galvanized, plastic-protected, or stainless steel.
- 3. For galvanized reinforcement, provide all galvanized accessories.
- B. Tie Wire: No. 16 gage or heavier, black or galvanized, soft or commercial grade steel tie wire. For galvanized reinforcement, provide zinc-coated wire. Where tie wire is in close proximity to finish surfaces of exposed-to-view concrete, provide soft stainless steel wire. Minimum gauge of the wire shall be 165 GA.

2.04 FABRICATION

- A. Fabrication Standards: Fabrication of steel reinforcement shall be in accordance with the Contract Drawings and approved Shop Drawings. Where specific details are not indicated, comply with applicable requirements of ACI SP-66, ACI 301, ACI 318, and CRSI Manual of Standard Practice.
- B. Cutting and Bending: Cutting and bending shall be performed at a central location, equipped and suitable for the purpose. Bars shall be accurately cut and bent as indicated. Bars shall be bent cold. Heating of bars for bending or straightening will not be permitted. Bars shall not be bent or straightened in any manner which will injure the material. Label all bars in accordance with bending diagrams and schedules, and secure like pieces in bundles when appropriate. Bend bars #6 size and larger in the shop only. Bars with unscheduled kinks or bends are subjected to rejection. Use only tested and approved bar materials.
- C. Repair of Damaged Coatings: Bars for galvanized reinforcement shall be cut and bent cold before galvanizing. Galvanized and epoxy coatings damaged by shipping, handling, or cutting and bending shall be repaired as specified in ACI 301, and ASTM A767/A767M, ASTM A775/A775M, ASTM A884/A884M, and ASTM D3963/D3963M, as applicable.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Verify surface, over which concrete is placed, is clean and in proper condition for placing reinforcement.
- B. Verify items to be embedded and block-outs are secured in place as required.
- C. Weld Inspection: visually inspect all welds according to AWS D1.4 Chapter 7, Inspection.
- D. Verify reinforcing steel is free from heavy rust and mill scale, dirt, oil, grease and other materials which reduce or destroy bond with concrete.

- E. Verify reinforcement is properly placed and secured prior to concrete placement. Do not place concrete until welds have been inspected and accepted by Metro or its designee.
- F. Verify all materials, components and accessories are placed and secured and clean before placing of concrete.

3.02 INSTALLATION

- A. Placing Standards: Reinforcing steel shall be placed in accordance with the Contract Drawings, approved Shop Drawings, and the applicable requirements of ACI 301, ACI 318, CRSI Manual of Standard Practice, and CRSI Placing Reinforcing Bars. Install reinforcement accurately and secure against movement, particularly under the weight of workers and the placement of concrete. The placement of reinforcement shall be within tolerances specified in ACI 117. Prevent damage to epoxy coated reinforcement.
- B. Reinforcing Supports: Bars shall be supported on metal or plastic chairs, spacers, and hangers, accurately placed and securely fastened to steel reinforcement in place. Support legs of accessories in forms without embedding in the form surface. Hoops and stirrups shall be accurately spaced and wired to the reinforcement.
- C. Placing and Tying: Reinforcing steel shall be installed in place, spaced, and rigidly and securely tied or wired with tie wire at all splices and at crossing points and intersections in the positions indicated. It is not necessary to tie bars at every intersection. Comply with requirements of CRSI Placing Reinforcing Bars, Chapter 10. Snap ties are acceptable for intermediate intersections. Rebending of bars on the job to fit different conditions will not be permitted. Point ends of wire ties away from adjacent form surfaces.
- D. Spacing: Center-to-center distance between parallel bars shall be in accordance with the Contract Drawings or, where not indicated, the minimum clear spacing shall be in accordance with ACI 318.
- E. Longitudinal Location of Bends and Ends of Bar: A maximum of plus or minus 3 inches from the indicated location will be permitted, provided that specified protective concrete cover at ends of members is not reduced by more than 1/2 inch.
- F. Formwork for as-cast finish: Use spacers which will not be visible in exposed finish; plastic-coated or stainless steel legs to depth of minimum cover as indicated or, if not indicated, as specified below for particular location.
- G. Embed reinforcement, including stirrups, to clear depth, measured from surface of bar to surface of concrete, in accordance with ACI 318, Article 7.7.
- H. Bar Supports and Spacers:
 - 1. Support reinforcing bars in position by means of approved spacers, chairs or hangers.
 - Install sufficient number of supports to prevent displacement of reinforcement from indicated position. Do not place reinforcing bars more than two inches beyond last leg of continuous bar support. Do not use supports as bases for runways for concrete conveying equipment and similar construction loads.

- 3. Support reinforcing steel located in bottom of slabs resting on earth, on precast concrete mortar blocks of proper size and dimensions to position and support steel.
- 4. Do not use stones, bricks, wood blocks or pieces of broken concrete to support reinforcing steel.

I. Splicing:

- 1. Lapped Splices:
 - a. Laps of splices shall be securely tied together to maintain the alignment of the bars, to provide the required minimum clearances, and to transfer stress by bond. Lapped splices and development lengths not shown shall be detailed to develop Class B lapping lengths and development lengths in tension, respectively, in accordance with ACI 318.
 - b. Splices of alternate bars shall be staggered a minimum clear offset of 2 feet between splices. Splices shall be tied with tie wire, or splices may be lap welded in accordance with AWS D1.4. Lapped splices are not permitted for No. 14 and No. 18 bars, or when specifically excluded by Contract provisions regardless of size.
- J. Dowels: Provide dowels where indicated or required for connecting construction and for maintaining structural and reinforcement continuity. Dowels shall be tied securely in place before concrete is deposited. Provide additional bars for proper support and anchorage where required. Do not bend dowels after embedment.

K. Welded Wire Fabric:

- 1. Wire fabric shall be installed in lengths as long as practicable and shall be wire-tied at all laps and splices. End laps shall be offset in adjacent widths. Lap welded wire fabric in accordance with applicable requirements of ACI 318.
- Where required welded wire fabric shall be secured in position with suitable supports, accessories, and tie wire as indicated and required to ensure against movement from workers and placement of concrete lift fabric as concrete is placed to assure proper embedment at position indicated.

3.03 FIELD QUALITY CONTROL

- A. In accordance with Section 01 43 20 Project Quality Program Requirements -Design/Bid/Build, quality control inspections and tests to be performed by the Contractor include the following:
 - 1. Placement of Reinforcing Steel: Visual inspection of reinforcing steel in place, including bar supports, tied laps and intersections, welded wire fabric, and bar mats.

2. Welds:

- a. Visual inspection of reinforcing bar welds.
- b. Tension tests of welded butt joints. Tests shall be performed on sample welds produced by the Contractor in accordance with ASTM E8. Furnish report for two tensile tests of sample welds made by each welder on the largest size bar indicated.

- c. Nondestructive tests of installed welded butt joints shall be performed in accordance with ASTM E 165.
- d. Inspections and tests shall be performed in accordance with the applicable requirements of AWS D 1.4, Chapters 6 and 7.
- e. If testing reveals defective weld, pay the cost of testing.
- f. Repair or replace defective welds to the satisfaction of Metro or it's designee.

E. END OF SECTION 03 20 00

SECTION 03 30 00

CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.01 <u>SECTION INCLUDES</u>

- A. Work specified in this section consists of:
 - 1. Placing, testing, repair/patching and initial curing of cast-in-place concrete, unless noted otherwise.

1.02 RELATED SECTIONS

- A. Section 01 33 00: Submittal Procedures
- B. Section 01 43 20: Project Quality Program Requirements Design/Bid/Build
- C. Section 01 66 00: Product Storage and Handling Requirements
- D. Section 03 05 15: Portland Cement Concrete
- E. Section 03 35 00: Concrete Finishing

1.03 REFERENCES

- A. American Association of State Highway and Transportation Officials (AASHTO):
 - 1. AASHTO M171 Sheet Materials for Curing Concrete
 - 2. AASHTO M182 Burlap Cloth Made from Jute or Kenaf
- B. American Concrete Institute (ACI):
 - 1. ACI 117 Tolerances for Concrete Construction & Materials and Commentary
 - 2. ACI 301 Specification for Structural Concrete
 - 3. ACI 304R Measuring, Mixing, Transporting, and Placing Concrete
 - 4. ACI 304.2R Placing Concrete by Pumping Methods
 - 5. ACI 305R Hot Weather Concreting
 - 6. ACI 309R Consolidation of Concrete
 - 7. ACI 318 Building Code Requirements for Structural Concrete

- 8. ACI 355.4 Acceptance Criteria for Qualification for Post Installed Adhesive Anchors in Concrete
- 9. ACI SP-15 Standard Specification for Structural Concrete
- C. ASTM International (ASTM):
 - 1. ASTM C33 Concrete Aggregates
 - 2. ASTM C42 Obtaining and Testing Drilled Cores and Sawed Beams of Concrete
 - 3. ASTM C94 Ready-Mixed Concrete
 - 4. ASTM C171 Sheet Materials for Curing Concrete
 - 5. ASTM C309 Liquid Membrane-Forming Compounds for Curing Concrete
 - 6. ASTM C881 Epoxy-Resin-Base Bonding Systems for Concrete
 - 7. ASTM D994 Preformed Expansion Joint Filler for Concrete (Bituminous Type)
 - 8. ASTM D1056 Flexible Cellular Materials Sponge or Expanded Rubber
 - 9. ASTM D1667 Flexible Cellular Materials Vinyl Chloride Polymers and Copolymers (Closed Cell Foam)
 - 10. ASTM D1751 Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Non-extruding and Resilient Bituminous Types)
 - 11. ASTM D1752 Preformed Sponge Rubber Cork and Recycled PVC Expansion Joint Fillers for Concrete Paving and Structural Construction
 - 12. ASTM D3740 Minimum Requirements for Agencies Engaged in Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction
- D. South Coast Air Quality Management District (SCAQMD) Volatile Organic Compounds (VOC) regulations
- E. Standard Specifications for Public Works Construction (SSPWC):
 - 1. Section 201 Concrete, Mortar, and Related Materials
- F. United States Army Corps of Engineers:
 - CRD-C400 Requirements for Water for Use in Mixing or Curing Concrete
- G. Caltrans Standard Specifications, Section 51, "Concrete Structures."
- H. ICC-ES International Code Council Evaluation Service
- I. CBC California Building Code

J. IBC - International Building Code

1.04 **QUALITY ASSURANCE**

- A. Comply with Project Quality Program Requirements (see 1.02 above).
- B. Qualifications of Concreting Supervisor; Responsible charge experience in placing, consolidating and curing portland cement concrete in structures similar to those of this Contract.
- C. Mix Design: As specified in Section 03 05 15 Portland Cement Concrete and 32 13 13 Concrete Paving.
- D. Comply with South Coast Air Quality Management District (SCAQMD) regulations for Volatile Organic Compounds (VOC).
- E. Construction Tolerances Allowable Deviations from Indicated Dimensions and Elevations Do not allow adjacent units to have cumulative deviations.
 - 1. Footings
 - Misplacement and eccentricity, as measured from centroid of footing Two
 percent of footing width in direction of misplacement but not more than two
 inches.
 - b. Elevation of top: +/- 1/4 inch.
 - c. Other footing dimensions: 1/4 inch or + unlimited.
 - 2. Tops of slabs not otherwise specified: +/- 1/4 inch.
 - 3. Variation from a 10-foot straightedge placed in all directions on horizontal and inclined surfaces: 1/4 inch.
- F. Obtain material from same source throughout work.
- G. Furnish materials in manufacturer's packaging with applicable instructions.
- H. Drill and Bond Dowels shall conform to CBC Chapter 17 requirements for post installed anchors.
- I. Chemical adhesives and adhesive anchors shall conform to CBC Chapter 17, ACI 318-14 Section 17.8.2, and anchor ICC-ES report requirements.

1.05 SUBMITTALS

- A. Refer to Section 01 33 00 Submittal Procedures, for submittal requirements and procedures.
- B. For each concrete placement operation:

- 1. Detailed descriptions of intended equipment and methods for conveying, placing, consolidating, preliminary finishing and curing of concrete.
- 2. Trial Concrete Mix Designs: As specified in Section 03 05 15 Portland Cement Concrete.
- 3. Ready-mix delivery tickets: In accordance with ASTM C94.
- 4. Detailed description of proposed methods for protecting fresh concrete from inclement weather and extremes of temperature.
- C. Tests: Concrete compressive strength report on production samples. Frequency of testing and number of cylinders per testing site as specified in Section 03 05 15 Portland Cement Concrete, or directed by OCTA or its designee.
- D. Bonding materials for drill and bond dowels shall conform to Section 51-1.01C(3), "Bonding Materials," of Caltrans Standard Specifications.
- E. Chemical adhesives and adhesive anchors shall conform to Section 51-1.01C(5), "Chemical Adhesives," of Caltrans Standard, and anchor ICC-ES report.

1.06 DEFINITIONS (NOT USED)

1.07 WORKSITE CONDITIONS

- A. Environmental Requirements:
 - 1. Hot weather concreting: Maximum temperature as recommended in ACI 305R.
 - a. Do not allow temperature of concrete, when deposited, to exceed 90F during hot weather.
 - b. When ice is used to maintain concrete temperature, add with or without water; include weight of ice in calculation of water cement ratio.
 - c. Protect concrete from direct sunlight during curing period.
 - d. Keep concrete moist with cool water sprinkling, wet burlap or cotton mats, or other acceptable methods which do not adversely affect concrete.
 - 2. Wet Weather: Do not place concrete in locations exposed to weather if rain intensity is expected to wash cement paste off aggregate, unless adequate shelter for concrete has been provided.
- B. Inspection Immediately Before Concreting:
 - 1. Substrate Surface Condition
 - a. Verify surface is hard, reasonably level, slightly moist, and free from loose, saturated and frosty material and debris.

b. Verify previously placed concrete has been prepared for bonding as specified and is free from loose and extraneous matter.

2. Products to be Embedded:

- a. Inspect anchorage devices, remove defective pieces, install new pieces, and correct omissions, improper positioning, and weaknesses in fastenings.
- b. Verify pipes and conduits to be embedded are satisfactorily tested, with external threads capped, internally-threaded and non-threaded ends plugged, and anchorage devices secured in indicated locations.
- 3. Formwork: Inspect for defects in alignment, grade and integrity of bracing, tie-bolts, falsework, camber, and joints; eliminate defects.
- 4. Concrete Reinforcement: Inspect for quantity, sizes and positioning. Verify fastenings will prevent displacement.
- 5. Do not place concrete until inspection has been completed and defects have been corrected.
- C. Where reinforcement is so congested concrete placement is impeded, implement special concrete placement and compaction procedures, with prior acceptance of OCTA or its designee.

1.08 DELIVERY, STORAGE, AND HANDLING

- A. Refer to Section 01 66 00 Product Storage and Handling Requirements, for general requirements for product delivery, storage and handling procedures.
- B. Transport and deliver concrete in accordance with ASTM C94, ACI 304R and this Section.
- C. Arrange and maintain delivery schedules; once placement has begun, do not delay more than 30 minutes between fresh deposits and previously placed deposits.
- D. Handle, store and batch concrete materials to prevent contamination, dampness, segregation and other conditions detrimental to final product.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Portland Cement Concrete for foundations: As specified in Section 03 05 15 Portland Cement Concrete.
- B. Portland Cement Concrete for pavements and other uses other than foundations shall be in accordance with SSPWC 201-1.1.2 Table 201-1.1.2.
- C. Water: Any potable additional water required during placement of concrete shall be in accordance with CRD-C400.

- D. Sand: Clean, dry, natural or manufactured sand, free from clay lumps, rocks and debris for under/over vapor barrier.
- E. Reinforcement: As specified in Section 03 20 00 Concrete Reinforcement
- F. Bonding materials for drill and bond dowels shall conform to Section 51-1.02C, "Bonding Materials," of Caltrans Standard Specifications.
- G. Chemical adhesives and adhesive anchors shall conform to Section 51-1.02H, "Chemical Adhesives," of Caltrans Standard, IBC 2018, ACI 355.4 requirements. The anchor ICC-ES report shall confirm that the material can be used for cracked and uncracked concrete in seismic design category C through F.

2.02 ACCESSORIES

- A. Curing Materials:
 - 1. Burlap Double thickness conforming to AASHTO M182, Class 3.
 - 2. Waterproof Paper Conform to ASTM C171.
 - 3. White Polyethylene Sheeting Conform to AASHTO M171.
 - 4. Liquid Membrane Forming Curing Compound Conform to ASTM C309, Type 1-D or 2 as selected by OCTA or its designee. Certify Class B curing agent will not affect bond of subsequent finishes.
 - a. Type 1-D compound, containing fugitive dye readily distinguished upon concrete surface and will become inconspicuous within seven days after application.
 - b. Type 2 compound, containing white pigment that when applied to surface exhibits reflectance not less than 60 percent of magnesium oxide. Use where surfaces are subjected to sunlight.
- B. Mortar for Patching Concrete: One part portland cement of type and manufacture used in damaged concrete to two parts fine aggregate conforming to ASTM C33.
- C. Grout for Bond New Concrete to Set Concrete: Equal parts of portland cement and fine aggregate by weight and not more than six gallons water per sack cement.
- D. Vapor Barrier: Six-mil polyethylene.
- E. Epoxy-Resin Adhesive: In conformance with ASTM C881. Concresive Epoxy by BASF, Sikadur Epoxy by Sika Corporation, HVA Capsule Anchors by Hilti, Ultrabond by Adhesives Technology Corporation or equal, subject to approval by OCTA or its designee.

PART 3 - EXECUTION

3.01 PREPARATION

- A. Remove all free water from forms before concrete is deposited. Remove hardened concrete, debris and foreign materials from interior surfaces of forms, exposed reinforcing, and from surfaces of mixing and conveying equipment.
- B. Wet wood form sufficiently to tighten up cracks. Wet other materials sufficiently to reduce absorbtion and to help maintain concrete workability.
- C. Provide concrete in accordance with Section 03 05 15 Portland Cement Concrete.
- D. Immediately before placing concrete, ensure required volume of concrete will be delivered in manner to permit placement at constant rate. Do not use aluminum components for conveying concrete.
- E. Immediately before placing concrete, check forms; make adjustments to ensure finished Work will conform to indicated lines and grades. Provide plumb lines and tell-tales to permit ready measurement by OCTA or its designee to determine settlement and deviation from Contract Drawing requirements.
- F. Do not place concrete until formwork, reinforcing steel and embedded items have been checked and appropriate placement certification has been signed by Contractor and accepted by OCTA or its designee.
- G. Embedments in Concrete: Position embedded steel items, inserts, pipes, conduits and anchors, and securely support as specified in Sections of architectural, electrical and mechanical Work and as indicated.
- H. Concrete Reinforcement: Except as indicated, install concrete reinforcement as specified in Section 03 20 00 Concrete Reinforcement.

3.02 BONDING

A. Bond New Concrete to Existing Concrete. Roughen and clean concrete surfaces as required to remove laitance, coatings, loose particles and foreign matter; clean reinforcing steel and uniformly expose clean coarse aggregate before applying grout or placing new concrete.

3.03 CONVEYING OR PUMPING OF CONCRETE

- A. Conveying: Convey concrete from mixer with equipment acceptable to OCTA or its designee to ensure continuous flow of concrete to point of placement without segregation or loss of mortar.
- B. Adjustable Length Pipes (Elephant Trunks):
 - Flexible pipes of metal, rubber or plastic will be permitted provided they are of four inch minimum diameter and used in manner to prevent segregation of concrete.

- 2. Locate pipe and flexible pipe so concrete is delivered in continuous flow to points not more than five feet horizontally and five feet vertically from final location. In vicinity of construction joints, reduce horizontal distance to three feet maximum.
- 3. Clean flexible pipes or elephant trunks after each use.
- 4. Do not use aluminum.

3.04 PLACING CONCRETE

A. Depositing:

- 1. Deposit concrete continuously and as rapidly as practicable after mixing.
- 2. Do not use vibrators to shift mass of fresh concrete.
- 3. Do not deposit concrete at rate which would endanger formwork or at rate faster than placing crew can properly consolidate placed concrete. Do not deposit concrete on concrete which has hardened sufficiently to cause formation of seams (cold joints) or planes of weakness within Section. Cover each concrete lift with fresh concrete within 30 minutes.
- 4. Deposit concrete in continuous flow to points not more than five feet horizontally and five feet vertically from final location.
- Remove temporary spreaders in forms when concrete has reached an elevation making spreaders unnecessary. Spreaders may remain embedded in concrete only if made of concrete or nonstaining metal, and with prior acceptance of OCTA or its designee.
- B. Placement: Not permitted when, in opinion of OCTA or its designee, sun, heat, wind, or limitations of facilities furnished by Contractor prevent proper finishing and curing of concrete
- C. Deposit concrete as near as practicable to final position, and in continuous flow. Do not allow mortar to separate from aggregate.
- D. Deposit concrete against leading face of lift being placed.
- E. Deposit concrete continuously in level layers of thickness which can be properly consolidated; cover previously-placed layers before concrete has begun to harden. Start placing at low point and proceed up grade unless otherwise permitted by OCTA or its designee.
- F. When truck or agitator is used for transporting concrete to delivery point, complete discharge within 1 1/2 hours, or before 300 revolutions of drum or blades, whichever comes first, after introduction of mixing water to cement and aggregates except as permitted by ASTM C94. Under conditions contributing to quick stiffening of concrete, and when concrete temperature is 90°F or above, less than 1 1/2 hours may be required.
- G. Do not retemper partially hardened concrete with additional water.

3.05 CONSOLIDATING CONCRETE

A. Consolidate concrete during placement until voids have been filled and free mortar appears on surface.

B. Compaction:

- As concrete is being placed, compact concrete thoroughly and uniformly by means of mechanical vibration in order to secure a dense mass, close bond with reinforcement, and a smooth surface. Work concrete well around reinforcement, embedded items and into corners of forms.
- Use internal vibration unless OCTA or its designee specifically requests use of external vibrators for consolidating when concrete is inaccessible for adequate internal consolidation. When external vibration is required, construct forms sufficiently rigid to resist displacement and damage from vibrations.
- 3. Provide vibrators capable of generating vibration at frequencies not less than 9,000 impulses per minute. Check vibrators; ensure good condition before starting concrete placement. Provide sufficient number of vibrators to properly consolidate each batch of concrete immediately after placement in forms. Determine size of vibrators by space available for use in forms between reinforcing bars. Provide not less than one spare vibrator, for each size, in good Working condition at site of pour for emergency use.
- 4. Use external vibrators of size, type and operation acceptable to OCTA or its designee.
- 5. Use experienced Workmen to operate vibrators in accordance with ACI 309R. Provide location, manner and duration of application to ensure maximum consolidation of concrete without causing segregation of mortar and coarse aggregate. Vibrate deposited concrete in manner to prevent damage to forms, damage and displacement of reinforcement and embedded materials, and segregation in concrete. Prevent formation of laitance and accumulation of excessive water on surface as concrete is deposited. Remove excessive water accumulation by pumping, bailing or other methods satisfactory to OCTA or its designee before additional concrete is placed. Do not penetrate previously placed layers more than two inches in order to consolidate layers and prevent overvibration of previously vibrated layer. Where, in opinion of OCTA or its designee, internal vibration is impractical or might cause damage to electrical conduits, spade or rod as required; internal vibration will not be permitted.
- 6. When spading, thoroughly compact coarse aggregate away from form and into plastic mass. Perform spading with approved equipment and rod concrete around embedded materials, and into corners and spaces to ensure even, dense surface, free from aggregate pockets and honeycomb.
- C. Vibrate concrete only as necessary to obtain maximum consolidation without segregating mortar and coarse aggregate, and without causing water and cement paste to flush to surface.

- D. Space points of vibrator insertion at 1 1/2 times radius of action recommended by ACI 309R, Table 5.1.4 for particular application.
- E. Revibrate approximately 15 minutes after initial vibration to remove air and limit settlement cracking, by raising vibrator at a rate of one foot in three seconds.
- F. Do not officially transport concrete in forms with vibrators nor allow vibrators to contact forms or reinforcing. Push vibrator vertically into the proceeding layers that are still plastic and slowly withdraw, producing maximum obtainable density in concrete without creating voids or segregation. In no case disturb concrete that has partially set.

3.06 **CURING**

- A. Protect freshly deposited concrete from excessively hot temperatures as specified; maintain without drying for period of time necessary for hydration of cement and proper hardening of concrete. Provide material for curing and protection of concrete at Worksite ready for use before starting actual placement of concrete.
 - 1. Provide, and use when necessary, sufficient tarpaulins or other acceptable material to cover completely, or enclose forms and Working areas during placing and finishing operations.
 - 2. Except as otherwise specified, maintain newly placed concrete continuously moist for seven days (three days for high-early strength) at air temperature above 50 F.
 - 3. Cure concrete by normal curing methods as specified, unless otherwise permitted by OCTA or its designee.
 - 4. Provide clean and potable water for curing concrete.
 - 5. Maintain steel forms and wood forms, exposed to sun and in contact with concrete, moist during curing period. If forms are removed during curing period, employ one of following curing materials or methods immediately and continue for remainder of curing period.

B. Moist Curing and Protection:

- 1. Moist cure concrete by one of methods specified below:
 - a. Ponding on horizontal surfaces, providing surface is submerged for required curing period.
 - b. Continuous sprinkling with nozzle or nozzles which, during first 24 hours, atomizes flow of water, providing mist and not spray. Do not apply moisture under pressure directly upon concrete and do not allow water to flow or wash surface and cause erosion.
 - c. Covering entire surface of concrete with burlap or absorptive mat or fabric laid directly on concrete and kept wet at all times.

- d. Sprinkling, as specified above, for at least 18 hours and then immediately covering concrete surface with waterproof paper or plastic sheeting free from holes and tears; maintain in position so entire surface of concrete being cured is fully covered.
- 2. When using burlap or cotton mats for curing concrete, prevent damage and marring of concrete surfaces.
- C. Membrane-Forming Curing: Apply compounds uniformly over surface at thickness recommended by manufacturer.
 - 1. Do not apply compounds to surfaces where bond is required for additional concrete, and where bonded surface coating such as paint, nonconductive flooring or tile is to be applied, unless certified compatible with subsequent finish and acceptable to OCTA or its designee.
 - 2. Warm curing compound that has become chilled to such a degree that it is too viscous for satisfactory application in accordance with manufacturer's recommendations. Repair portions of compound film, damaged before expiration of curing period, immediately with additional compound.
 - 3. Apply required surface finish before application of curing compounds. Apply curing compound as recommended by manufacturer for desired effect. Apply immediately after stripping forms and acceptance of concrete finish. If surface is dry, wet concrete with water and apply curing compound just as surface film of water disappears. Apply second coat, if required, after first application has set. During curing operations wet unsprayed surfaces with water. Protect coating against damage at least 10 days after application. If surface coating is subjected to disturbance, OCTA or its designee may require water curing be applied at once. If use of curing compound results in streaked or blotchy appearance, stop method and perform water curing as specified until cause of defective appearance is corrected.
 - 4. Uniformly apply compound over surface at application rate recommended by compound manufacturer.
 - a. Surfaces exposed to sunlight Pigmented type.
 - b. Surfaces protected from sunlight Clear type.
 - 5. Apply non-wax resin type curing compounds to surface where bond is required for additional concrete or where a bonded surface coating such as paint, tile, waterproofing or roofing will be applied.
 - 6. Do not apply curing compound to construction joints, to permanently exposed concrete floors, and walls that will be chemically sealed.

3.07 PROTECTION OF COMPLETED WORK

A. During curing period, protect concrete against damage from mechanical disturbances, water flow, loading, shock and vibration.

B. Protect concrete from physical damage or visual defects until Work is accepted by OCTA or its designee.

3.08 FIELD QUALITY CONTROL

- A. Comply with pertinent provision of Section 03 05 15 Portland Cement Concrete.
- B. Continuously monitor concrete placing to maintain level floor by use of an instrument level, transit, or laser.
- C. Provide periodic inspection of concrete placements in compliance to latest code requirements.
- D. Employ services of an independent Testing Laboratory to perform material qualification and job control testing. The laboratory shall meet requirements Section 01 43 20 Project Quality Program Requirements Design/Bid/Build.

3.09 REPAIR

A. Document nonconforming conditions on a Nonconformance Report. Obtain approved Engineering disposition prior to repair. OCTA or its designee will determine extent and action required to repair or replace defective concrete revealed by surface defects and otherwise. Fill holes and cracks extending through concrete; use plunger-type gun or other suitable device acceptable to OCTA or its designee from least exposed face; hold flush stop at exposed face.

B. Repair of Formed Surfaces:

- Patch defective areas with cement mortar of mix proportions and materials identical to surrounding concrete. Before starting to patch, produce finish on sample patch indistinguishable from appearance of finish of concrete patched immediately after removing forms. Patch in manner and method reviewed and accepted in writing by OCTA or its designee.
- Patch surfaces indicated to receive abrasive blast finish or other type of exposed aggregate finish with patching mortar containing cement and coarse aggregate of type used in surrounding concrete, and in identical proportions to surrounding concrete. Do not patch before abrasive blasting, except when approved by OCTA or its designee.
- 3. Cut out honeycomb, rock pockets and voids having diameter more than 1/2 inch to solid concrete, but not shallower than one inch. Make edges of cuts perpendicular to exposed concrete surface. Before placing cement mortar, thoroughly clean, dampen, and brush neat cement grout on area to be patched.

C. Repair of Unformed Surfaces:

1. Test surfaces for smoothness and verify conformance of surface plane to tolerances specified. Eliminate low and high areas.

- 2. Test sloped surfaces for trueness of slope and smoothness; use template of required slope. Eliminate high and low areas.
- Repair finished surfaces containing defects which adversely affect durability of concrete.
- 4. Grind high areas of surfaces after concrete has cured sufficiently to make repairs without damaging adjacent areas.
- Cut out low areas in surfaces during or immediately after completing surface finishing; fill with fresh concrete. Finish repaired areas to blend into adjacent concrete.
- 6. Cut out defective areas, except random cracks and single holes not larger than one inch in diameter and fill with fresh concrete. Remove defective areas to sound concrete; leave clean, square cuts. Expose reinforcing steel at least 3/4 inch all around. Dampen concrete surfaces which will contact patching concrete and brush with neat cement grout or concrete bonding agent. Place patching concrete before grout initially sets. Mix patching concrete of same materials and in same proportions as adjacent concrete. Place, compact and finish patch to blend with adjacent concrete. Cure patch same as adjacent concrete.
- 7. Repair isolated random cracks and single holes not larger than one inch in diameter by dry-pack method. Groove tops of cracks, cut out holes to sound concrete, and remove dust, dirt and loose particles. Dampen cleaned concrete surfaces and brush with neat cement grout. Mix dry-pack, consisting of one part portland cement to 2 1/2 parts fine aggregate passing No. 16 sieve; use only amount of water necessary to facilitate handling and patching. Place dry-pack before grout initially sets. Compact dry-pack in-place and finish to match adjacent concrete. Keep patched areas continuously moist not less than 72 hours.

D. Defective Concrete

- 1. Sampling and Testing
 - a. Sampling and testing of cast-in-place concrete deemed defective, as directed by OCTA Quality Manager.
 - b. Test concrete in accordance with ASTM C42.
 - c. If testing reveals defective concrete, pay testing laboratory for collecting samples, furnishing equipment, performing tests and certifying tests results.
 - d. If test results do not reveal defective concrete, cost of testing concrete will be reimbursed by OCTA.

2. Defective Concrete Criteria

a. Defective and unacceptable if average of three core specimens shows less than 85 percent of specified compressive strength, and single core is less than 75 percent of specified compressive strength.

- b. Defective and unacceptable if structurally unsound, contains cracks or openings affecting water tightness or gas tightness, improperly finished, or not within specified tolerances.
- c. At discretion of OCTA or its designee remove and replace unacceptable concrete.

E. Corrective Work for Defective Concrete

- If OCTA or its designee gives permission to correct minor defects, roughen
 defective concrete to form key and soak remaining concrete surfaces with water
 before patching with concrete or mortar of color to match surrounding concrete.
 White cement may be added to patching material to produce same color as
 original concrete.
- 2. Clean cavities produced on surfaces by form ties and other holes, honeycomb spots, broken corners, edges and other defects. Saturate cavities with water and point with mortar paste consisting of cement and fine aggregate; mix in generally same proportions as original concrete; match appearance of original concrete.
- 3. Prepare patching mortar not more than 30 minutes before use. Cure mortar patches properly. Where required, leave joint filler exposed full length with clean and true edges.
- 4. Leave articulated joints in completed Work carefully tooled and free of mortar and concrete.
- 5. Protect concrete structure from rust staining by structural steel members and from other substances during Work. If staining occurs, remove stains and restore concrete to original color.
- Damaged Work: Before final acceptance of Work, repair damaged surfaces, corners of concrete, and concrete finish. Bring damaged places where surface repairs are permitted to smooth, dense, watertight condition to satisfaction of OCTA or its designee.

END OF SECTION

SECTION 03 35 00

CONCRETE FINISHING

PART 1 - GENERAL

1.01 <u>SECTION INCLUDES</u>

- A. Repair of surface defects
- B. Finishing of formed surfaces
- C. Slabs and flatwork
- D. Curing

1.02 RELATED SECTIONS

- A. Section 03 30 00: Cast-In-Place Concrete
- B. Section 01 43 20: Project Quality Program Requirements Design/Bid/Build

1.03 REFERENCES

- A. American Association of State Highway and Transportation Officials (AASHTO):
 - 1. AASHTO M182 Burlap Cloth Made from Jute or Kenaf and Cotton Mats
- B. American Concrete Institute (ACI):
 - 1. ACI 117 Specifications for Tolerances for Concrete Construction and Materials
 - 2. ACI 301 Specifications for Structural Concrete
 - 3. ACI 308R Guide to Curing Concrete
 - 4. ACI 503.4 Specifications for Repairing Concrete with Epoxy Mortars
- C. ASTM International (ASTM):
 - 1. ASTM C33 Specification for Concrete Aggregates
 - 2. ASTM C150 Specification for Portland Cement
 - 3. ASTM C171 Specification for Sheet Materials for Curing Concrete
 - 4. ASTM C309 Specification for Liquid Membrane-forming Compounds for Curing Concrete

- ASTM C881/C881M Specification for Epoxy-Resin-Base Bonding systems for Concrete
- 6. ASTM E1155 Test Method for Determining FF Floor Flatness and FL Floor Levelness Numbers
- D. State of California, Department of Transportation (CalTrans), Standard Specifications:
 - 1. Section 51 Concrete Structures

1.04 **QUALITY ASSURANCE**

- A. Comply with Project Quality Program Requirements (see 1.02 above).
- B. Finishes:
 - 1. Finishing of formed concrete surfaces shall conform to applicable requirements of ACI 301.
 - 2. Finishes for slabs and flatwork shall conform to applicable requirements of ACI 301.
- C. Curing: Conform to requirements of ACI 301 and ACI 308R, as applicable, and requirements specified herein.

1.05 **SUBMITTALS**

- A. General: Refer to Section 01 33 00 Submittal Procedures, for submittal requirements and procedures. Submittals involving exposed concrete finishes require approval of OCTA or its designee before they may be incorporated in the Work.
- B. Shop Drawings: Submit drawings, or diagrams to scale, that indicate the location in plan and elevation of all concrete finishes.
- C. Product Data: Submit manufacturers' product data for manufactured products.
- D. Certificates of Compliance: Submit a Certificate of Compliance for each type of curing compound to be used.

1.06 <u>DEFINITIONS (NOT USED)</u>

1.07 SAMPLING TESTING AND INSPECTION

- A. The independent testing laboratory shall perform sampling, testing, and inspection in accordance with the provisions herein and in Section 01 43 20, Project Quality Program Requirements Design/Bid/Build.
- B. Notify OCTA at least 48 hours in advance of sampling, testing and inspections being performed by the independent test laboratory. OCTA or its designee may elect to

- observe these procedures. Provide samples and facilities for inspection to OCTA or its designee if requested.
- C. Qualifications of the independent test laboratory: Refer to Section 01 43 20, Project Quality Program Requirements Design/Bid/Build.

PART 2 - PRODUCTS

2.01 TOOLS AND EQUIPMENT

A. The Contractor shall furnish all materials, tools, equipment, facilities, and services as required for performing the required concrete-finishing work.

2.02 REPAIR AND FINISHING MATERIALS

- A. Portland Cement: ASTM C150, Type II, of same brand as used in the work. Furnish white portland cement where required to produce color matching color of surrounding concrete.
- B. Aggregate:
 - 1. For Bonding Grout: ASTM C33, washed clean sand passing a No. 30 sieve.
 - 2. For Patching Mortar: ASTM C33, washed clean, graded fine aggregate of suitable size for areas to be repaired. Clean coarse aggregate up to Size No. 8 may be added for repair of larger pockets and voids.
- C. Commercial Patching Mortar: A structural repair mortar may be furnished if appropriate for the use and approved by OCTA or its designee.
- D. Epoxy Patching Mortar: As specified in ACI 503.4 for Epoxy Mortar.
- E. Epoxy Adhesive: ASTM C881/C881M, Type II or Type V, epoxy-based bonding agent.
- F. Anti-Slip Abrasive Grit: Virgin grain Aluminum Oxide or Silicon Carbide particles, or a mixture of the two.

2.03 CURING MATERIALS

- A. Damp Curing Materials:
 - 1. Waterproof Sheet Materials: ASTM C171, waterproof paper with white paper face, polyethylene film pigmented white, or white burlap-polyethylene sheeting.
 - 2. Burlap: AASHTO M182, of class or weight suitable for the use and location. Do not use burlap where concrete is exposed to direct sunlight.
- B. Curing Compound: ASTM C309, liquid membrane-forming curing compound, Type 1, Class A or B as appropriate for the use or location.

1. Where concrete surfaces will receive architectural finishes, such as resilient floor coverings or paint, or membrane waterproofing, membrane-forming curing compound shall not leave a coating or residue that will impair bond of adhesives, paints, and coatings with concrete.

PART 3 - EXECUTION

3.01 REPAIR OF SURFACE DEFECTS

A. Repair Standards: Repair of surface defects shall conform with applicable requirements of ACI 301. When using epoxy mortar, conform with applicable requirements of ACI 503.4.

B. Surface Defects:

- 1. Repair of surface defects shall begin immediately after form removal. For repair with epoxy mortar, concrete shall be dry.
- 2. Surface defects are defined to include: form-tie holes, air voids or pockets, bug holes with a nominal diameter or depth greater than 1/4-inch, honeycombed areas, rock pockets, visible construction joints, fins and burrs.
- Repair of surface defects shall be tightly bonded and shall result in concrete surfaces of uniform color and texture, matching adjacent surfaces, and free of shrinkage cracks.

C. Repair Work:

- Remove honeycombed and other defective concrete down to sound concrete. Saw-cut the edges perpendicular to the surface or slightly undercut. Feather-edges will not be permitted. Dampen the area to be patched and an area at least 6 inches wide surrounding it to prevent absorption of water from the patching mortar.
- 2. Where rock pockets or similar defects or voids expose steel reinforcement, cutout to solid surface behind the reinforcing steel to provide suitable key-lock for patching mortar. Patching mortar shall envelope the exposed reinforcing bar.
- 3. Bond patching mortar to concrete with bonding grout or epoxy adhesive. Bonding grout shall consist of 1 part portland cement to 1 part No. 30 mesh sand, mixed to the consistency of a thick cream, and then well brushed onto the concrete. Bond commercial patching mortar to concrete in accordance with the manufacturer's instructions.
- 4. Make the patching mortar of the same materials and of approximately the same proportions as used for the concrete, except omit the coarse aggregate. Use not more than 1 part portland cement to 2-1/2 parts sand by damp loose volume, and substitute white portland cement for a portion of the regular gray portland cement to produce patching mix matching the surrounding concrete in color when dry. Determine the proportion of white portland cement by trial mixes and test areas, prior to repair of actual defective areas.

- 5. After surface water has evaporated from the area to be patched, brush the bond coat well into the surface. When the bond coat begins to lose the water sheen, apply the patching mortar. Compact the mortar into place and strike off so as to leave the patch slightly higher than the surrounding surface. To permit initial shrinkage, leave the patch undisturbed for at least 1 hour before being finally finished. Keep the patched area damp for 7 days.
- 6. Neatly finish patched surfaces to match adjacent surrounding surface texture of concrete. Grind or fill surfaces to produce level and plumb, true planes.
- 7. For walls exposed in the finish work, form tie holes shall be patched and finished flush with adjacent surface. For holes passing entirely through walls, a plunger type injection gun or other suitable device shall be used to completely fill the holes.
- 8. Patching of honeycombed areas or rock pockets that are too large and unsatisfactory for mortar patching shall be cut out to solid surface, keyed, and packed solid with matching concrete to produce firm bond and flush surface. Patching shall match texture of adjacent surfaces where exposed in the finished work.
- Repair work in exposed locations that does not match the texture and color of surrounding adjacent surfaces or that was not well performed shall be removed and performed again until the repair work conforms with Specification requirements.
- 10. Surfaces to receive membrane waterproofing shall have fins and loose material removed, and voids and cracks patched flush with adjacent surfaces.
- 11. Completed repairs shall be cured as herein specified under Article 3.04, Curing.

3.02 SLABS AND FLATWORK

A. Placement and Finishing Standards: Slabs and flatwork shall be placed, consolidated, and finished in accordance with applicable requirements of ACI 301. Coordinate with Section 03 30 00 - Cast-In-Place Concrete, as applicable.

B. Placement:

- 1. Slabs and flatwork shall be placed and finished monolithically. Strike off and screed slabs to true, plane surfaces at required elevations, and thoroughly compact concrete with vibrators, floats, and tampers to force coarse aggregate below the surface. Finish slab within four hours of concrete placement.
- 2. Whether indicated or not, in areas where drains occur, slope finished slab to drains. Slope shall be a minimum of 1/8-inch per foot unless otherwise indicated.
- C. Slab Finishes: as specified in ACI 301.

D. Joints:

- Construction, expansion, isolation, and contraction joints shall be located as indicated. Construction joints shall act as contraction joints. Where additional contraction joints are required to prevent shrinkage cracks, saw-cut such joints. All joints shall be straight and true to line. Saw-cut joints, not less than twelve hours nor more than twenty-four hours after placing concrete, unless otherwise approved by OCTA or its designee.
- 2. Mark-off lines or edges at formed construction and expansion joints shall be finished with 1/4-inch radius curved edging tool, neat and true to line, uniform throughout.

3.03 CURING

A. Curing Standards: Curing of concrete shall conform with applicable requirements of ACI 301 and ACI 308, except that the duration of the curing period shall be ten days. Curing with earth, sand, sawdust, straw, and hay will not be permitted.

B. Curing Requirements:

- 1. Concrete shall be cured with waterproof sheet materials, damp burlap, or curing compounds.
- 2. Curing compounds shall not be used on top of ballasted aerial structures and on surfaces when their use may be detrimental to bonding of concrete, mortar, membrane waterproofing, calking and sealants, adhesives, plaster, paint, or the specified surface finish or coating.

C. Damp Curing:

- 1. Vertical surfaces shall be cured by keeping the forms wet at all times and by leaving the forms in place as long as possible as specified in Section 03 11 00 Concrete Forming. After removal of forms, concrete shall be kept continuously damp by fog spraying or otherwise washing down the concrete in an accepted manner until ten days after placing. Protect exposed surfaces by covering with sheet materials or burlap kept continuously moist.
- 2. Horizontal surfaces shall be cured and protected by covering the finished surfaces with waterproof sheet materials or damp burlap, left in place for a minimum of ten days and kept continuously moist.
- 3. Fog spray freshly placed slabs until finishing operations commence. Allow no slabs to become dry until finishing operations are complete.
- D. Curing Compound: Application of curing compound shall conform to applicable requirements of ACI 308R.

3.04 PROTECTION

- A. Protect exposed concrete surfaces, including flatwork, as required to prevent damage from impact or strains.
- B. Protect fresh concrete from drying winds, rain, damage, or soiling.
- C. Refer to Section 03 30 00 Cast-In-Place Concrete, Article 3.09, "Curing and Protection", for additional requirements.
- D. Structural concrete and shotcrete used as structural concrete shall be maintained at a temperature of not less than 45° F for 72 hours after placing and at not less than 40° F for an additional 4 days. When required by OCTA or its designee, submit a written outline of the proposed methods for protection of the concrete.

3.05 TOLERANCES

- A. Slabs and Flatwork: Conform to applicable classification requirements of ASTM E1155, as follows:
 - 1. Very Flat Tolerance: FF 50, FL30. True plane with maximum variation of 1/8-inch in 10 feet when measured with a 10-foot straightedge placed anywhere on the slab in any direction.
 - 2. Flat Tolerance: FF 30, FL20. True plane with maximum variation of 3/16-inch in 10 feet when measured with a 10-foot straightedge placed anywhere on the slab in any direction.
 - 3. Straightedge Tolerance: FF 20, FL 15. True plane with maximum variation of 5/16-inch in 10 feet when measured with a 10-foot straightedge placed anywhere on the slab in any direction.
 - 4. Bullfloated Tolerance: FF 15, FL 13. True plane with maximum variation of ½ inch in 10 feet when measured with a 10-foot straightedge placed anywhere on the slab in any direction.

3.06 FIELD QUALITY CONTROL

- A. The independent testing laboratory shall perform the following sampling, testing and inspections:
 - 1. Inspect preparation of concrete surface for concrete repairs.
 - 2. Provide periodic inspection of application of repair materials.

END OF SECTION

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SECTION 05 05 13

GALVANIZING

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Hot-dip galvanizing of ferrous metal fabrications.

1.02 RELATED SECTIONS

A. Section 01 33 00: Submittal Procedures

B. Section 01 43 20: Project Quality Program Requirements - Design/Bid/Build

C. Section 01 66 00: Product Storage and Handling Requirements

1.03 REFERENCES

- A. American Galvanizers Association, Inc. (AGA):
 - 1. Guide for Inspection of Hot-Dip Galvanized Products
- B. ASTM International (ASTM):

1.	ASTM A53 -	Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and
		Seamless

- 2. ASTM A123 Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel
 - Products
- 3. ASTM A143 Safeguarding Against Embrittlement of Hot-Dip Galvanized

Structural Steel Products and Procedure for Detecting

Embrittlement

- 4. ASTM A153 Zinc Coating (Hot-Dip) on Iron and Steel Hardware
- 5. ASTM A384 Safeguarding Against Warping and Distortion During Hot-Dip

Galvanizing of Steel Assemblies

- 6. ASTM A385 Providing High-Quality Zinc Coatings (Hot-Dip)
- 7. ASTM A563 Carbon and Alloy Steel Nuts
- 8. ASTM A780 Repair of Damaged and Uncoated Areas of Hot-Dip

Galvanized Coatings

9. ASTM B6 - Zinc

1.04 QUALITY ASSURANCE

A. Comply with Project Quality Program Requirements (see 1.02 above).

- B. Galvanizing Firm: Member of American Galvanizers Association Inc. (AGA).
- C. Engage the services of a qualified galvanizer who has demonstrated a minimum of ten years experience in the successful application of hot-dip galvanized coatings.
- D. Inspection and Tests:
 - 1. Inspections, tests, and samples: Conform with ASTM Specifications and Standards.
 - 2. Rights and privileges, procedures, and acceptance or rejection of galvanized steel materials shall be in conformance with ASTM A123.
 - 3. Inspection and tests include following:
 - a. Visual examination of samples and finished products.
 - b. Tests to determine weight or mass of zinc coating per square foot of steel surface.
 - c. Tests to determine distribution and uniformity of zinc coating.
 - d. Tests to determine thread fittings of units, washers and bolts.

1.05 SUBMITTALS

- A. Refer to Sections 01 33 00 Submittal Procedures, for submittal requirements and procedures.
- B. Certification:
 - 1. Each certificate Co-signed by Contractor and galvanizer certifying that steel materials, bolts, nuts, washers, and items of iron and steel hardware conform with specified requirements.
 - 2. Manufacturer's product data.
- C. Test Reports.
- D. Material Safety Data Sheets (MSDS): Manufacturer's Material Safety Data Sheets for each type of material used in Work.

1.06 DEFINITIONS

A. Hot-Dip Galvanizing: Dipping steel members and assemblies into molten zinc for lasting, or long-term corrosion protection. Resultant zinc coating fuses permanently with base steel material.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Refer to Section 01 66 00 Product Storage and Handling Requirements, for general requirements for delivery, storage, and handling procedures.
- B. Packaging Prevent damage to galvanized surfaces and distortion of steel materials and components.

C. Handling and Storage:

- 1. Conform with ASTM A123.
- 2. Protect galvanized materials from damage to zinc coating.
- 3. To avoid humid storage stain, space surfaces of galvanized materials to permit free circulation of air.

D. Damaged Materials:

- Repair material showing evidence of damage to zinc coating. Limit repair to minor, incidental assembly damage, as required for field welding, and as acceptable to OCTA or its designee.
- 2. If not repairable, material with damaged coating will be rejected.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Steel Materials:

- 1. Geometrically suitable for galvanizing as specified in ASTM A384 and A385.
- 2. Steel materials suitable for galvanizing include structural shapes, pipe, sheet, fabrications, and assemblies.
- 3. Material shall be chemically suitable for galvanizing. Verify with supplier or fabricator.

B. Iron and Steel Hardware:

- 1. Bolts, nuts, washers, and items of iron and steel hardware furnished for galvanizing Suitable for hot-dip galvanizing.
 - a. All threaded components (bolts and nuts) of a fastener assembly must be galvanized by the same process. Mixing bolts that are galvanized by one process with nuts that are galvanized by a second process may result in an unworkable assembly.

2. Inspection:

- a. Inspect iron and steel hardware before galvanizing and verify suitability for galvanizing.
- b. Replace items which are not suitable for galvanizing.

C. Zinc for Galvanizing:

1. Conform with ASTM B6, as specified in ASTM A123.

PART 3 - EXECUTION

3.01 GALVANIZING

- A. Steel members, fabrications, and assemblies to be galvanized after fabrication:
 - 1. Method: Hot-dip process in accordance with ASTM A123, except if modified by other sections with regard to weight of galvanized coating.
 - 2. Weight of zinc coating: Conform to requirements of ASTM A153 unless specified in other sections. If items are not specified in ASTM A153 coat at 2.0 oz. per square foot.
 - 3. Components: Smooth after galvanizing.
- B. Safeguard against steel embrittlement in accordance with ASTM A143.
- C. Safeguard against warping or distortion of steel members in accordance with ASTM A384. Notify OCTA or its designee of potential warping problems which require modification in design before proceeding with steel fabrications.
- D. Finish and uniformity of zinc coating and adherence of coating In accordance with ASTM A153.
- E. Bolts, nuts, and washers, and iron and steel hardware components Galvanize in accordance with ASTM A153.
 - 1. Weight of zinc coating: In accordance with ASTM A153.
 - 2. Tap nuts after galvanizing to minimum diameter amounts in accordance with ASTM A563.
 - 3. Coat nuts with waterproof lubricant: Clean and dry to touch.

3.02 TOUCH-UP AND REPAIR

- A. Repair damaged galvanized surfaces by one of following methods and in accordance with ASTM A780.
 - 1. Sprayed Zinc: Clean and preheat to assure freedom from loose material, moisture, oil grease, or other foreign matter before applying zinc. Apply zinc coating by metallizing spray to clean and dry surfaces.
 - Zinc-Based Solders and Wire: Clean to remove loose material and contaminants, and heat to approximately 600°F. Apply zinc-alloy repair compound by spreading material over heated surface in accordance with compound manufacturer's instructions. Remove repair compound residues with damp cloth or by rinsing with water.
- B. Dry film thickness of applied repair materials Not less than galvanized coating thickness required by ASTM A53, A123, or A153, as applicable.
- C. Touch-up of galvanized surfaces with silver paint, bright paint, or aluminum paints is not acceptable.
- D. For factory-applied finish coatings, field-touch-up shall be performed by factory approved personnel to ensure that warranties will apply.

- E. Touch-up shall be such that repair is not visible from a distance of 6 feet.
- F. If non factory-approved technicians are used for field-touch-up, Contractor will be required to make all repairs at its own expense at the approval of OCTA or its designee.
- G. Touch-up repair kits or touch-up instructions to be provided to OCTA for each type of factory-applied finish.
- H. Repair areas damaged by welding, flame cutting or during handling, transport or erection by one of the approved methods in accordance with ASTM A 780 whenever damage exceeds 3/16" in width.

3.03 INSPECTION AND TESTING

- A. Inspection and testing of hot-dip galvanized coatings to be under the guidelines provided in the AGA publication Inspection of product hot-dip galvanized after fabrication as stated in the reference Article 1.03.
- B. Visual examination and tests shall be performed as required in accordance with applicable standards to determine the thickness of zinc coating on the metal surface.

END OF SECTION

Galvanizing 05 05 13 - 5

SECTION 05 05 19

POST-INSTALLED CONCRETE ANCHORS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Individual miscellaneous metal items as specified in this Section and in various other Sections of the Specifications, (except the other Division 05 Sections), and as indicated on the Drawings.
- B. Miscellaneous Metal Items: The following list of miscellaneous metal items is included for convenience only and does not constitute a complete listing of the miscellaneous metal items as may be involved in the Project.
 - 1. Fasteners and welding materials.
 - 2. Mechanical anchor systems.
 - 3. Adhesive anchoring systems.
 - 4. Bollards

1.02 RELATED SECTIONS:

A. Individual miscellaneous metal items as specified in various other Sections of the general construction Specifications.

1.03 REFERENCES

- A. American Concrete Institute (ACI):
 - 1. ACI 318, Building Code Requirements for Structural Concrete and Commentary.
- B. American Welding Society (AWS):
 - 1. AWS D1.1 Structural Welding Code Steel.
- C. ASTM International (ASTM):
 - 1. ASTM A36, Standard Specification for Carbon Structural Steel.
 - 2. ASTM A53, Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.
 - 3. ASTM A167, Standard Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip.
 - 4. ASTM A276, Standard Specification for Stainless Steel Bars and Shapes.

- 5. ASTM A307, Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60,000 PSI Tensile Strength..
- 6. ASTM A563, Standard Specification for Carbon and Alloy Steel Nuts.
- 7. ASTM F436, Standard Specification for Hardened Steel Washers.
- 8. ASTM F1554, Standard Specification for Anchor Bolts, Steel, 36, 55, and 105 ksi Yield Strength.
- D. American Welding Society (AWS):
 - 1. AWS D1.1 Structural Welding Code Steel.
- E. Federal Specifications:
 - 1. Spec. FF-S-92B, Screw, Machine, Slotted, Cross Recessed, or Hexagon Head.

1.04 **SUBMITTALS**

- A. Shop Drawings and Product Data:
 - 1. Shop drawings shall identify the detail as indicated on the Engineer's Drawings and be complete as to the detail of the product and location in the project, the size of members, the methods of joining various components, the quantity, finish, the location and type of anchors, and necessary measurements.
 - 2. Shop assemblies which require markings for erection identification shall have easy-to-read markings on the shop and erection drawings.
 - 3. Note on shop drawings variations in tolerances or clearances between various products.
 - 4. Use standard welding symbols of the American Welding Society on shop drawings.
 - 5. Furnish setting diagrams, templates, and directions for the installation of metal fabrications.
 - 6. Submit product data on type of finish paint system for both shop painting and field touch-up painting.
 - 7. Submit current Approved ICC Evaluation Reports for all expansion and adhesive anchors.
 - 8. Submit anchor installer's certification of training completion.

1.05 **QUALITY ASSURANCE**

A. Welder Qualifications: Welds shall be made only by welders, tackers, and welding operators who are currently qualified by tests as prescribed in the Structural Welding Code, AWS D1.1 to perform the type of work required.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Store steel above the ground surface on platforms, skids, blocking, or other supports.
- B. Protect from exposure to conditions that produce rust.
- C. Store beams with webs vertical.
- D. Handle steel so no parts are bent, broken, or otherwise damaged, and avoid damage to other material and work.

1.07 <u>INSTALLER QUALIFICATIONS</u>

A. Contractors or Installers shall be certified, or otherwise qualified by the anchor Manufacturer verifying that the necessary training has been provided to install products per Manufacturer's requirements.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Carbon Steel Shapes, Plates, and Bars: ASTM A36.
- B. Stainless Steel Plate, Sheet, and Strip: ASTM A167 and ASTM A480.
- C. Fasteners and Welding Materials:
 - 1. Standard Steel Bolts, Nuts, and Washers: ASTM A307.
 - 2. High-Strength Structural Steel Bolts, Nuts, and Washers:
 - a. ASTM A325 Specification for Bolts.
 - b. ASTM A563 Specification for Carbon and Alloy Steel Nuts.
 - c. ASTM F436 Specification for Hardened Steel Washers for Use with High-Strength Bolts.
 - 3. Steel Anchor Rods: Shapes as indicated, ASTM F1554 Grade 36.
 - 4. Stainless Steel Bolts, Nuts and Washers: ASTM A320 Grade B8, AISC Type 304.
 - 5. Headed Stud Type Shear Connectors: Cold finished carbon steel, ASTM A668, Class Designation B; similar to Nelson Stud Welding Systems.
 - 6. Welding Electrodes: Table 4.1.1 of AWS D1.1 as required for applicable base metals and welding process.

D. Anchor System:

1. Mechanical Anchoring System

- a. Steel Expansion Anchors and Stainless Steel Expansion Anchors: Provide zinc-plated torque-controlled mechanical expansion anchors, with Type 316 stainless steel wedge clips, that meet ACI 318 Appendix D requirements for cracked concrete and have approved ICC-ES Evaluation Report.
 - 1) Acceptable manufacturers:
 - (a) Hilti Kwik-Bolt TZ, www.hilti.com
 - (b) Simpson Strong Tie Strong-Bolt, www.simpsonanchors.com
 - (c) Approved equal.
- b. Steel Undercut Anchors and Stainless Steel Undercut Anchors: Provide selfundercutting anchors with undercutting teeth which expands by tightening the nut. Anchors shall meet ACI 318 Appendix D requirements for cracked concrete and have approved ICC-ES Evaluation Report.
 - 1) Acceptable manufacturers:
 - (a) Hilti HDA Undercut Anchor, www.hilti.com
 - (b) Simpson Strong Tie Torq-Cut, www.simpsonanchors.com
 - (c) Approved equal.
- 2. Adhesive Anchoring System: Provide adhesive anchors that meet ACI 318 Appendix D requirements for cracked concrete and that have a current approved ICC-ES Evaluation Report. The adhesive anchor setting system shall be composed of anchors and fasteners as specified, and a self-contained cartridge system capable of dispensing epoxy components in the proper mixing ratio.
 - a. Anchor Assembly
 - 1) Standard Anchor Rod Assembly: Chamfered end threaded stud rod of ASTM F1554 Grade 36 steel with nut and washer. Stud size as indicated on Drawings.
 - Stainless Steel Anchor/Fastener: Chamfered end threaded stud rod of AISI Type 304 stainless steel, with nut and washer of AISI Type 316 stainless steel.
 - 3) Deformed Reinforcing Bar conforming to ASTM A615.
 - 4) Anchor element shall meet a tested elongation of 14% and a reduction of area of at least 30% per ACI 318 Appendix D.
 - b. Adhesive Cartridge: The dual cartridge shall contain both hardener and resin and shall be dispensed from the dual cartridge through a static mixing nozzle.
 - 1) The Pre-mixed adhesive shall be injected directly into the prepared anchor hole. The anchor/fastener shall be inserted in the adhesive in

accordance with the adhesive manufacturer's installation instructions. Only injection tools and static mixing nozzles as recommended by manufacturer shall be used.

- c. Use of Fast-Setting Epoxies is expressly prohibited.
- d. Use of Adhesive Anchors for overhead or direct tension applications is prohibited.
- e. Adhesive anchors shall not resist gravity loads in fire-rated construction.
- f. Acceptable Manufacturers:
 - 1) Hilti HIT-RE 500 V3, www.hilti.com.
 - 2) Hilti HIT-HY 150 MAX-SD, www.hilti.com.
 - 3) Simpson Strong Tie SET-XP, www.simpsonanchors.com.
 - 4) Approved equal.
- E. Bollards: Schedule 20 black steel pipe conforming to ASTM A53 and concrete filled with 3,000 psi concrete conforming to the requirements as specified in Section 03300: Cast-in-Place Concrete.
- F. Shop Paint: Surface preparation and painting in accordance with Section 09900.

2.02 FABRICATION

- A. Insofar as possible, fit and shop-assemble metal fabrications, ready for installation.
- B. Fabricate in accordance with details, approved shop drawings, and referenced standards.
- C. Drill or punch holes required for the attachment of work of other trades and for bolted connections. Burned holes are not acceptable.
- D. Welding shall be in accordance with AWS D1.1.
- E. Dress smooth welds and sharp corners.
- F. Make work square, plumb, straight, and true.

2.03 SHOP PAINTING

A. Surface Preparation and painting in accordance with Section 09900.

PART 3 EXECUTION

3.01 **EXAMINATION**

A. Inspect the installed work of other trades and verify that such work is complete to the point where this work may properly commence.

3.02 PREPARATION

A. Field Measurements: Verify measurements in field before fabrication.

3.03 ERECTION

- A. Erect and install miscellaneous metal and metal fabrications in accordance with details, approved shop drawings and referenced standards aligning straight, plumb, and level within a tolerance of one in 200.
- B. Provide suitable temporary braces and stays to hold metal fabrications in position until permanently secured.
- C. Draw threaded bolt connections up tight with lock washers or other means to prevent loosening. Screw fasteners in exposed or finished surfaces may be slot or Phillips head type, but in either case, screws must be countersunk design.
- D. Erect miscellaneous structural steel in accordance with the Drawings, pertinent regulations and referenced AISC standards.

3.04 INSTALLATION

- A. Expansion Anchor Installation:
 - General: Install expansion anchors in strict accordance with manufacturer's published instructions and those listed in the applicable ICC-ES Evaluation Report and in accordance with the following.
 - 2. Install in dry, interior locations only; tension is not permitted in overhead applications.
 - 3. Install anchors only after concrete has reached its minimum specified 28-day compressive strength.
 - 4. Anchors shall not resist gravity loads in fire-rated construction.
 - 5. Drilling Holes: Use rotary hammer type drill and drill holes to the required diameter and depth as consistent with anchor manufacturer's instructions for size of anchors being installed.
 - 6. Minimum Installation Criteria: Unless otherwise indicated on Drawings, embed expansion anchors to 6.5 bolt diameters minimum. Anchors shall meet the manufacturer's published centerline to centerline spacing and edge distance requirements.

B. Adhesive Anchor Installation:

 General: Install adhesive anchors in strict accordance with manufacturer's published instructions and those listed in the applicable ICC-ES Evaluation Report and in accordance with the following. Adhesive anchors shall not be installed in overhead and direct tension applications.

- 2. Install anchors only after concrete has reached its minimum specified 28-day compressive strength.
- 3. Anchors shall be installed in dry concrete.
- 4. Drilling Holes: Use rotary hammer type drill and drill holes to the required diameter and depth as consistent with anchor manufacturer's instructions for size of anchors being installed. Use carbide-tipped drill
 - a. Prior to setting cartridge and anchor stud clean drilled holes free of loose material. Clean holes by blowing from the back of the borehole with oil-free compressed air (min. 90 psi at 3.5 CFM), fully retracting the air extension 2 times. Brush 2 times with properly sized round steel brush. Blow again with compressed air 2 times or until return air stream is free of noticeable dust.
- 5. Anchor Rod Installation: Following cartridge installations in in-prepared drill holes, set anchor rod to the required depth. Set anchor rod truly perpendicular (normal) to the base plate of item being anchored.
- Minimum Installation Criteria: Unless otherwise noted on Contract drawings, embed adhesive anchors as shown below. Anchors shall meet the manufacturer's published centerline to centerline spacing and edge distance requirements.

Adhesive Anchor Diam. (Inches)	3/8	1/2	5/8	3/4	7/8	1
Embedment Depth (Inches)	4	5	6	7	8	10

3.05 FIELD TOUCH-UP PAINTING

A. Provide field touch-up painting in accordance with Section 09900.

END OF SECTION

SECTION 05 05 33

BASIC WELDING REQUIREMENTS

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Basic welding requirements for structural steel, structural and non-structural metal, piping, and miscellaneous metal fabrications including weld performance and procedure qualification, base and filler metal requirements, preparation, technique, inspection, examination and related special processes.
- B. Off-The-Shelf" Products: Welded products identified by OCTA as "off-the-shelf" are exempt from the requirements of this section. "Off-the shelf" means an item produced and placed in stock by a Contractor, or stocked by a distributor, before receiving orders or contracts for its sale. The item must also be commercial. "Commercial" means an item described in commercial catalogs, drawings, or industrial standards.

1.02 RELATED SECTIONS

- A. Section 01 33 00: Submittal Procedures
- B. Section 01 43 20: Project Quality Program Requirements Design/Bid/Build

1.03 REFERENCES

- A. American Society for Nondestructive Testing (ASNT):
 - 1. ASNT SNT-TC-1A Recommended Practice
- B. American Welding Society (AWS):
 - 1. AWS B2.1 Welding Procedure and Performance Qualification
 - 2. AWS D1.1 Structural Welding Code Steel
 - 3. AWS D1.3 Structural Welding Code Sheet Steel
 - 4. AWS D1.6 Structural Welding Code StainlessAWS QC 1 AWS

Certification of Welding Inspectors

- 5. AWS D9.1 Sheet Metal Welding Code
- C. ASTM International (ASTM):
 - 1. ASTM E543 Agencies Performing Nondestructive Testing
 - 2. ASTM E709 Guide for Magnetic Particle Inspection
 - 3. ASTM E165 Standard Practice for Liquid Penetrate Examination for

General Industry

1.04 QUALITY ASSURANCE

- A. Comply with Project Quality Program Requirements (see 1.02 above).
- B. Identification for structural steel welds
 - Welder identification: Assign unique identification to each qualified welder performing welding activities for use in tracking that welder's production. Indicate welder identification marks on welder's performance qualification record. Maintain log to allow matching of identification mark at weld to specific welder's name.
 - 2. Weld identification: Develop system of weld identification to track inspection activities. Use system that allows welds to be uniquely identified and traceable between inspection documents and drawings, to allow matching of weld location and inspection activity. Maintain inspection tracking documentation and referenced inspection reports as a permanent contract record, handle, and store as quality record for the contract duration.
 - 3. NDE Documentation: Use unique identification system to document acceptance of each weld. Do not consider welds acceptable until required examination/test results are complete, acceptable and documented. Make entries in permanent ink only. Make corrections by drawing one line through error, and signing and dating correction. Nondestructive Examinations (NDE), except visual Performed by personnel certified in accordance with ASNT SNT-TC-1A.
 - 4. Marking on welds: Apply marks for identification of welds by dye stamp or paint marker. Dye stamps used on dynamically loaded members are limited to blunt-nosed continuous or blunt-nosed interrupted dot types.
- C. Where not referenced in the specific specification section, qualify weld procedures and welder qualification in accordance with the following:
 - 1. AWS D1.1 Structural Steel (1/8" min)
 - 2. AWS D1.3 Sheet Metal Structural (10 gage max.)
 - 3. AWS D1.4 Reinforcing Steel

1.05 SUBMITTALS

- A. Refer to Section 01 33 00 Submittal Procedures, for submittal requirements and procedures.
- B. Obtain review and approval in writing by OCTA before commencement of related work, and maintain as retrievable upon request for the duration of the Contract, unless as otherwise noted below.
- C. Weld Procedures Address and document all applicable variables as noted in the suggested weld procedure forms of applicable codes for both prequalified and qualified procedures. When prequalified procedures are permitted, prepare separate prequalified procedures within the limitation of variables noted for fully qualified procedures. Include revision number and authorized signature on each procedure. Indicate on the procedure

- or by submittal attachment, the specific application of all procedures submitted for review.
- D. Welder Performance Qualification Records Include on the documents, applicable code, process, position(s) tested, material thickness, tests conducted, test results, authorized signature and other documentation in accordance with the applicable code.
- E. Visual Inspector Certification All welding inspectors shall be CWI certified and employed by OCTA Quality Management approved independent test laboratory. Provide documented evidence as a current Certified Welding Inspector (CWI) in accordance with AWS QC1 for each person engaged in visual weld inspection activities. Submit certification to OCTA Quality Management approval prior to inspection activities.
- F. Level II Inspector Certification for Magnetic Particle, Ultrasonic, Dye Penetrate and / or Radiographic Methods Documented evidence of current certification, in accordance with ASNT SNT-TC-1A and the NDE contractor's Written Practice. Submit certification for OCTA Quality Management approval prior to NDE activities.
- G. Nondestructive Examination Procedures Establish procedures in accordance with applicable codes and standards and ASTM E543. Provide, with the procedures, the performing testing agency's letterhead and signature of a Level III inspector certified for the applicable practice and employed by, or acting as an "outside agency" to, the performing NDE test laboratory. Procedures to be submitted to OCTA Quality management for approval prior to examinations.
- H. Written Practice Establish a Written Practice for certification of inspection personnel in accordance with ASNT SNT-TC-1A; ASNT-TC-1A shall be used as the minimum requirements for qualifications and certifications of all levels of NDE personnel. Provide with the document, the Level III inspector's certification for the applicable practices and letter of appointment by test laboratory for Level III responsibilities in accordance with ASNT SNT-TC-1A. Submit Written Practice for OCTA Quality Management approval prior to start of inspection activities.
- I. Inspection Agency QA/QC Manual Provide for each agency subcontracted or intended for use. Subcontracting of NDE activities to another test laboratory requires prior approval by OCTA Quality Management.
- J. Copy of nondestructive inspection reports, on a weekly basis, for information only.

1.06 DEFINITIONS

- A. "Off-The-Shelf" Products: Welded products identified by OCTA as "off-the-shelf" are exempt from the requirements of this section. "Off-the shelf" means an item produced and placed in stock by a Contractor, or stocked by a distributor, before receiving orders or contracts for its sale. The item must also be commercial. "Commercial" means an item described in commercial catalogs, drawings, or industrial standards.
- B. Architectural and/or Ornamental Welding: Weldments or specific welds on weldments identified by OCTA or its designee to be solely architectural and/or ornamental, and

where their failure will not cause system loss or jeopardize public safely, are exempt from the requirements of this section.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Nondestructive Examination (NDE)
 - Site and Fabrication Yard Welding: Assure weld NDE activities including visual, magnetic particle, ultrasonic, dye penetrate and radiographic methods are performed by an independent testing laboratory employed by the Contractor and approved by OCTA Quality Management. Assure the independent test laboratory CWI is present during all welding operations.
 - 2. Where individual specification sections do not designate NDE requirements, perform NDE practice and acceptance criteria in accordance with following codes:
 - a. Structural Carbon and Stainless Steel (1/8" min. thickness) AWS D1.1.
 - Structural Sheet metal (Carbon Steel and Stainless Steel, 10 gauge max.) AWS D1.3.
 - 3. Perform NDE frequency in accordance with specific Contract Technical Specification section and referenced code.
 - 4. Where inspection frequency is specified 10 percent, if a reject occurs in the first 10 percent sample, select a second 10 percent sample and test. If no failure occurs in the second 10 percent sample, accept the represented welds. Acceptance criteria shall be per AWS D 1.1, Section 6, Part C. For members subjected to traffic loads, the Acceptance Criteria for Cyclically Loaded non-tubular connections shall apply.
 - 5. Rework and retest the rejected welds in the first 10 percent sample. If a failure occurs in the second 10 percent sample, test 100 percent of the welds. Rework and retest all rejected welds.
 - 6. All inspection reports identifying rejections shall be presented to the lead inspector prior to leaving the site.

3.02 INSTALLATION

- A. Acceptable Welding Processes: Perform workmanship and technique in accordance with codes or standards referenced by the specific product section and the following:
 - 1. Shielded metal arc welding (SMAW).
 - 2. Gas tungsten arc welding (GTAW).
 - 3. Gas metal arc welding (GMAW). GMAW in short circuiting mode is not authorized for material greater than 10 gauge. GMAW in globular mode is not authorized for material greater than 3/8".

- 4. Flux cored arc welding (FCAW).
- 5. Submerged Arc Welding (SAW).
- 6. Welds deposited by processes different from authorized processes may be subject to complete removal.

B. Filler Metal:

- 1. Filler compatibility: Select filler metal so principal elements in deposited weld metal are of same nominal composition as base material being joined.
- 2. Cyclical Loading: Weld cyclical loaded structures with a low hydrogen process (FCAW or SAW) or use E7018 with the SMAW process.

C. Weld Joint Preparation:

- Prepare weld joints by machining, grinding or thermal cutting. When thermal cutting is performed, mechanically prepare and clean joint surfaces to sound metal before welding.
- 2. Tee and corner joints prepared by thermal cutting: Grind smooth to facilitate alignment and proper fit.
- 3. Cleaning of joint surfaces: Clean free of slag, rust, scale, grease, paint, and foreign material detrimental to integrity of weld.
- 4. Stainless steel: Use grinding wheels and stainless steel wire brushes that have not been previously used on carbon steel. Do not perform grinding on carbon steel in the area of stainless steel fabrication.
- 5. Perform and maintain end preparation, root openings and alignment tolerances as described in weld procedure and applicable code. Perform tack welds used for holding alignment and position to same requirements as the root pass. Incorporate tacks into the weld only after being dislodged, wire brushed and verified that it is crack free.

D. Weld Repair:

- 1. Make repairs to correct weld defects using welding procedure and welders in accordance with the same requirements utilized on the original weld.
- 2. Reexamine repair areas using same inspection procedures by which defect was originally detected.
- 3. Two repair attempts will be allowed on a defective area. Do not attempt further repairs without authorization of OCTA.
- 4. When the quality of a qualified welder's work is such that repeated repairs are required, or his or her work is below the requirements of the Code, OCTA Quality Management may require that the welder demonstrate the ability to produce sound welds by requalification or a simple test.

- E. Preheat and Interpass Temperature:
 - 1. Verify maintenance of preheat and interpass temperature, as required by applicable codes, standards and procedures, with temperature crayons or other calibrated temperature measuring instruments suitable for the material welded.
 - 2. Maintain required material preheats and interpass temperature to three inches minimum in all directions from all surfaces being welded.

3.03 INSTALLATION EQUIPMENT

- A. Store, maintain and use equipment and materials in a manner consistent with manufacturer's recommendation and good work practice.
- B. Mark and Maintain equipment, including wire brushes and grinding wheels, used for work with stainless steels; store and use for stainless steel only.

END OF SECTION

SECTION 05 12 23

STRUCTURAL STEEL

PART 1 – GENERAL

1.01 SECTION INCLUDES

A. Furnishing, fabricating and erecting structural steel as indicated. Structural steel to consist of those items defined in the AISC Code of Standard Practice for Steel Building and Bridges. The entire structural steel drawings fabrication and erection shall conform to AISC Code of Standard Practice.

1.02 RELATED SECTIONS

A. Section 01 33 00: Submittal Procedures

B. Section 01 43 20: Project Quality Program Requirements - Design/Bid/Build

C. Section 01 66 00: Product Storage and Handling Requirements

D. Section 03 60 00: Grout

E. Section 05 05 13: Galvanizing

F. Section 05 05 33: Basic Welding Requirements

G. Section 09 91 00 Painting

1.03 REFERENCES

A. American Institute of Steel Construction, Inc. (AISC):

1. AISC 303 - Code of Standard Practice for Steel Buildings and Bridges

2. AISC 360- Specification for the Design, Fabrication and Erection of

Structural Steel for Buildings

3. AISC 325- Steel Construction Manual

B. American National Standards Institute (ANSI):

1. ANSI B1.1 - Unified Inch Screw Threads

C. American Society of Mechanical Engineers (ASME):

1. ASME B18.2.1 - Square, Hex, Heavy Hex, and Askew Head Bolts and Hex, Heavy Hex, Hex Flange, Lobed Head, and Lag Screws (Inch

Series)

D. ASTM International (ASTM):

	•	,
1.	ASTM A6 -	General Requirements for Rolled Structural Steel Bars, Plates, Shapes, and Sheet Piling
2.	ASTM A27 -	Steel Castings, Carbon, for General Application
3.	ASTM A36 -	Carbon Structural Steel
4.	ASTM A53 -	Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless
5.	ASTM A108 -	Steel Bar, Carbon and Alloy, Cold-Finished
6.	ASTM A123 -	Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products
7.	ASTM A148 -	Steel Castings, High Strength, for Structural Purposes
8.	ASTM A307 -	Carbon Steel Bolts and Studs, 60 000 PSI Tensile Strength
9.	ASTM A500 -	Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes
10.	. ASTM A501 -	Hot-Formed Welded and Seamless Carbon Steel Structural Tubing
11.	. ASTM A563 -	Carbon and Alloy Steel Nuts
12.	. ASTM A992 -	Structural Steel Shapes

Hardened Steel Washers

Anchor Bolts, Steel, 36, 55, and 105-ksi Yield Strength

E. American Welding Society, Inc. (AWS):

- 1. AWS D1.1 Structural Welding Code Steel
- F. The Society for Protective Coatings (SSPC):
 - 1. SSPC SP 1 Solvent Cleaning
 - 2. SSPC SP 6 Commercial Blast Cleaning
 - 3. SSPC SP 10 Near-White Blast Cleaning

1.04 QUALITY ASSURANCE

13. ASTM F436 -

14. ASTM F1554 -

- A. Comply with Project Quality Program Requirements (see 1.02 above).
- B. Comply with inspection requirements of applicable local jurisdiction.
- C. Allowable deviations in accordance with AISC.
- D. Identify structural steel by name and location of mill and heat number. Provide records of mill analysis.

- 1. If steel cannot be identified by heat number and manufacturer's name, provide results of one tension and one chemical analysis for each 10 tons, or fraction thereof, from each supplier.
- 2. Test specimens: Provided by steel fabricator as required, under the direction of the testing laboratory.
- E. Welding Operations: In accordance with AWS D1.1 and Section 05 05 33 Basic Welding Requirements.

1.05 SUBMITTALS

- A. Refer to Section 01 33 00 Submittal Procedures, for submittal requirements and procedures.
- B. Shop and Erection Drawings: Indicate fabrication and assembly details and torquing order for each bolted assembly, direction and sequence for welding for each welded assembly. Use AWS symbols for defining type, size and length of welds. Indicate which welds are to be performed in shop and which welds are to be performed in field.
- C. Bill of materials, and producer's or manufacturer's specifications and installation instructions Include laboratory test reports for following items:
 - 1. Threaded fasteners.
 - 2. Washers.
- D. Certified copy of mill analysis for each heat of steel in each delivery. Mill analysis shall identify name and location of the manufacturer.
- E. Laboratory report of results of one tension test for each heat of steel in each delivery.
- F. Provide welder certifications and qualified welding procedures for review and acceptance to OCTA or its designee.
- G. Provide certification and necessary documentation as specified in Section 05 05 33 Basic Welding Requirements.
- H. Manufacturer's product data.

1.06 DEFINITIONS (Not Used)

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Refer to Section 01 66 00 Product Storage and Handling Requirements, for general requirements for product delivery, storage and handling procedures.
- B. Load, transport, unload and store structural steel consistent with design of members, assemblies, packaging and order of need in erection procedure.

- C. Mark each member with a number indicating its location in assembly sequence, its weight and its match marks to identify adjacent member and fit.
- D. Store structural steel above grade. Protect steel from weather, damage and corrosion.
- E. Provide setting drawings, templates and directions for installation of anchor bolts and other devices that are to be embedded in concrete or masonry in time for them to be installed before start of concrete or masonry operations.
- F. Provide storage for welding electrodes in accordance with AWS D1.1.
- G. Ship, handle, and store to prevent bending, twisting, and otherwise distorting the individual members; remove and repaint damaged primer coat to OCTA or its designee's satisfaction.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Structural Steel for Structures
 - 1. Carbon Steel ASTM A36, unless indicated otherwise.
 - 2. Hollow Structural Section (HSS) and Pipe
 - a. Cold-Formed Carbon Steel ASTM A500 Grade C.
 - b. Hot-Formed Carbon Steel ASTM A501.
 - c. Steel Pipe ASTM A53, Type E or S, Grade B.
 - 3. Unfinished Fasteners
 - a. Hex Head, ¼ Inch-through Four Inch-Diameter Bolts ASTM A307, Grade A.
 - b. Hex Configuration Nuts for ASTM A307 Bolts ASTM A563.
 - c. Anchor Bolt –Unless otherwise indicated anchor bolts shall be ASTM A36. Where indicated anchor bolts shall be ASTM A307 or F1554.
 - d. Hex configuration Nuts Anchor Bolts ASTM A563.
 - 4. Washers Hardened Steel, Circular/Flat and Rectangular/Tapered ASTM F436.
- B. Welding Electrodes E70XX.
- C. Nonmetallic Nonshrink Grout As specified in Section 03 60 00 Grout.
- D. Galvanizing As specified in Section 05 05 13 Galvanizing, and conforming to ASTM A123. Steel shall be galvanized only as indicated on the drawings.
- E. FIELD APPLIED GALVANIZING COMPOUND Galvalloy by Metalloy Products Co., hardhat 2185 by Rustoleum or ZRC by ZRC Chemical Products.
- F. Protective Coatings

- 1. Galvanizing As specified in Section 05 05 13 Galvanizing.
- 2. Steel Primers As specified in Section 09 91 00 Painting
 - a. Degrease in accordance with SSPC SP 1.
 - b. Sandblast in accordance with SSPC-SP-6, Commercial Blast, as this is moderate exposure.
- Touch-up Paint for Galvanized Surfaces As specified in Section 09 91 00 Painting.
 - a. Degrease in accordance with SSPC SP 1.
 - b. Sandblast in accordance with SSPC-SP-6, Commercial Blast, as this is moderate exposure.

G. Fasteners:

- 1. Anchor Bolts ASTM A36 or ASTM F1554 (as noted).
- H. Grout As specified in Section 03 60 00 Grout.

2.02 FABRICATION

A. Shop fabricate structural steel assemble in conformance with AISC 360 in largest units consistent with handling and transportation of such prefabricated units. Weld shop connections. Bolts, for bolted field connectors – ASTM A325, unless indicated otherwise.

PART 3 – EXECUTION

3.01 EXAMINATION

- A. Welding: As specified in Section 05 05 33 Basic Welding Requirements and AWS D1.1.
- B. Shop Painting:
 - 1. Finish as specified in other sections, as applicable. Refer to Section 09 91 00 Painting, for preparation and painting.
 - Apply primer paint to steel in the shop. Primer shall be compatible with the finish coating. Do not paint members or portions of member to be embedded in concrete or mortar, except for initial two inches of embedded areas of steel otherwise exposed.
 - 3. Immediately after surface preparation, apply structural steel primer paint in accordance with manufacturer's instructions and at rate to provide uniform dry film thickness not less than 1.5 mils. Use painting methods that will result in full coverage of joints, corners, edges and exposed surfaces.
 - 4. Do not paint within six inches of surfaces to be welded or contact surfaces of high strength bolted connections.

- 5. Apply entire painting system as specified in Section 09 91 00 Painting, to surfaces which will be inaccessible after assembly or erection. Change shade of each coat.
- C. Inspection: Examine areas and conditions under which Work is to be performed. Correct conditions detrimental to proper and timely completion of Work. Do not proceed until unsatisfactory conditions have been corrected.

3.02 INSTALLATION

A. Survey: Establish permanent bench marks necessary for erection of structural steel. Check elevations of concrete surfaces and locations of anchor bolts and similar items before erection proceeds.

B. Anchor Bolts:

- 1. Furnish and install templates and other devices required for setting bolts and other anchors to receive structural steel.
- 2. Install anchor bolts in templates; secure templates to forms for concrete after installation of reinforcing steel.

C. Setting Base and Bearing Plates:

- 1. Clean concrete bearing surfaces free of bond-reducing materials, and then roughen concrete to improve bond to surface. Clean bottom surface of base and bearing plates.
- 2. Set base plates and bearing plates for structural members in proper position and secure with wedges or threaded fasteners.
- 3. Finish column base plate over area in contact with column shaft in accordance with AISC specification of structural steel.

D. Assembly:

- 1. Clean bearing surfaces and other surfaces that will be in permanent contact before assembly.
- 2. Set structural frames accurately to lines and elevations indicated. Align and adjust various members forming part of complete frame or structure before fastening. Splice only where indicated.
- 3. Provide temporary shoring and bracing members with connections of sufficient strength to bear imposed loads.
- 4. Provide temporary guy lines to achieve alignment of structures as erection proceeds.
- 5. Level and plumb individual members of structure within AISC tolerances.
- Perform adjustments to compensate for discrepancies in elevations and alignment.
 Immediately report to OCTA or its designee any errors in fabrication and deformation resulting from handling or transportation that prevents proper erection and fitting of parts to OCTA or its designee.
- 7. Establish required leveling and plumbing measurements at mean operating temperature of structure. Make allowances for difference between temperature at

- time of erection and mean temperature applicable to structure when completed and in service.
- 8. Comply with AISC 360 for bearing, adequacy of temporary connections and alignment.
- 9. Tighten anchor bolts after supporting members have been positioned and plumbed. Do not remove wedges or shims; if wedges or shims protrude, cut off flush with edge of base or bearing plate before grouting. Nuts on anchor bolts under base plates may be used instead of wedges or shims.
- E. Except as modified herein, erect steel in accordance with AISC 325. Where parts cannot be assembled or fitted properly as result of errors in fabrication, or deformation due to handling or transportation, report such condition immediately to OCTA or its designee and obtain review and acceptance for methods of correction before proceeding with correction. Straighten plates, angles and other shapes by acceptable methods. Do not heat-treat parts for straightening. When calibrated wrenches are used for tightening of bolts, calibrate wrenches at least once each working day, using not less than tree typical bolts of each diameter. Do not use impact torque wrenches to tighten anchor bolts set in concrete.
- F. Connections: Provide anchor bolts and other connections between structural steel and foundations and properly build into connection work. Design connections, for details not indicated, in accordance with AISC 325.
- G. Base Plates and Bearing Plates: Provide column base plates for columns and bearing plates for beams, girders, and similar members. Provide base plates and bearing plates with full bearing after supported members have been plumbed and properly positioned. Dry pack area under plate solidly with non-shrinking grout mortar. Grouting In accordance with printed instruction of grouting mortar manufacturer and as specified in Section 03 60 00 Grout.
- H. Tolerances: In accordance with Code of Standard Practice of AISC 325.
- I. Temporary Welds Run-Off Plates and Backing Strips Need not be removed unless:
 - 1. Weld is to remain exposed.
 - 2. At beam-column flange complete penetration welds resisting seismic loads.
 - 3. Where run-off plates and backing strips are removed exposed weld shall be air-arced to sound material and reinforced with a minimum 5/16" fillet weld.
- J. Tolerance Survey: Employ licensed Land Surveyor or Civil Engineer, registered in State of California to perform tolerance survey and monitor structural steel erection process for conformance. Prepare reproducible drawings indicating As-Built location of steel members. Drawings Signed and sealed by licensed Land Surveyor or Civil Engineer registered in State of California; note conditions that exceed AISC 360 for tolerances. Show non-conforming conditions of plumbness, level, camber, sweep, alignment, and centerline displacement and immediately bring to Contractor's attention for correction. Corrections that deviate from details on design drawings Subject to review and acceptance by OCTA or its designee.

K. Threaded Fasteners:

- 1. Bolts and Washers: Clean free of rust, and other foreign matter. Lubricate threads before installing.
- 2. Install hardened round washer and nut on threaded end of bolt. Observe Special washer requirements, such as those related to slotted and oversize holes.
- 3. Tighten nuts in each joint uniformly to bring connected members into moderate contact. Torque each nut in joint uniformly.
- 4. Tightening: Progress systematically from most rigid part of joint to free edges. Complete closure of gap is not required.
- 5. Remove temporary connections and members when permanent members are in place and final connections are made.
- 6. Bolt holes: Do not flame cut; no irregularities.

L. Non-Shrink Grout:

- 1. Install forms for non-shrink grout about columns and spaces to be grouted. Set tops of forms one inch above surfaces to be grouted.
- 2. Mix pourable, non-metallic, non-shrink grout in conformance with manufacturer's directions and per Section 03 60 00.
- 3. Placement: Place grout in conformance with manufacturer's instructions and per Section 03 60 00. Pour grout from one side until grout rises at least one inch about plate on opposite side. Strapping may be used to encourage grout to flow under entire area. Do not vibrate grout. After initial set, cut grout back and rake flush with edge of base plate. Protect grout with cement-sand mortar or, if not cut back, protect with minimum ¾ inch mortar cover.

M. Touch-Up:

- After erection, clean chips, skips and abrasions where paint has been removed, damaged or burned; clean field welds and coat as specified under Shop Painting above.
- 2. Clean areas where galvanized surfaces have been damaged. Coat damaged areas with field-applied galvanizing repair compound conforming to the requirements in Section 05 05 13.

3.03 FIELD QUALITY CONTROL

- A. Shop and Field Tests and Inspections: Testing laboratory inspection and testing is required for shop and field fabrication and assembly of structural steel comply with requirements of Section 05 05 33 Basic Welding Requirements.
- B. Visual Inspection 100% Welds per AWS D1.1.

END OF SECTION 05 12 23

SECTION 08 33 26

OVERHEAD COILING GRILLES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. High-performance overhead coiling metal grilles and operating hardware; electrically operated.
 - 1. Identified on drawings as Gates A1 and A2 (at Anaheim Bus Base).
 - 2. May be noted on drawings as "Roll-Up Gates" or "Overhead Rolling Gates."
- B. Wiring from electric circuit disconnect to operator and to control station.

1.02 REFERENCE STANDARDS

- A. ASTM A653/A653M Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
- B. ITS (DIR) Directory of Listed Products.
- C. NEMA 250 Enclosures for Electrical Equipment (1000 Volts Maximum).
- D. NEMA ICS 2 Industrial Control and Systems Controllers, Contactors and Overload Relays Rated 600 Volts.
- E. NEMA MG 1 Motors and Generators.
- F. NFPA 70 National Electrical Code.
- G. UL (DIR) Online Certifications Directory.
- H. UL 325 Standard for Door, Drapery, Gate, Louver, and Window Operators and Systems.

1.03 SUBMITTALS

- A. See Section 01 30 00 Administrative Requirements for submittal procedures.
- B. Product Data: Provide general construction component connections and details, and electrical equipment.
- C. Shop Drawings: Indicate pertinent dimensioning, anchorage methods, hardware locations, and installation details.Include wiring diagrams. Field verify existing pertinent dimensions and conditions.
- D. Installer's qualification statement.

- E. Specimen warranty.
- F. Maintenance Data: Indicate lubrication requirements and frequency and periodic adjustments required.

1.04 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum five years of documented experience.
- B. Installer Qualifications: Company authorized by manufacturer and specializing in performing work of type specified and with at least three years documented experience.
- C. Products Requiring Electrical Connection: Listed and classified by ITS (DIR), UL (DIR), or testing firm acceptable to authorities having jurisdiction as suitable for purpose specified.

1.05 WARRANTY

A. Manufacturer Warranty: Provide 2-year manufacturer warranty for roller shaft counterbalance assembly. Complete forms in Owner's name and register with manufacturer.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Overhead Coiling Grilles:
 - 1. Lawrence Doors; Basis of Design: Model PG High Performance Grilles: www.lawrencedoors.com.
 - 2. Cornell Iron Works, Inc: www.cornelliron.com/#sle.

2.02 PERFORMANCE

A. Rated for 500,000 cycles, minimum.

2.03 GRILLES AND COMPONENTS

- A. Grille: Aluminum; horizontal bar curtain, coiling on overhead counterbalanced shaft.
 - 1. Finish: Anodized, clear color.
 - 2. Electric operation.
 - 3. Mounting: Post supported.
- B. Curtain: Round horizontal bars connected with vertical links.
 - 1. Horizontal bars: 5/16 inch diameter.

- 2. Bar spacing: 1-1/2 inch on center.
- 3. Tube spacers: 1/2 inch diameter.
- 4. Spacer spacing: 3-1/4 inch on center.
- 5. Vertical links: 3/16 by 3/4 inch flat bar, 2 hole.
- 6. Link spacing: 9 inch on center.
- 7. Bar Ends: Provide with nylon runners for guiet operation.
- 8. Bottom Bar: Manufactuere's standard back to back angles or aluminum exterusions with tubular resilient cushion.
- C. Guides: Galvanized steel angles, of profile to retain grille in place with snap-on trim, mounting brackets of same metal.
- D. Hood Enclosure and Trim: Sheet metal; completely covering operating mechanisms; internally reinforced to maintain rigidity and shape.
 - 1. Material: Galvanized steel.
 - 2. Finish: Factory painted, color as selected.
- E. Lock Hardware:
 - 1. For motor operated units, additional lock or latching mechanisms are not required.
- F. Springless barrel design minimum 8 5/8" diameter pipe and 1 1/2" shafts.

2.04 SUPPORT STRUCTURE

A. Galvanized steel tube posts, flange mounted at base and side bracket mounted at head. Design and configure to fit existing condiditons.

2.05 MATERIALS

- A. Aluminum: ASTM B221 (ASTM B221M).
- B. Galvanized Steel Sheet: ASTM A653/A653M, galvanized to minimum G90/Z275 coating.

2.06 ELECTRIC OPERATION

- A. Operator, Controls, Actuators, and Safeties: Comply with UL 325; provide products listed by ITS (DIR), UL (DIR), or testing agency acceptable to authorities having jurisdiction.
 - 1. Provide interlock switches on motor operated units.
- B. Electric Operators:

- 1. Mounting: Side mounted.
- 2. Motor Enclosure:
 - a. Exterior Coiling Grilles: NEMA MG 1, Type 4; open drip proof.
- 3. Motor Rating: 2 hp; continuous duty.
- 4. Motor Voltage: 208 volts, three phase, 60 Hz.
- 5. Motor Controller: NEMA ICS 2, full voltage, reversing magnetic motor starter.
- 6. Controller Enclosure: NEMA 250 Type 1.
- 7. Opening Speed: 24 inches per second.
- 8. Brake: Adjustable friction clutch type, activated by motor controller.
- 9. Manual override in case of power failure.
- 10. Refer to Section 26 05 83 for electrical connections.
- C. Wiring Terminations: Provide terminal lugs to match branch circuit conductor quantities, sizes, and materials indicated; enclose terminal lugs in terminal box sized to comply with NFPA 70.
- D. Integrate grille control systems with existing bus base security system. Entrance gates shall be access controlled. Gate control for garage vehicles and pedestrians shall use fleet vehicle transponders, card reader system (employee badges reader) and intercom system, as applicable. Embedded sensor loops in pavement at vehicular exits shall open the gates automatically upon presence of an exiting vehicle. Embedded safety loops on each side of each vehicular gate shall prevent gate from closing prematurely.
- E. Control Station: Provide standard three button (Open-Close-Stop) momentary-contact control device for each operator complying with UL 325, mounted on interior side of garage at location as directed by OCTA.
 - 1. 24 volt circuit.
 - 2. Surface mounted, at interior door jamb.
 - 3. Entrapment Protection Devices: Provide sensing devices and safety mechanisms complying with UL 325.
 - a. Primary Device: Provide wireless sensing or NEMA 4X photo eye sensors as required with momentary-contact control device.
 - Secondary Device: Provide electric sensing edge with wireless edge kit or non-monitored safety edge as an option along with continuous-constant control device.

PART 3 EXECUTION

3.01 **EXAMINATION**

- A. Verify that adjacent construction is suitable for door installation.
- B. Verify that electrical services have been installed and are accessible.
- C. Notify OCTA and Architect of any unacceptable conditions or varying dimensions.
- D. Commencement of installation indicates acceptance of substrate and door opening conditions.

3.02 **INSTALLATION**

- A. Install grille unit assemblies in accordance with manufacturer's instructions.
- B. Use anchorage devices to securely fasten assembly to existing building construction and framing without distortion or stress.
- C. Securely and rigidly brace components suspended from structure.
- D. Fit and align assembly including hardware; level and plumb, to provide smooth operation.
- E. Coordinate installation of electrical service with Section 26 05 83.
- F. Complete wiring from disconnect to unit components.
- G. Install enclosure and perimeter trim.

3.03 TOLERANCES

- A. Maintain dimensional tolerances and alignment with adjacent work.
- B. Maximum Variation From Plumb: 1/16 inch.
- C. Maximum Variation From Level: 1/16 inch.
- D. Longitudinal or Diagonal Warp: Plus or minus 1/8 inch per 10 ft straight edge.

3.04 ADJUSTING

A. Adjust grille, hardware and operating assemblies for smooth and relatively noiseless operation.

3.05 CLEANING

- A. Clean grille and components.
- B. Remove labels and visible markings.

END OF SECTION

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SECTION 26 00 05

BASIC ELECTRICAL REQUIREMENTS

PART 1 GENERAL

1.01 SUMMARY

- A. This Section supplements all Sections of Division 26 and shall apply to the work hereinafter specified, shown on the Drawings, and as otherwise required to provide a complete installation of electrical systems for the Project. The Work required under this Division, is not limited to the Electrical Drawings. Refer to Mechanical Drawings that may designate Work to be accomplished.
- B. Work includes but is not limited to the following:
 - 1. Labor, material, services and skilled supervision necessary for the construction, erection, installation, connections, testing, and adjustment of all circuits and electrical equipment specified herein, or shown or noted on the Drawings, complete in all respects ready for use.
 - 2. Temporary construction power including test power, temporary heat and lighting
 - 3. Cleaning, cutting, patching, repairing and painting
 - 4. Testing and commissioning

C. Contract Drawings:

- 1. Contract Drawings are diagrammatic and intended to convey the Scope of Work indicating the general arrangement of equipment, conduit and outlets.
- 2. Drawings do not indicate all fittings, hardware, or appurtenances required for a complete operating installation.
- 3. Wiring diagrams on Drawings are not intended to indicate the exact course of raceways.
- 4. One-line and riser diagrams are only schematics and do not show physical arrangements of equipment.
- 5. Follow the Contract Drawings in laying out the work and verify spaces for the installation of the materials and equipment based on actual dimensions of equipment furnished.
- 6. Drawings are not intended to be scaled for roughing in measurements or to serve as installation drawings.
- 7. Wherever a question exists as to the exact intended location of outlets or equipment, obtain approval from the OCTA before proceeding with the Work.

- D. Equipment or Fixtures: Connect to provide circuit continuity in accordance with the Specifications, whether or not each piece of conductor, conduit, or protective device is shown between such items of equipment or fixtures, and the point of circuit origin.
- E. Work Installed but Furnished under Other Sections: The Electrical Work includes the installation or connection of certain materials and equipment furnished under other Sections. Verify installation details. Foundations for apparatus and equipment will be furnished under other Sections unless otherwise noted or detailed.
- F. Utilities: Location and sizes of electrical, mechanical and plumbing service facilities are shown in accordance with data secured from existing record drawings and site observations. Data shown are offered as an estimating guide without guarantee of accuracy. Check and verify all data given and verify exact location of all utility services pertaining to Work prior to excavation or performing Work.

1.02 GENERAL REQUIREMENTS

- A. Manufacturers, Products, and Substitutions: Refer to Specification Section 01 25 00 "Substitution Procedures" for general requirements.
 - 1. Where two or more units of the same class of material or equipment are required, provide products of a single manufacturer. Component parts of units or equipment need not be products of the same manufacturer.
 - 2. Unless otherwise indicated, provide materials and equipment which are the standard products of manufacturers regularly engaged in the production of such materials and equipment. Provide the manufacturers' latest standard design that conforms to these Specifications.
 - 3. Provide materials and equipment with manufacturers' standard finish system meeting the requirements of NEMA ICS 6 corrosion-resistance test, except equipment specified to meet requirements of ANSI C37.20 shall have a finish as specified in ANSI C37.20. Provide manufacturers' standard finish color, except where specific color is indicated. If manufacturer has no standard color, finish equipment with ANSI Number 61, light gray color. Refer to individual Specification Sections of this Division for more stringent requirements.
- B. Equipment Safety: All electrical materials and equipment shall be new and shall be listed by Underwriter's Laboratories and bear their UL label, or listed and certified by a nationally recognized testing authority where UL does not have an approval. Custom made equipment must have complete test data submitted by the manufacturer attesting to its safety.
- C. Codes, Regulations, and Standards: Design, manufacture, testing and method of installation of all apparatus and materials furnished shall conform to the latest publications or standard rules of the following:
 - 1. State of California Code of Regulations, including the codes indicated on the Drawings.
 - 2. Additional Standards, as Referenced:
 - a. Institute of Electrical and Electronic Designers IEEE

- b. National Electrical Manufacturers' Association NEMA
- c. Underwriters' Laboratories, Inc. UL
- d. National Fire Protection Association NFPA
- e. American Society for Testing and Materials ASTM
- f. American National Standards Institute ANSI
- g. Insulated Power Cable Designers Association IPCEA
- h. International Electrical Testing Association NETA
- D. Seismic Design of Electrical Equipment and Conduit Banks:
 - 1. Seismic bracing and gravity load are design build. Submit design and build anchorage/bracing systems with associated anchorage and bracing for all equipment and conduit banks per California Building Code (CBC) requirements.
 - All electrical prefabricated equipment is to be designed and constructed in such a
 manner that all portions, elements, sub-assemblies and parts of said equipment
 and the equipment as a whole, including their attachments, will resist a horizontal
 load equal to the operating weights of those parts multiplied times the factors per
 CBC requirements.
 - 3. Load is to be applied at the center of gravity of the part and to be in any direction horizontally. Design stresses shall be in accordance with the specifications for design of the American Institute of Steel Construction. Anchorage, support and attachment of said prefabricated equipment to the structure should be in designed and built by the contractor.
 - 4. Design seismic restraints for a 1.0 importance factor, supported by stamped structural calculations signed by a California Registered Structural Engineer.
 - 5. It is the entire responsibility of the Contractor to verify the design of equipment so that the strength and anchorage of the internal components of the equipment exceeds the force level used to restrain and anchor the unit itself to the supporting structure.
 - 6. If the state of California requires that certain electrical equipment and components have a special seismic certification, the Contractor and vendor shall provide such certification.
- E. Submittals: Refer to General Conditions and Division 01 for general submittal requirements and procedures.
 - 1. Submittals required include, but are not limited to, the following:
 - a. Equipment Wiring Connections
 - b. Minor Electrical Demolition
 - c. Low-Voltage Electrical Power Conductors and Cables

- d. Grounding and Bonding for Electrical Systems
- e. Hangers and Supports for Electrical Systems
- f. Vibration and Seismic Controls for Electrical Systems
- g. Wiring Connection
- h. Enclosed Switches and Circuit Breakers
- ½" scale drawings of all low voltage electrical rooms complying with all applicable OCTA and CEC requirements for equipment layout and installation.
- 2. Submit Division 26 shop drawings and product data, grouped and referenced by technical Specification Section number, in one complete submittal package.
- 3. Certificates of Compliance or Conformance: Submit manufacturer's certifications for the specified products. Certifications shall be documents prepared specifically for this Contract. Pre-printed certifications and copies of previously submitted documents will not be acceptable. The manufacturer's certifications shall name the appropriate products, equipment, or materials and the publication specified as controlling the quality of that item. Certificates shall not contain statements to imply that the item does not meet requirements specified, such as "as good as"; or "achieve the same end use and results as materials formulated in accordance with the referenced publications"; or "equal or exceeding the service and performance of the specified material." Certifications shall simply state that the item conforms to the requirements specified. Certificates shall be printed on the manufacturer's letterhead and shall be signed by the manufacturer's official authorized to sign certificates of compliance or conformance.
- 4. Include a marked-up copy of each Specification Section showing compliance with each respective paragraphs and specified items and features. Exceptions shall be clearly identified by referencing respective paragraph and other requirements along with proposed alternative.
- 5. Shop Drawings:
 - a. Include installation details of equipment indicating proposed location, layout and arrangement, accessories, conduit, and other items that must be shown to assure a coordinated installation.
 - b. Indicate adequate clearance for operation, maintenance, and replacement of operating equipment devices.
- 6. Product Data: For each manufactured item, provide manufacturer's current descriptive literature of cataloged products, certified equipment drawings, diagrams, performance and characteristic curves if applicable, and catalog cuts.
- 7. Standard Compliance: When materials or equipment must conform to the standards of organizations such as American National Standards Institute (ANSI) or UL, submit proof of such conformance. If an organization uses a label or listing to indicate compliance with a particular standard, the label or listing will be

acceptable evidence, unless otherwise specified. In lieu of the label or listing, submit a certificate from an independent testing organization, which is competent to perform acceptance testing and is approved by OCTA. The certificate shall state that the item has been tested in accordance with the specified organization's test methods and that the item conforms to the specified organization's standard.

- 8. Certified Test Reports: Before delivery of materials and equipment, submit certified copies of all test reports specified in individual Specification Sections.
- 9. Submit passcodes and passwords for any hardware and software required for the operations and troubleshooting in all systems and components no less than fourteen (14) calendar days prior to Final Completion.
- F. Cutting and Patching: Refer to Section 01 73 00 "Execution."
- G. Cleaning and Painting of Equipment:
 - 1. After installation, metal finishes shall be polished and cleaned of all dirt, rust, cement, plaster, grease, and paint splatters.
- H. Workmanship, including aesthetic as well as electrical aspects of the Work, shall be of the highest quality consistent with the best practices of the trade.
- I. Manufacturers' Recommendations
 - Where installation procedures or any part thereof are required to be in accordance with manufacturer's recommendations, installation of the item shall not proceed until recommendations are received. Failure to furnish recommendations shall be cause for rejection of the equipment or material.

J. Guarantee:

1. Standard warranties of manufacturers with longer durations shall apply for replacement of parts after expiration of the above period. Manufacturer shall furnish replacement parts to OCTA for their service agency as requested.

K. Miscellaneous:

- 1. Outdoor equipment enclosures exposed to weather shall be NEMA type 3R stainless steel. Bus duct shall have NEMA 3R enclosures.
- 2. Indoor bus duct shall be sprinkler-proof, IP54 rating.

1.03 JOB CONDITIONS

A. The arrangement of and connection to equipment shown on the Drawings is based upon information available and is not intended to show exact dimensions particular to a specific manufacturer. Some features of the illustrated equipment installations may require revision to meet actual equipment installation requirements. Structural supports, housekeeping pads, points of connection, and adjacent equipment may have to be altered to accommodate the equipment provided. No additional payment will be made for such revisions or alterations.

B. Existing Conditions:

- Field verify existing conditions as set forth in the General Conditions. Where
 existing conditions differ from the drawings, adjustment shall be made and
 allowances included for all necessary equipment to complete all parts of the
 Drawings and Specifications.
- 2. Electrical circuits affecting work shall be de-energized while working on or near them.
- 3. Arrange the work so that electrical power is available to all electrical equipment within existing facility at all times. Schedule all interruptions at the convenience of OCTA, including exact time and duration, in accordance with OCTA power shutdown procedures. Provide temporary power during all periods of interruption, which are deemed necessary by OCTA. Costs of all premium time (overtime) resulting from the scheduled power interruptions and all costs for providing temporary power shall be included in the cost of the Work.

C. Delivery and Storage:

- Handle, store, and protect equipment and materials in accordance with the manufacturer's recommendations and with the requirements of NFPA 70B P, Appendix I, titled "Equipment Storage and Maintenance During Construction." Replace damaged or defective items with new items.
- D. Layout and coordinate all work well enough in advance to avoid conflicts or interferences with other work in progress so that in case of interference the electrical layout may be altered to suit the conditions, prior to the installation of any work and without additional cost. Conflicts arising from lack of coordination shall be Contractor's responsibility. Maintain all code-required clearances about electrical equipment. Unless specifically noted otherwise, establish the exact location of electrical equipment based on the actual dimensions of equipment furnished.
- E. Prepare and submit drawings when necessary to show proposed rearrangement of Work to meet Project conditions, including changes to Work specified in other Specification Sections. Obtain permission from OCTA before proceeding.

1.04 WORK IN COOPERATION WITH OTHER TRADES

- A. Examine the Drawings and Specifications and determine the work to be performed by the electrical, mechanical and other trades. Cooperate with installers of work of other Divisions to facilitate progress of Work. Allow installers every reasonable opportunity for installation of their work.
- B. Provide the type and amount of electrical materials and equipment necessary to place this work in proper operation, completely wired, tested and ready for use. This shall include all conduit, wire, motor starters, disconnects, relays, time clocks and other devices for the required operation sequence of all electrical, mechanical and other systems or equipment.
- C. Provide conduit for controls and other devices, both line and low voltage, described in this or other parts of the Contract Documents, including line-voltage wiring. Install control housings and back boxes required for installing conduit and wire to the

controls.

- D. Before installing any conduit for heating, ventilating and air conditioning control wiring, verify from the control manufacturer's shop drawings where these separate conduit runs are required.
- E. Plan all work so that it proceeds with a minimum of interference with other trades. Inform all parties concerned of openings required for equipment or conduit required in the building construction for Electrical Work and provide all special frames, sleeves and anchor bolts as required. Coordinate the electrical work with the mechanical installation. Promptly report to OCTA any delay or difficulties encountered which might prevent prompt and proper installation, or make it unsuitable to connect with or receive the work of other sections. Failure to so report shall constitute an acceptance of the work of other sections as being fit and proper for the execution of this work.

1.05 TESTING AND ADJUSTMENT

- A. Upon completion of all Electrical Work, provide testing as follows:
 - 1. Operational Test: Test all circuit breakers, receptacles and all other electrical equipment. Replace all faulty devices and equipment discovered during testing with new devices and equipment at no additional cost, and that part of the system (or devices or equipment) shall then be retested.
 - 2. Secondary Grounding Resistance: Perform ground continuity test between main ground system and equipment frame, system neutral or derived neutral point.
 - 3. Ground Fault System Test: Measure system neutral insulation resistances to ensure no shunt ground paths exist.
 - 4. Ground resistance testing, ground fault testing and specified NETA testing shall be performed by an independent testing firm.

1.06 MAINTENANCE, SERVICING AND INSTRUCTION MANUALS, AND WIRING DIAGRAMS

- A. Refer to Section 01 78 00 "Close-Out Submittals."
- B. Submit operating and maintenance and servicing instructions, as well as complete wiring diagrams for the following items or equipment:
 - 1. Wiring Devices
 - 2. Fuses
 - 3. Enclosed Switches
 - 4. Enclosed Circuit Breakers
- C. Wiring diagrams shall specifically cover the installed system indicating zones, wiring, and components added to the system. Typical drawings will not be accepted.

D. Include product data, calculations data, and testing reports with operations and maintenance manuals.

1.07 FINAL INSPECTION AND ACCEPTANCE

- A. After all requirements of the Specifications and Drawings have been fully completed, OCTA will inspect the Work. The Contractor shall provide competent personnel to demonstrate the operation of any item of system, to the full satisfaction of each representative. The Contractor shall provide 8 hours of minimum scheduled operation and maintenance training to staff to be trained on each system indicated in 1.6A above. See specific Sections for additional training/operation hours required.
- B. Provide manuals for attendees.
- C. Final acceptance of the work will be made by OCTA after receipt of approval and recommendation of acceptance from each representative.
- D. The Contractor shall furnish Record Drawings before final payment of retention.

1.08 OPERATING AND MAINTENANCE SERVICE

- A. During the period between Substantial Completion and Partial Acceptance (Final Acceptance of a defined area of the work), the Contractor shall provide the necessary services to Operate and Maintain the equipment in proper working order. Including, but not limited to:
 - 1. Operation and Maintenance Response:
 - a. Provide twenty (24) hour emergency service during this period consisting of:
 - 1) Critical Issue: A prompt response (within 15 minutes) to emergency request by telephone or otherwise from OCTA. Onsite within 30 minutes of notification to triage and assess the situation.
 - 2) Non Critical Issues: A prompt response (within 15 minutes) to request by telephone or otherwise from OCTA. Onsite within one (1) hour after receiving notice from OCTA or having knowledge of a need to service the system. If event occurs after business hours, weekends or holidays, response shall be within one (1) hour of commencement of next business day.
 - 3) Scheduled Operational Needs: 24 hour notice of scheduled operational need. Failure to respond to scheduled operational need render need as a Critical Issue.
 - (a) For Critical issues, on site response shall be within 30 minutes of notification. Repair or service of respective components and system shall be commenced immediately upon arrival on site. This requirement shall include after-business hours, weekends, and holidays. Critical issues are defined as complete system failure, failure of controls, entrapments, or potential injury to persons or other item that OCTA deems a critical operational need.

(b) For Noncritical issues, on site response shall be within one (1) hour of notification. If event occurs after business hours, weekends, or holidays, response shall be within one (1) hour of commencement of next business day. Repair or service of respective components and system shall be commenced within (4) hours of the arrival on site.

4) Maintenance:

- (a) Inspection of completed installation and periodic testing to maintain equipment in completely operable, like new condition.
- (b) Perform any necessary regulatory testing to ensure system(s) are compliant with applicable codes persection 1.4
- (c) Periodic lubrication of parts, filter changes and equipment components as per OEM's recommendation. Provide documentation for each piece of equipment when services are provided.
- (d) Spare Parts: The Contractor shall maintain adequate supply of spare parts during this period. Any spare parts utilized during this period that are part of the contractually-obligated inventory of spare parts for Final Acceptance shall be replenished prior to Final Acceptance. OCTA-provided spare parts shall also be replenished prior to Final Acceptance.

5) Operation:

- (a) All necessary work to operate/maintain the equipment in proper working order for use at OCTA including.
- (b) Perform daily maintenance and system health checks as applicable, and any necessary system backups, failover/failback testing.
- (c) Routinely monitoring equipment and systems for anomalies and respond or report to system maintenance team to respond and resolve.
- (d) Perform configuration changes as needed to support project, OCTA, tenant operations, etc.
- (e) Maintain logs of configuration changes.
- 6) Perform work without removing equipment from service during peak traffic periods (unless emergency or unless specifically authorized by OCTA) and these periods need to be consulted with OCTA. Failure of the Contractor to provide maintenance and service response within the allowed response time period will result in a \$150.00 penalty for each hour thereafter until response is fulfilled.
- 7) Unlimited regular time callbacks are included with the applicable response time. Regular time will be Monday through Friday, 8:00am to 4:30pm, exclusive of holidays. Overtime call backs originating from an operational error related to the performance requirements of the

SECURITY GATES INSTALLATION AT ANAHEIM, GARDEN GROVE, AND SANTA ANA BUS BASES

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equipment shall be borne by the Contractor.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

SECTION 26 05 03

EQUIPMENT WIRING CONNECTIONS

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes electrical connections to equipment.
- B. Related Sections:
 - 1. Section 260519 Low-Voltage Electrical Power Conductors and Cables.
 - 2. Section 260533 Raceway and Boxes for Electrical Systems.

1.02 REFERENCES

- A. National Electrical Manufacturers Association:
 - 1. NEMA WD 1 General Requirements for Wiring Devices.
 - 2. NEMA WD 6 Wiring Devices-Dimensional Requirements.

1.03 SUBMITTALS

- A. Product Data: Submit wiring device manufacturer's catalog information showing dimensions, configurations and construction.
- B. Manufacturer's installation instructions.

1.04 CLOSEOUT SUBMITTALS

A. Project Record Documents: Record actual locations, sizes, and configurations of equipment connections.

1.05 COORDINATION

- A. Obtain and review shop drawings, product data, manufacturer's wiring diagrams, and manufacturer's instructions for equipment furnished under other sections.
- B. Determine connection locations and requirements.
- C. Sequence rough-in of electrical connections to coordinate with installation of equipment.
- D. Sequence electrical connections to coordinate with start-up of equipment.

PART 2 PRODUCTS

2.01 CORD AND PLUGS

- A. Manufacturers:
 - 1. Hubbell.
 - 2. Bryant.
 - 3. Leviton.
 - 4. Substitutions: Not Permitted.
- B. Attachment Plug Construction: Conform to NEMA WD 1.
- C. Configuration: NEMA WD 6; match receptacle configuration at outlet furnished for equipment.
- D. Cord Construction: Type SO or SJO multiconductor flexible cord with identified equipment grounding conductor, suitable for use in damp locations.
- E. Size: Suitable for connected load of equipment, length of cord, and rating of branch circuit overcurrent protection.

PART 3 EXECUTION

3.01 **EXAMINATION**

A. Verify equipment is ready for electrical connection, for wiring, and to be energized.

3.02 EXISTING WORK

- A. Remove exposed abandoned equipment wiring connections, including abandoned connections above accessible ceiling finishes.
- B. Disconnect abandoned utilization equipment and remove wiring connections. Remove abandoned components when connected raceway is abandoned and removed. Install blank cover for abandoned boxes and enclosures not removed.
- C. Extend existing equipment connections using materials and methods compatible with existing electrical installations, or as specified.

3.03 INSTALLATION

- A. Make electrical connections.
- B. Use liquid tight flexible conduit with watertight connectors in damp or wet locations.
- C. Connect heat producing equipment using wire and cable with insulation suitable for temperatures encountered.
- D. Install receptacle outlet to accommodate connection with attachment plug.

- E. Install cord and cap for field-supplied attachment plug.
- F. Install suitable strain-relief clamps and fittings for cord connections at outlet boxes and equipment connection boxes.
- G. Install disconnect switches, controllers, control stations, and control devices to complete equipment wiring requirements.
- H. Install terminal block jumpers to complete equipment wiring requirements.
- I. Install interconnecting conduit and wiring between devices and equipment to complete equipment wiring requirements.
- J. Coolers and Freezers: Cut and seal conduit openings in freezer and cooler walls, floor, and ceilings.

3.04 ADJUSTING

A. Cooperate with utilization equipment installers and field service personnel during checkout and starting of equipment to allow testing and balancing and other startup operations. Provide personnel to operate electrical system and checkout wiring connection components and configurations.

END OF SECTION

SECTION 26 05 05

MINOR ELECTRICAL DEMOLITION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Electrical demolition.

1.02 **SUBMITTALS**

A. Sustainable Design Documentation: Submit certification of removal and appropriate disposal of abandoned cables containing lead stabilizers.

PART 2 PRODUCTS

2.01 MATERIALS AND EQUIPMENT

A. Materials and equipment for patching and extending work: As specified in individual sections.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify field measurements and circuiting arrangements are as indicated.
- B. Verify that abandoned wiring and equipment serve only abandoned facilities.
- C. Demolition drawings are based on casual field observation and existing record documents.
- D. Beginning of demolition means installer accepts existing conditions.

3.02 PREPARATION

- A. Disconnect electrical systems in walls, floors, and ceilings to be removed.
- B. Provide temporary wiring and connections to maintain existing systems in service during construction. When work must be performed on energized equipment or circuits, use personnel experienced in such operations.

3.03 DEMOLITION AND EXTENSION OF EXISTING ELECTRICAL WORK

- A. Remove, relocate, and extend existing installations to accommodate new construction.
- B. Remove abandoned wiring to source of supply.
- C. Remove exposed abandoned conduit, including abandoned conduit above accessible ceiling finishes. Cut conduit flush with walls and floors, and patch

surfaces.

- D. Disconnect abandoned outlets and remove devices. Remove abandoned outlets if conduit servicing them is abandoned and removed. Provide blank cover for abandoned outlets that are not removed.
- E. Repair adjacent construction and finishes damaged during demolition and extension work.
- F. Maintain access to existing electrical installations that remain active. Modify installation or provide access panel as appropriate.

END OF SECTION

SECTION 26 05 19

LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

PART 1 GENERAL

1.01 SUMMARY

- A. Section Includes:
 - 1. Building wires and cables rated 600 V and less.
 - 2. Connectors, splices, and terminations rated 600 V and less.
- B. Related Requirements:
 - 1. Section 260533 "Raceways and Boxes for Electrical Systems"
 - 2. Section 260553 "Identification for Electrical Systems."

1.02 **DEFINITIONS**

- A. ASTM: American Society of Testing Materials.
- B. ICEA: Insulated Cable Engineers Association.
- C. IEEE: Institute of Electrical & Electronics Engineers.
- D. NEMA: National Electrical Manufacturers Association.
- E. NETA ATS: InterNational Electrical Testing Association Acceptance Testing Specification.
- F. VFC: Variable frequency controller.

1.03 ACTION SUBMITTALS

- A. Product Data: Submit manufacturer's technical data for each type of product, indicating conductor/cable construction, insulation material, thickness of insulation, jacket, cable stranding, and voltage rating of each type of conductor/cable specified, splices and terminations. Indicate date and place of manufacture for each conductor/cable, cable, splice and termination.
- B. Manufacturer's ISO certification.

1.04 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Independent Testing Agency.
- B. Field quality-control reports. Perform field testing of cables per para 3.8. Submit six (6) copies of field test reports to OCTA within two (2) weeks of completion of test.

1.05 QUALITY ASSURANCE

- A. General Requirements: The low voltage power conductors and cable shall be copper, minimum 600V rated unless otherwise indicated. Aluminum conductors and cables shall not be accepted unless otherwise indicated.
- B. Codes and Standards: Products shall comply with the following codes and standards:
 - 1. ASTM-B8 Concentric lay stranded copper conductors
 - 2. UL 44 Thermoset insulated wires and cables
 - 3. UL 83 Thermoplastic insulated wires and cables
 - 4. UL 1569 Metal clad cables
- C. Materials and installation shall meet or exceed requirements in the following referenced standards and shall be listed and labelled by UL.
 - 1. ICEA S-93-639/ NEMA WC 74.
 - 2. AEIC CS8.
 - 3. UL 1072.
 - 4. IEEE
 - 5. ASTM
 - 6. NEMA
- D. Conductors and cables shall be of the same manufacturer and shipped to the job site in original unbroken reels.
- E. Conductors and cables shall be manufactured with in twelve (12) months of installation. Date of manufacture shall be clearly marked on conductors or conductor reels.
- F. Manufacturer shall have minimum ten (10) years experience in the manufacturer of conductors and cables similar to those specified on this project.
- G. Manufacturer shall have ISO 9001 and ISO 9002 certification.
- H. All conductors and cables shall be new and supplied by a local distributor.
- I. American made conductors and cables have been acceptable. If non-domestic product is submitted, notice is hereby given that extensive testing shall be required to insure quality and conformance to the Specifications. All of the testing procedures and results shall be satisfactory to the OCTA. The Contractor shall bear all costs for testing and shall be responsible for all costs associated with travel, lodging, etc. for the OCTA to witness the test at the manufacturer's testing facility. The Contractor shall reimburse the OCTA at \$1,200 per man day or part thereof for the time required to witness the testing.

- J. Testing: Provide the services of an independent qualified testing laboratory to perform the specified field tests. Notify the OCTA fourteen (14) days in advance of performance of work requiring testing.
- K. Conductors, cables, splices and terminations shall be manufactured within twelve (12) months of installation. Each item shall have a permanent marking on the product or the original manufacturers' package indicating the date of manufacture unless otherwise noted.
- L. Testing Agency Qualifications:
 - Testing agency shall be an independent company; shall have been a member of NETA for a minimum of last ten (10) years and has permanent in-house testing engineers and technicians involved with testing of low voltage electrical power conductors and cables similar to those specified on this project.
 - 2. Testing company shall be located with 50 miles radius of the project.
 - Testing Agency's Field Supervisor: Certified by NETA to supervise on-site testing.
 - 4. Field Testing technician and supervisor shall have minimum ten (10) years' experience in field testing of low voltage power conductors and cables of the type and rating similar to the conductors and cables to be tested on this project.

PART 2 PRODUCTS

2.01 CONDUCTORS AND CABLES

- A. Manufacturers: Provide products by one of the following manufacturers:
 - 1. General Cable Technologies Corporation.
 - 2. Southwire Incorporated
 - 3. Belden Inc.
 - 4. Encore Wire Corporation.
- B. Conductor Material: Electrical grade, soft drawn annealed copper, 98 percent conductivity, and fabricated in accordance with ASTM and IPCEA standards. Minimum size is number 12 for branch circuits, number 14 stranded for control wiring. Aluminum conductors are not permitted. Copper Conductors: Comply with NEMA WC 70/ICEA S-95-658.
- C. Conductor Insulation: Comply with NEMA WC 70/ICEA S-95-658 for Type THHN-2-THWN-2 rated for 90-degree conductor temperatures in wet or dry locations.
- D. Provide separate neutral with each branch circuit serving outlets. When dedicated neutrals are provided, use color spiral to match associated phase.

2.02 CONNECTORS AND SPLICES

A. Manufacturers: Provide products by one of the following manufacturers:

- 1. Ideal Industries, Inc.
- 2. Ilsco; a branch of Bardes Corporation.
- 3M: Electrical Markets Division.
- 4. Tyco Electronics.
- B. Description: Factory-fabricated connectors and splices of size, ampacity rating, material, type, and class for application and service indicated.
- C. Copper conductors shall be terminated in copper or bronze mechanical connectors or lugs or tool applied compression connections made of copper for all connections except those on wiring devices.
- D. Splices in wires No. 10 and smaller shall be made with twist-on splicing connector in accordance with UL486-C. Connections in wires No. 8 and larger shall be made with compression type connectors in accordance with UL486-A and wrapped with insulated tape in accordance with UL501. Insulating tape shall be applied in a minimum of two layers of half wrap or built to match the overall insulation of the wire.
- E. Pressure type connectors are not permitted.

2.03 SYSTEM DESCRIPTION

- A. Electrical Components, Devices, and Accessories: UL Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- B. Comply with NFPA 70.

PART 3 EXECUTION

3.01 CONDUCTOR MATERIAL APPLICATIONS

- A. Feeders: Copper. Stranded for No. 10 AWG and smaller; stranded for No. 8 AWG and larger.
- B. Branch Circuits: Copper. Stranded for No. 10 AWG and smaller; stranded for No. 8 AWG and larger, except VFC cable, which shall be extra flexible stranded.

3.02 CONDUCTOR INSULATION AND MULTICONDUCTOR CABLE APPLICATIONS AND WIRING METHODS

- A. Exposed Feeders: Type THHN-2-THWN-2, single conductors in raceway.
- B. Feeders Concealed in Ceilings, Walls, Partitions, and Crawlspaces: Type THHN-2-THWN-2, single conductors in raceway.
- C. Feeders Concealed in Concrete, below Slabs-on-Grade, and Underground: Type THHN-2-THWN-2, single conductors in raceway
- D. Exposed Branch Circuits, Including in Crawlspaces: Type THHN-2-THWN-2, single conductors in raceway.

- E. Branch Circuits Concealed in Ceilings, Walls, and Partitions: Type THHN-2-THWN-2, single conductors in raceway.
- F. Branch Circuits Concealed in Concrete, below Slabs-on-Grade, and Underground: Type THHN-2-THWN-2, single conductors in raceway or Type XHHW-2, single conductors in raceway

3.03 INSTALLATION OF CONDUCTORS AND CABLES

- A. All conductors and cables shall be installed in a raceway.
- B. Before installing conductors and cables in existing conduits, verify the continuity of each conduit; each surface conduit is properly supported per code and clear of any debris.
- C. Complete raceway installation between conductor and cable termination points according to Section 260533 "Raceways and Boxes for Electrical Systems" prior to pulling conductors and cables.
- D. Use manufacturer-approved pulling compound or lubricant where necessary; compound used must not deteriorate conductor or insulation. Do not exceed manufacturer's recommended maximum pulling tensions and sidewall pressure values.
- E. Use pulling means, including fish tape, cable, rope, and basket-weave wire/cable grips, that will not damage cables or raceway.
- F. Install exposed cables parallel and perpendicular to surfaces of exposed structural members and follow surface contours where possible.
- G. Support cables according to Section 260529 "Hangers and Supports for Electrical Systems."

3.04 CONNECTIONS

- A. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A-486B.
- B. Make splices, terminations, and taps that are compatible with conductor material and that possess equivalent or better mechanical strength and insulation ratings than unspliced conductors.
 - 1. Use oxide inhibitor in each splice, termination, and tap for aluminum conductors.
- C. Wiring at Outlets: Install conductor at each outlet, with at least 6 inches of slack.

3.05 IDENTIFICATION

A. Each conductor shall be factory color coded by conductor manufacturer. Identify and color-code conductors and cables according to Section 260553 "Identification for Electrical Systems."

B. Identify each spare conductor at each end with identity number and location of other end of conductor and identify as spare conductor.

3.06 SLEEVE AND SLEEVE-SEAL INSTALLATION FOR ELECTRICAL PENETRATIONS

A. Install sleeves and sleeve seals at penetrations of exterior floor and wall assemblies. Comply with requirements in Section 260544 "Sleeves and Sleeve Seals for Electrical Raceways and Cabling."

3.07 FIELD QUALITY CONTROL

- A. Perform the following tests and inspections:
 - 1. Perform each visual and mechanical inspection and electrical tests stated in latest NETA Acceptance Testing Specification section 7.3.2 (Inspection and Test Procedures-Cables, Low Voltage-600V Maximum). Certify compliance with test parameters per NETA tables.
 - 2. Infrared Scanning: After Substantial Completion, but not more than 60 days after Final Acceptance, perform an infrared scan of each splice in conductors No. 3 AWG and larger. Remove box and equipment covers so splices are accessible to portable scanner. Correct deficiencies determined during the scan.
 - a. Follow-up Infrared Scanning: Perform an additional follow-up infrared scan of each splice 11 months after date of Substantial Completion.
 - b. Instrument: Use an infrared scanning device designed to measure temperature or to detect significant deviations from normal values. Provide calibration record for device.
 - c. Record of Infrared Scanning: Prepare a certified report that identifies splices checked and that describes scanning results. Include notation of deficiencies detected, remedial action taken, and observations after remedial action.
- B. Test and Inspection Reports: Prepare a written report to record the following:
 - 1. Procedures used.
 - 2. Results that comply with requirements. Include color scan images.
 - 3. Results that do not comply with requirements and corrective action taken to achieve compliance with requirements.
- C. Cables will be considered defective if they do not pass tests and inspections. They must be replaced at no cost to OCTA.

END OF SECTION

SECTION 26 05 26

GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.01 SUMMARY

- A. Section Includes: Grounding systems and equipment.
- B. Section includes grounding systems and equipment, plus the following special applications:
- C. To comply with UL467
 - 1. Underground distribution grounding.

1.02 **DEFINITIONS**:

- A. NETA ATS: Inter National Electrical Testing Association Acceptance Testing Specification.
- B. NETA MTS: InterNational Electrical Testing Association Maintenance Testing Specification.
- C. NFPA: National Fire Protection Association.

1.03 ACTION SUBMITTALS

A. Product Data: Submit manufacturer's technical catalog cuts for each type of product indicated.

1.04 INFORMATIONAL SUBMITTALS

- A. Informational Submittals: Plans drawn to scale (1/4"=1'-0") showing dimensioned locations of grounding features specified in "Field Quality Control" Article, including the following:
 - 1. Test wells.
 - 2. Ground rods.
 - 3. Grounding conductors, connectors.
 - 4. Grounding arrangements and connections for separately derived systems.
- B. Qualification Data: For qualified independent testing agency and testing agency's field supervisor.
- C. Field quality-control reports. Submit written test reports including the following:
 - 1. Test procedures used.

- 2. Test results that comply with requirements.
- 3. Results of failed tests and corrective action taken to achieve test results that comply with requirements.

1.05 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: For grounding to include in emergency, operation, and maintenance manuals. In addition to operation and maintenance data items specified in Section 01 78 00 CLOSE-OUT SUBMITTALS, include the following:
 - 1. Instructions for periodic testing and inspection of grounding features at test wells and grounding connections for separately derived systems based on NFPA 70B.
 - a. Tests shall determine if ground-resistance or impedance values remain within specified maximums, and instructions shall recommend corrective action if values do not.
 - b. Include recommended testing intervals.

1.06 QUALITY ASSURANCE

- A. Testing Agency Qualifications:
 - Testing agency shall be an independent company; shall have been a member of NETA for a minimum of last ten (10) years and has permanent in-house testing engineers and technicians involved with testing of grounding systems similar to those specified on this project.
 - 2. Testing company shall be located with 50 miles radius of the project.
 - 3. Testing Agency's Field Supervisor: Currently certified by NETA to supervise onsite testing.
 - 4. Field Testing technician and supervisor shall have minimum ten (10) years' experience in field testing of rounding systems of the type and rating similar to the systems to be tested on this project.
- B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- C. Comply with UL 467 for grounding and bonding materials and equipment.

PART 2 PRODUCTS

2.01 GROUNDING ELECTRODES, CONDUCTORS, CONNECTOR, BUS:

- A. Manufacturers: Provide products by one of the following, or equal:
 - 1. Grounding Connectors, Bars and Rods:
 - a. Erico Inc.; Electrical Product Group

- b. Framatome Connectors/Burndy Electrical.
- c. O-Z/Gedney Co.; a business of the EGS Electrical Group.
- d. Thomas & Betts, Electrical.
- 2. Grounding Conductors and cables:
 - a. Southwire
 - b. American Insulated Wire
 - c. Okonite

2.02 CONDUCTORS

- A. Insulated Conductors: Copper wire or cable insulated for 600 V unless otherwise required by CEC 310
- B. Bare Copper Conductors:
 - 1. Solid Conductors: ASTM B 3.
 - 2. Stranded Conductors: ASTM B 8.
 - 3. Tinned Conductors: ASTM B 33.
 - 4. Bonding Cable: 28 kcmil, 14 strands of No. 17 AWG conductor, 1/4 inch in diameter.
 - 5. Bonding Conductor: No. 4 or No. 6 AWG, stranded conductor.
 - 6. Bonding Jumper: Copper tape, braided conductors terminated with copper ferrules; 1-5/8 inches wide and 1/16 inch thick.
 - 7. Tinned Bonding Jumper: Tinned-copper tape, braided conductors terminated with copper ferrules; 1-5/8 inches wide and 1/16 inch thick.
- C. Bare Grounding Conductor and Conductor Protector for Wood Poles:
 - 1. No. 4 AWG minimum, soft-drawn copper.
 - 2. Conductor Protector: Half-round PVC or wood molding; if wood, use pressure-treated fir, cypress, or cedar.
- D. Grounding Bus: Predrilled rectangular bars of annealed copper, 1/4 by 4 inches in cross section, with 9/32-inch holes spaced 1-1/8 inches apart. Stand-off insulators for mounting shall comply with UL 891 for use in switchboards, 600 V. Lexan or PVC, impulse tested at 5000 V.

2.03 CONNECTORS

A. Listed and labeled by UL for applications in which used and for specific types, sizes, and combinations of conductors and other items connected.

- B. Bolted Connectors for Conductors and Pipes: Copper or copper alloy, pressure type with at least two bolts.
 - 1. Pipe Connectors: Clamp type, sized for pipe.
- C. Welded Connectors: Exothermic-welding kits of types recommended by kit manufacturer for materials being joined and installation conditions.
- D. Bus-bar Connectors: Mechanical type, cast silicon bronze, solderless exothermic-type wire terminals, and long-barrel, two-bolt connection to ground bus bar.

2.04 **GROUNDING ELECTRODES**

- A. Ground Rods: Copper-clad steel; 3/4 inch by 10 feet in diameter.
- B. Chemical-Enhanced Grounding Electrodes: Copper tube, straight or L-shaped, charged with nonhazardous electrolytic chemical salts
 - 1. Termination: Factory-attached No. 4/0 AWG bare conductor at least 48 inches long.
 - 2. Backfill Material: Electrode manufacturer's recommended material.

PART 3 EXECUTION

3.01 APPLICATIONS

- A. Conductors: Install solid conductor for No. 10 AWG and smaller, and stranded conductors for No. 8 AWG and larger unless otherwise indicated.
- B. Underground Grounding Conductors: Install bare tinned-copper conductor, # 2/0 AWG minimum.
 - 1. Bury at least 24 inches below grade.
 - 2. Duct-Bank Grounding Conductor: Bury 12 inches above duct bank when indicated as part of duct-bank installation.
- C. Isolated Grounding Conductors: Green-colored insulation with continuous yellow stripe. On feeders with isolated ground, identify grounding conductor where visible to normal inspection, with alternating bands of green and yellow tape, with at least three bands of green and two bands of yellow.
- D. Grounding Bus: Install in electrical and telephone equipment rooms, in rooms housing service equipment, and elsewhere as indicated.
 - 1. Install bus on insulated spacers 2 inches minimum from wall, 6 inches above finished floor unless otherwise indicated.
 - 2. Where indicated on both sides of doorways, route bus up to top of door frame, across top of doorway, and down to specified height above floor; connect to horizontal bus.
- E. Conductor Terminations and Connections:

- 1. Pipe and Equipment Grounding Conductor Terminations: Bolted connectors.
- 2. Underground Connections: Welded connectors except at test wells and as otherwise indicated.
- Connections to Ground Rods at Test Wells: Bolted connectors.
- 4. Connections to Structural Steel: Welded connectors.

3.02 EQUIPMENT GROUNDING

- A. Install insulated equipment grounding conductors with all feeders and branch circuits in the same conduit containing phase and neutral conductors. Comply with NFPA 70, Article 250, for types, sizes, and quantities of equipment grounding conductors, unless specific types, larger sizes, or more conductors than required by NFPA 70 are indicated.
- B. Install insulated equipment grounding conductors with the following items, in addition to those required by NFPA 70:
 - 1. Feeders and branch circuits.
 - 2. Single-phase motor and appliance branch circuits.
 - 3. Three-phase motor and appliance branch circuits.
 - 4. Flexible raceway runs.
 - 5. Armored and metal-clad cable runs.
- C. Air-Duct Equipment Circuits: Install insulated equipment grounding conductor to duct-mounted electrical devices operating at 120 V and more, including air cleaners, heaters, dampers, humidifiers, and other duct electrical equipment. Bond conductor to each unit and to air duct and connected metallic piping.

3.03 **INSTALLATION**

- A. Grounding Conductors: Route along shortest and straightest paths possible unless otherwise indicated or required by CEC 250. Avoid obstructing access or placing conductors where they may be subjected to strain, impact, or damage.
- B. Ground Bonding Common with Lightning Protection System: Comply with NFPA 780 and UL 96 when interconnecting with lightning protection system. Bond electrical power system ground directly to lightning protection system grounding conductor at closest point to electrical service grounding electrode. Use bonding conductor sized same as system grounding electrode conductor and install in conduit.
- C. Ground Rods: Drive rods until tops are 2 inches below finished floor or final grade unless otherwise indicated.
 - 1. Interconnect ground rods with grounding electrode conductor below grade using exothermic welds, except at test wells and as otherwise indicated. Make connections without exposing steel or damaging coating if any.

- 2. Test Wells: Install at least one test well for each service unless otherwise indicated. Install at the ground rod electrically closest to service entrance. Set top of test well flush with finished grade or floor.
- D. Bonding Straps and Jumpers: Install in locations accessible for inspection and maintenance except where routed through short lengths of conduit.
 - 1. Bonding to Structure: Bond straps directly to basic structure, taking care not to penetrate any adjacent parts.
 - 2. Bonding to Equipment Mounted on Vibration Isolation Hangers and Supports: Install bonding so vibration is not transmitted to rigidly mounted equipment.
 - 3. Use exothermic-welded connectors for outdoor locations; if a disconnect-type connection is required, use a bolted clamp.

E. Grounding and Bonding for Piping:

- 1. Metal Water Service Pipe: Install insulated copper grounding conductors, in conduit, from building's main service equipment, or grounding bus, to main metal water service entrances to building. Connect grounding conductors to main metal water service pipes; use a bolted clamp connector or bolt a lug-type connector to a pipe flange by using one of the lug bolts of the flange. Where a dielectric main water fitting is installed, connect grounding conductor on street side of fitting. Bond metal grounding conductor conduit or sleeve to conductor at each end.
- 2. Water Meter Piping: Use braided-type bonding jumpers to electrically bypass water meters. Connect to pipe with a bolted connector.
- 3. Bond each aboveground portion of gas piping system downstream from equipment shutoff valve.
- F. Bonding Interior Metal Ducts: Bond metal air ducts to equipment grounding conductors of associated fans, blowers, electric heaters, and air cleaners. Install tinned bonding jumper to bond across flexible duct connections to achieve continuity.
- G. Grounding for Steel Building Structure: Install a driven ground rod at base of each corner column and at intermediate exterior columns at distances not more than 60 feet apart.

3.04 LABELING

- A. Comply with requirements in Section 260553 "Identification for Electrical Systems" for instruction signs. The label or its text shall be green.
- B. Install labels at the telecommunications bonding conductor and grounding equalizer and at the grounding electrode conductor where exposed.
 - 1. Label Text: "If this connector or cable is loose or if it must be removed for any reason, notify the facility manager."

3.05 FIELD QUALITY CONTROL

- A. Testing Agency: Engage an independent qualified testing agency to perform tests and inspections.
- B. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect, test, and adjust components, assemblies, and equipment installations, including connections.
- C. Perform tests and inspections.
 - Manufacturer's Field Service: Engage a factory-authorized service representative to inspect components, assemblies, and equipment installations, including connections, and to assist in testing.

D. Tests and Inspections:

- 1. After installing grounding system but before permanent electrical circuits have been energized, test for compliance with requirements.
- 2. Inspect physical and mechanical condition. Verify tightness of accessible, bolted, electrical connections with a calibrated torque wrench according to manufacturer's written instructions.
- 3. Test completed grounding system at each location where a maximum ground-resistance level is specified, at service disconnect enclosure grounding terminal at ground test wells. Make tests at ground rods before any conductors are connected.
 - a. Measure ground resistance no fewer than two full days after last trace of precipitation and without soil being moistened by any means other than natural drainage or seepage and without chemical treatment or other artificial means of reducing natural ground resistance.
 - b. Perform tests by fall-of-potential method according to IEEE 81.
- 4. Prepare dimensioned Drawings locating each test well, ground rod and ground-rod assembly, and other grounding electrodes. Identify each by letter in alphabetical order, and key to the record of tests and observations. Include the number of rods driven and their depth at each location and include observations of weather and other phenomena that may affect test results. Describe measures taken to improve test results.
- E. Grounding system will be considered defective if it does not pass tests and inspections.
- F. Prepare test and inspection reports.
- G. Report measured ground resistances that exceed the following values:
 - 1. Power and Lighting Equipment or System with Capacity of 500 kVA and Less: 10 ohms.

- 2. Power and Lighting Equipment or System with Capacity of 500 to 1000 kVA: 5 ohms.
- 3. Power and Lighting Equipment or System with Capacity More Than 1000 kVA: 3 ohms.
- 4. Power Distribution Units or Panelboards Serving Electronic Equipment: 3 ohm(s).
- 5. Substations and Pad-Mounted Equipment: 5 ohms.
- 6. Manhole Grounds: 10 ohms.
- H. Excessive Ground Resistance: If resistance to ground exceeds specified values, notify LBWD promptly and include recommendations to reduce ground resistance.

END OF SECTION

SECTION 26 05 29

HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.01 SUMMARY

- A. This Section includes the following:
 - 1. Hangers and supports for electrical equipment and systems.
 - 2. Construction requirements for concrete bases.

1.02 **DEFINITIONS**

A. EMT: Electrical metallic tubing.

B. RMC: Rigid metal conduit.

1.03 PERFORMANCE REQUIREMENTS

- A. Delegated Design: Design supports for multiple raceways, including comprehensive engineering analysis by a qualified professional engineer, using performance requirements and design criteria indicated.
- B. Design supports for multiple raceways capable of supporting combined weight of supported systems and its contents.
- C. Design equipment supports capable of supporting combined operating weight of supported equipment and connected systems and components.
- D. Conduit supports are required by SMACNA guidelines. Provide seismic restraint for suspended conduits that are 2 inches and larger.
- E. Rated Strength: Adequate in tension, shear, and pullout force to resist maximum loads calculated or imposed for this Project, with a minimum structural safety factor of five times the applied force.

1.04 ACTION SUBMITTALS

- A. Product Data: For the following:
 - 1. Steel slotted support systems.
 - 2. Nonmetallic slotted support systems.
- B. Shop Drawings: Signed and sealed by a qualified professional engineer. Show fabrication and installation details and include calculations for the following:
 - 1. Trapeze hangers. Include Product Data for components.

- 2. Steel slotted channel systems. Include Product Data for components.
- 3. Nonmetallic slotted channel systems. Include Product Data for components.
- 4. Equipment supports.
- C. Qualification Data: For professional engineer.

1.05 INFORMATIONAL SUBMITTALS

A. Welding certificates.

1.06 QUALITY ASSURANCE

- A. Welding: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code Steel."
- B. Professional Engineer Qualifications: A professional engineer who is registered in the State of California and who is experienced in providing engineering services of the kind indicated.
- C. Comply with NFPA 70.

1.07 COORDINATION

A. Coordinate size and location of concrete bases. Cast anchor-bolt inserts into bases. Concrete, reinforcement, and formwork requirements are specified together with concrete Specifications.

PART 2 PRODUCTS

2.01 SUPPORT, ANCHORAGE, AND ATTACHMENT COMPONENTS

- A. Steel Slotted Support Systems: Comply with MFMA-4, factory-fabricated components for field assembly.
 - 1. Manufacturers: Provide products by one of the following:
 - a. Cooper B-Line, Inc.; a division of Cooper Industries.
 - b. ERICO International Corporation.
 - c. GS Metals Corp.
 - d. Thomas & Betts Corporation.
 - e. Unistrut; Tyco International, Ltd.
 - 2. Metallic Coatings: Hot-dip galvanized after fabrication and applied according to MFMA-4.
 - 3. Nonmetallic Coatings: Manufacturer's standard PVC, polyurethane, or polyester coating applied according to MFMA-4.

- 4. Painted Coatings: Manufacturer's standard painted coating applied according to MFMA-4.
- 5. Channel Dimensions: Selected for applicable load criteria.
- B. Raceway and Cable Supports: As described in NECA 1 and NECA 101.
- C. Conduit and Cable Support Devices: Steel hangers, clamps, and associated fittings, designed for types and sizes of raceway or cable to be supported.
- D. Support for Conductors in Vertical Conduit: Factory-fabricated assembly consisting of threaded body and insulating wedging plug or plugs for non-armored electrical conductors or cables in riser conduits. Plugs shall have number, size, and shape of conductor gripping pieces as required to suit individual conductors or cables supported. Body shall be malleable iron.
- E. Structural Steel for Fabricated Supports and Restraints: ASTM A 36/A 36M, steel plates, shapes, and bars; black and galvanized.
- F. Mounting, Anchoring, and Attachment Components: Items for fastening electrical items or their supports to building surfaces include the following:
 - 1. Powder-Actuated Fasteners: Threaded-steel stud, for use in hardened portland cement concrete, steel, or wood, with tension, shear, and pullout capacities appropriate for supported loads and building materials where used.
 - a. Manufacturers: Provide products by one of the following:
 - 1) Hilti Inc.
 - 2) ITW Ramset/Red Head; a division of Illinois Tool Works, Inc.
 - 3) MKT Fastening, LLC.
 - 4) Simpson Strong-Tie Co., Inc.; Masterset Fastening Systems Unit.
 - 2. Mechanical-Expansion Anchors: Insert-wedge-type, zinc-coated steel, for use in hardened portland cement concrete with tension, shear, and pullout capacities appropriate for supported loads and building materials in which used.
 - a. Manufacturers: Provide products by one of the following:
 - 1) Cooper B-Line, Inc.; a division of Cooper Industries.
 - 2) Empire Tool and Manufacturing Co., Inc.
 - 3) Hilti Inc.
 - 4) ITW Ramset/Red Head; a division of Illinois Tool Works, Inc.
 - 5) MKT Fastening, LLC.
 - 3. Concrete Inserts: Steel or malleable-iron, slotted support system units similar to MSS Type 18; complying with MFMA-4 or MSS SP-58.

- 4. Clamps for Attachment to Steel Structural Elements: MSS SP-58, type suitable for attached structural element.
- 5. Through Bolts: Structural type, hex head, and high strength. Comply with ASTM A 325.
- 6. Toggle Bolts: All-steel springhead type.
- 7. Hanger Rods: Threaded steel.

2.02 FABRICATED METAL EQUIPMENT SUPPORT ASSEMBLIES

A. Description: Welded or bolted, structural-steel shapes, shop or field fabricated to fit dimensions of supported equipment.

PART 3 EXECUTION

3.01 APPLICATION

- A. Comply with NECA 1 and NECA 101 for application of hangers and supports for electrical equipment and systems except if requirements in this Section are stricter.
- B. Maximum Support Spacing and Minimum Hanger Rod Size for Raceway: Space supports for EMT, and RMC as required by NFPA 70. Minimum rod size shall be 1/4 inch in diameter.
- C. Multiple Raceways or Cables: Install trapeze-type supports fabricated with steel slotted or other support system, sized so capacity can be increased by at least 25 percent in future without exceeding specified design load limits.
 - 1. Secure raceways and cables to these supports with two-bolt conduit clamps.
- D. Spring-steel clamps designed for supporting single conduits without bolts may be used for 1-1/2-inch and smaller raceways serving branch circuits and communication systems above suspended ceilings and for fastening raceways to trapeze supports.

3.02 SUPPORT INSTALLATION

- A. Comply with NECA 1 and NECA 101 for installation requirements except as specified in this Article.
- B. Raceway Support Methods: In addition to methods described in NECA 1, EMT, and RMC may be supported by openings through structure members, as permitted in NFPA 70.
- C. Strength of Support Assemblies: Where not indicated, select sizes of components so strength will be adequate to carry present and future static loads within specified loading limits. Minimum static design load used for strength determination shall be weight of supported components plus 200 lb.
- D. Mounting and Anchorage of Surface-Mounted Equipment and Components: Anchor and fasten electrical items and their supports to building structural elements by the following methods:

- 1. To Wood: Fasten with lag screws or through bolts.
- 2. To New Concrete: Bolt to concrete inserts.
- 3. To Masonry: Approved toggle-type bolts on hollow masonry units and expansion anchor fasteners on solid masonry units.
- 4. To Existing Concrete: Expansion anchor fasteners.
- 5. Instead of expansion anchors, powder-actuated driven threaded studs provided with lock washers and nuts may be used in existing standard-weight concrete 4 inches thick or greater. Do not use for anchorage to lightweight-aggregate concrete or for slabs less than 4 inches thick.
- 6. To Steel: Welded threaded studs complying with AWS D1.1/D1.1M, with lock washers and nuts Beam clamps (MSS Type 19, 21, 23, 25, or 27) complying with MSS SP-69.
- 7. To Light Steel: Sheet metal screws.
- 8. Items Mounted on Hollow Walls and Nonstructural Building Surfaces: Mount cabinets, panelboards, disconnect switches, control enclosures, pull and junction boxes, transformers, and other devices on slotted-channel racks attached to substrate.
- E. Drill holes for expansion anchors in concrete at locations and to depths that avoid reinforcing bars.

3.03 INSTALLATION OF FABRICATED METAL SUPPORTS

- A. Cut, fit, and place miscellaneous metal supports accurately in location, alignment, and elevation to support and anchor electrical materials and equipment.
- B. Field Welding: Comply with AWS D1.1/D1.1M.

3.04 CONCRETE BASES

- A. Construct concrete bases of dimensions indicated but not less than 4 inches larger in both directions than supported unit, and so anchors will be a minimum of 10 bolt diameters from edge of the base.
- B. Anchor equipment to concrete base.
 - 1. Place and secure anchorage devices. Use supported equipment manufacturer's setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
 - 2. Install anchor bolts to elevations required for proper attachment to supported equipment.
 - 3. Install anchor bolts according to anchor-bolt manufacturer's written instructions.

3.05 PAINTING

- A. Touchup: Clean field welds and abraded areas of shop paint. Paint exposed areas immediately after erecting hangers and supports. Use same materials as used for shop painting. Comply with SSPC-PA 1 requirements for touching up field-painted surfaces.
 - 1. Apply paint by brush or spray to provide minimum dry film thickness of 2.0 mils.
- B. Galvanized Surfaces: Clean welds, bolted connections, and abraded areas and apply galvanizing-repair paint to comply with ASTM A 780.

END OF SECTION

SECTION 26 05 33

RACEWAYS AND BOXES FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.01 **SUMMARY**

- A. Section Includes:
 - 1. Metal conduits, tubing, and fittings.
 - 2. Nonmetal conduits, tubing, and fittings.
 - 3. Metal wireways and auxiliary gutters.
 - 4. Nonmetal wireways and auxiliary gutters.
 - 5. Surface raceways.
 - 6. Boxes, enclosures, and cabinets.
 - 7. Handholes and boxes for exterior underground cabling.

1.02 **DEFINITIONS**

- A. EMT: Electrical metal tubing
- B. ENT: Electrical non-metallic tubing
- C. GRC: Galvanized rigid steel conduit.
- D. LFMC: Liquidtite flexible metal conduit
- E. LFNC: Liquitite flexible non-metallic conduit.
- F. RNC: Rigid non-metallic conduit

1.03 CODES AND STANDARDS

- A. ANSI C80.1 Standard for Rigid Steel Conduit
- B. NEMA TC-2 Elecrtical Plastic Tubing and Conduit
- C. NEMA TC-3 PVC Fittings for Use With Rigid PVC Conduit and Tubing
- D. UL 1 Flexible Metal Conduit
- E. UL 6 Rigid Metal Conduit
- F. UL 360 Liquid Tight Flexible Steel Conduit

- G. UL 651 Schedule 40 and Schedule 80 Rigid PVC Conduit
- H. UL 797 Electrical Metallic Tubing
- I. UL 870 Wireways, Auxiliary Gutters and Associated Fittings

1.04 QUALITY ASSURANCE:

- A. Each conduit shall bear manufacturer's trademark and UL label.
- B. Each type of conduit and fittings shall be of a single manufacturer. Multiple manufacturers of the same material are not acceptable.

1.05 ACTION SUBMITTALS

- A. Product Data: For surface raceways, wireways and fittings, floor boxes, hinged-cover enclosures, and cabinets.
 - 1. Product Data for Credit IEQ 4.1: For solvent cements and adhesive primers, documentation including printed statement of VOC content.
 - Laboratory Test Reports: For solvent cements and adhesive primers, documentation indicating that products comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."
- B. Shop Drawings: For custom enclosures and cabinets. Include plans, elevations, sections, and attachment details.

1.06 INFORMATIONAL SUBMITTALS

- A. Coordination Drawings: Conduit routing plans, drawn to scale, on which the following items are shown and coordinated with each other, using input from installers of items involved:
 - 1. Structural members in paths of conduit groups with common supports.
- B. Seismic Qualification Certificates: For enclosures, cabinets, and conduit racks and their mounting provisions, including those for internal components, from manufacturer.
 - 1. Basis for Certification: Indicate whether withstand certification is based on actual test of assembled components or on calculation.
 - 2. Dimensioned Outline Drawings of Equipment Unit: Identify center of gravity and locate and describe mounting and anchorage provisions.
 - 3. Detailed description of equipment anchorage devices on which the certification is based and their installation requirements.
 - 4. Detailed description of conduit support devices and interconnections on which the certification is based and their installation requirements.

C. Source quality-control reports.

PART 2 PRODUCTS

2.01 METAL CONDUITS, TUBING, AND FITTINGS

- A. Manufacturers: Provide products by one of the following:
 - 1. Allied Tube & Conduit; a Tyco International Ltd. Co.
 - 2. Republic Conduit.
 - 3. Thomas & Betts Corporation.
 - 4. Western Tube and Conduit Corporation.
- B. Listing and Labeling: Metal conduits, tubing, and fittings shall be UL listed and labeled as defined in NFPA 70, and marked for intended location and application.
- C. GRC: Comply with ANSI C80.1 and UL 6. rigid steel conduit where exposed to weather, and in areas susceptible to damage and for high and low-voltage feeders inside the building. in addition, rigid conduits must be installed in the main electrical room (normal and emergency).
- D. EMT: Comply with ANSI C80.3 and UL 797. Electrical metallic tubing shall zinc coated steel with an interior coating of lacquer or enamel. EMT may be used in concealed spaces up to 1½" maximum. EMT couplings to be compression
- E. FMC: Comply with UL 1; zinc-coated steel. Flexible steel conduit(Aluminum flex not allowed). Short runs from ceiling j-boxes to light fixtures, final connection to motors or another appliances and equipment (use liquid tight in damp locations) or wheel special permission is granted for use.
- F. LFMC: Flexible steel conduit with oil resistant PVC jacket and complying with UL 360.
- G. Fittings for Metal Conduit: Comply with NEMA FB 1 and UL 514B.
 - 1. Conduit Fittings for Hazardous (Classified) Locations: Comply with UL 886 and NFPA 70.
 - 2. Fittings for EMT:
 - a. Material: Steel.
 - b. Type: Compression.
 - 3. Expansion Fittings: PVC or steel to match conduit type, complying with UL 651, rated for environmental conditions where installed, and including flexible external bonding jumper.
- H. 3/4" Minimum conduit size.

- I. Insulated bushing for EMT 1-1/2 inches and larger shall have malleable iron bodies with molded high impact thermosetting insulation, OZ type or equal
- J. Insulated Bushings for conduit 1 inch and small shall be high impact thermosetting plastic, O.Z. Gedney type A or equal.

2.02 NONMETALLIC CONDUITS, TUBING, AND FITTINGS

- A. Manufacturers: Provide products by one of the following:
 - 1. CANTEX Inc.
 - 2. Condux International, Inc.
 - 3. Electri-Flex Company.
 - 4. RACO; a Hubbell company.
 - 5. Thomas & Betts Corporation.
- B. Listing and Labeling: Nonmetallic conduits, tubing, and fittings shall be listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- C. ENT: Comply with NEMA TC 13 and UL 1653.
- D. RNC: Type EPC-40-PVC, complying with NEMA TC 2 and UL 651 unless otherwise indicated.
- E. LFNC: Comply with UL 1660.
- F. Fittings for ENT and RNC: Comply with NEMA TC 3; match to conduit or tubing type and material.
- G. Fittings for LFNC: Comply with UL 514B.
- H. Solvent cements and adhesive primers shall have a VOC content of 510 and 550 g/L or less, respectively, when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
- Solvent cements and adhesive primers shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."
- J. 3/4" Minimum conduit size.

2.03 METAL WIREWAYS AND AUXILIARY GUTTERS

- A. Manufacturers: Provide products by one of the following:
 - 1. Cooper B-Line, Inc.
 - 2. Hoffman; a Pentair company.

- 3. Square D; a brand of Schneider Electric.
- B. Description: Sheet metal, complying with UL 870 and NEMA 250, Type 1 or Type 3R unless otherwise indicated, and sized according to NFPA 70.
 - 1. Metal wireways installed outdoors shall be listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- C. Fittings and Accessories: Include covers, couplings, offsets, elbows, expansion joints, adapters, hold-down straps, end caps, and other fittings to match and mate with wireways as required for complete system.
- D. Wireway Covers: Screw-cover type unless otherwise indicated.
- E. Finish: Manufacturer's standard enamel finish.

2.04 BOXES, ENCLOSURES, AND CABINETS

- A. Manufacturers: Provide products by one of the following:
 - 1. Cooper Technologies Company; Cooper Crouse-Hinds.
 - 2. EGS/Appleton Electric.
 - 3. FSR Inc.
 - 4. Hoffman; a Pentair company.
 - 5. Hubbell Incorporated; Killark Division.
 - 6. O-Z/Gedney; a brand of EGS Electrical Group.
 - 7. RACO; a Hubbell Company.
 - 8. Thomas & Betts Corporation.
 - 9. Wiremold / Legrand.
- B. General Requirements for Boxes, Enclosures, and Cabinets: Boxes, enclosures, and cabinets installed in wet locations shall be listed for use in wet locations.
- C. Sheet Metal Outlet and Device Boxes: Comply with NEMA OS 1 and UL 514A.
- D. Cast-Metal Outlet and Device Boxes: Comply with NEMA FB 1, aluminum, Type FD, with gasketed cover.
- E. Nonmetallic Outlet and Device Boxes: Comply with NEMA OS 2 and UL 514C.
- F. Metal Floor Boxes:
 - 1. Material: sheet metal.
 - 2. Type: Fully adjustable.

- 3. Shape: Rectangular.
- 4. Listing and Labeling: Metal floor boxes shall be listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- G. Luminaire Outlet Boxes: Nonadjustable, designed for attachment of luminaire weighing 50 lb. Outlet boxes designed for attachment of luminaires weighing more than 50 lb shall be listed and marked for the maximum allowable weight.
- H. Small Sheet Metal Pull and Junction Boxes: NEMA OS 1.
- I. Cast-Metal Access, Pull, and Junction Boxes: Comply with NEMA FB 1 and UL 1773, cast aluminum with gasketed cover.
- J. Box extensions used to accommodate new building finishes shall be of same material as recessed box.
- K. Device Box Dimensions: 4 inches square by 2-1/8 inches deep.
- L. Gangable boxes are prohibited.
- M. Hinged-Cover Enclosures: Comply with UL 50 and NEMA 250, Type 1 or Type 3R with continuous-hinge cover with flush latch unless otherwise indicated.
 - 1. Metal Enclosures: Steel, finished inside and out with manufacturer's standard enamel.
 - 2. Nonmetallic Enclosures: Plastic.
 - 3. Interior Panels: Steel; all sides finished with manufacturer's standard enamel.

PART 3 EXECUTION

3.01 RACEWAY APPLICATION

- A. Outdoors: Apply raceway products as specified below unless otherwise indicated:
 - 1. Exposed Conduit: GRC
 - 2. Concealed Conduit, Aboveground: GRC or EMT.
 - 3. Rigid steel conduit where exposed to weather, and in areas susceptible to damage and for high and low-voltage feeders inside the building. in addition, rigid conduits must be installed in the main electrical room (normal and emergency).
 - 4. Connection to Vibrating Equipment (Including Transformers and Hydraulic, Pneumatic, Electric Solenoid, or Motor-Driven Equipment): LFMC.
 - 5. Boxes and Enclosures, Aboveground: NEMA 250, Type 3R.
- B. Indoors: Apply raceway products as specified below unless otherwise indicated:
 - 1. Exposed, Not Subject to Physical Damage: EMT.

- 2. Exposed, Not Subject to Severe Physical Damage: EMT.
- 3. Exposed and Subject to Severe Physical Damage: GRC. Raceway locations include the following:
 - a. Loading dock.
 - b. Corridors used for traffic of mechanized carts, forklifts, and pallet-handling units
 - c. Mechanical rooms.
- 4. Concealed in Ceilings and Interior Walls and Partitions: EMT.
- 5. Connection to Vibrating Equipment (Including Transformers and Hydraulic, Pneumatic, Electric Solenoid, or Motor-Driven Equipment): FMC, except use LFMC in damp or wet locations.
- 6. Damp or Wet Locations: GRC.
- 7. Boxes and Enclosures: NEMA 250, Type 1, except use NEMA 250, Type 4 stainless steel in institutional and commercial kitchens and damp or wet locations.
- C. Minimum Raceway Size: 3/4-inch trade size.
- D. Raceway Fittings: Compatible with raceways and suitable for use and location.
 - 1. Rigid and Intermediate Steel Conduit: Use threaded rigid steel conduit fittings unless otherwise indicated. Comply with NEMA FB 2.10.
 - PVC Externally Coated, Rigid Steel Conduits: Use only fittings listed for use with this type of conduit. Patch and seal all joints, nicks, and scrapes in PVC coating after installing conduits and fittings. Use sealant recommended by fitting manufacturer and apply in thickness and number of coats recommended by manufacturer.
 - 3. EMT: Use compression, steel fittings. Comply with NEMA FB 2.10.
 - 4. Flexible Conduit: Use only fittings listed for use with flexible conduit. Comply with NEMA FB 2.20.
- E. Install nonferrous conduit or tubing for circuits operating above 60 Hz. Where aluminum raceways are installed for such circuits and pass through concrete, install in nonmetallic sleeve.
- F. Do not install aluminum conduits, boxes, or fittings in contact with concrete or earth.
- G. Install surface raceways only where indicated on Drawings.
- H. Do not install nonmetallic conduit where ambient temperature exceeds 120 degrees F.

3.02 INSTALLATION

- A. Comply with NECA 1 and NECA 101 for installation requirements except where requirements on Drawings or in this article are stricter. Comply with NECA 102 for aluminum conduits. Comply with NFPA 70 limitations for types of raceways allowed in specific occupancies and number of floors.
- B. Keep raceways at least 6 inches away from parallel runs of flues and steam or hotwater pipes. Install horizontal raceway runs above water and steam piping.
- C. Complete raceway installation before starting conductor installation.
- D. Comply with requirements in Section 260529 "Hangers and Supports for Electrical Systems" for hangers and supports.
- E. Arrange stub-ups so curved portions of bends are not visible above finished slab.
- F. Install no more than the equivalent of three 90-degree bends in any conduit run except for control wiring conduits, for which fewer bends are allowed. Support within 12 inches of changes in direction.
- G. Conceal conduit and EMT within finished walls, ceilings, and floors unless otherwise indicated. Install conduits parallel or perpendicular to building lines.
- H. Support conduit within 12 inches of enclosures to which attached.
- I. Raceways Embedded in Slabs:
 - 1. Run conduit larger than 1-inch trade size, parallel or at right angles to main reinforcement. Where at right angles to reinforcement, place conduit close to slab support. Secure raceways to reinforcement at maximum 10-footintervals.
 - 2. Arrange raceways to cross building expansion joints at right angles with expansion fittings.
 - 3. Arrange raceways to keep a minimum of 2 inches of concrete cover in all directions.
 - 4. Do not embed threadless fittings in concrete unless specifically approved by LBWD for each specific location.
 - 5. Change from ENT to GRC before rising above floor.
- J. Stub-ups to Above Recessed Ceilings:
 - 1. Use EMT, or RMC for raceways.
 - 2. Use a conduit bushing or insulated fitting to terminate stub-ups not terminated in hubs or in an enclosure.
- K. Threaded Conduit Joints, Exposed to Wet, Damp, Corrosive, or Outdoor Conditions: Apply listed compound to threads of raceway and fittings before making up joints. Follow compound manufacturer's written instructions.

- L. Coat field-cut threads on PVC-coated raceway with a corrosion-preventing conductive compound prior to assembly.
- M. Raceway Terminations at Locations Subject to Moisture or Vibration: Use insulating bushings to protect conductors including conductors smaller than No. 4 AWG.
- N. Terminate threaded conduits into threaded hubs or with locknuts on inside and outside of boxes or cabinets. Install bushings on conduits up to 1-1/4-inch trade size and insulated throat metal bushings on 1-1/2-inch trade size and larger conduits terminated with locknuts. Install insulated throat metal grounding bushings on service conduits.
- O. Install raceways square to the enclosure and terminate at enclosures with locknuts. Install locknuts hand tight plus 1/4 turn more.
- P. Do not rely on locknuts to penetrate nonconductive coatings on enclosures. Remove coatings in the locknut area prior to assembling conduit to enclosure to assure a continuous ground path.
- Q. Cut conduit perpendicular to the length. For conduits 2-inch trade size and larger, use roll cutter or a guide to make cut straight and perpendicular to the length.
- R. Install pull wires in empty raceways. Use polypropylene or monofilament plastic line with not less than 250 lbs (113 kgs) tensile strength. Leave at least 12 inches of slack at each end of pull wire. Provide acrylic identification tags (2" x 4") at each end indicating the source. Cap underground raceways designated as spare above grade alongside raceways in use.

S. Surface Raceways:

- 1. Install surface raceway with a minimum 2-inchradius control at bend points.
- 2. Secure surface raceway with screws or other anchor-type devices at intervals not exceeding 48 inches and with no less than two supports per straight raceway section. Support surface raceway according to manufacturer's written instructions. Tape and glue are not acceptable support methods.
- T. Install raceway sealing fittings at accessible locations according to NFPA 70 and fill them with listed sealing compound. For concealed raceways, install each fitting in a flush steel box with a blank cover plate having a finish similar to that of adjacent plates or surfaces. Install raceway sealing fittings according to NFPA 70.
- U. Install devices to seal raceway interiors at accessible locations. Locate seals so no fittings or boxes are between the seal and the following changes of environments. Seal the interior of all raceways at the following points:
 - 1. Where conduits pass from warm to cold locations, such as boundaries of refrigerated spaces.
 - 2. Where an underground service raceway enters a building or structure.
 - 3. Where otherwise required by NFPA 70.

- V. Comply with manufacturer's written instructions for solvent welding RNC and fittings.
- W. Expansion-Joint Fittings:
 - 1. Install in each run of aboveground RNC that is located where environmental temperature change may exceed 30 deg F and that has straight-run length that exceeds 25 feet. Install in each run of aboveground RMC conduit that is located where environmental temperature change may exceed 100 deg F and that has straight-run length that exceeds 100 feet.
 - 2. Install type and quantity of fittings that accommodate temperature change listed for each of the following locations:
 - a. Outdoor Locations Not Exposed to Direct Sunlight: 125 deg F temperature change.
 - b. Indoor Spaces Connected with Outdoors without Physical Separation: 125 deg F temperature change.
 - 3. Install fitting(s) that provide expansion and contraction for at least 0.00041 inch per foot of length of straight run per deg F of temperature change for PVC conduits. Install fitting(s) that provide expansion and contraction for at least 0.000078 inch per foot of length of straight run per deg F of temperature change for metal conduits.
 - 4. Install expansion fittings at all locations where conduits cross building or structure expansion joints.
 - Install each expansion-joint fitting with position, mounting, and piston setting selected according to manufacturer's written instructions for conditions at specific location at time of installation. Install conduit supports to allow for expansion movement.
- X. Flexible Conduit Connections: Comply with NEMA RV 3. Use a maximum of 72 inches of flexible conduit for recessed and semi recessed luminaires, equipment subject to vibration, noise transmission, or movement; and for transformers and motors.
 - 1. Use LFMC in damp or wet locations
- Y. Mount boxes at heights indicated on Drawings. If mounting heights of boxes are not individually indicated, give priority to ADA requirements. Install boxes with height measured per drawing details.
- Z. Horizontally separate boxes mounted on opposite sides of walls, so they are not in the same vertical channel.
- AA.Locate boxes so that cover or plate will not span different building finishes.
- BB. Support boxes of three gangs or more from more than one side by spanning two framing members or mounting on brackets specifically designed for the purpose.

- CC. Fasten junction and pull boxes to or support from building structure. Do not support boxes by conduits.
- DD. Set metal floor boxes level and flush with finished floor surface.
- EE.Set nonmetallic floor boxes level. Trim after installation to fit flush with finished floor surface.

3.03 SLEEVE AND SLEEVE-SEAL INSTALLATION FOR ELECTRICAL PENETRATIONS

A. Install sleeves and sleeve seals at penetrations of exterior floor and wall assemblies. Comply with requirements in Section 260544 "Sleeves and Sleeve Seals for Electrical Raceways and Cabling."

3.04 PROTECTION

- A. Protect coatings, finishes, and cabinets from damage and deterioration.
 - 1. Repair damage to galvanized finishes with zinc-rich paint recommended by manufacturer.
 - 2. Repair damage to PVC coatings or paint finishes with matching touchup coating recommended by manufacturer.

END OF SECTION

SECTION 26 05 33.23

SURFACE RACEWAYS FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Surface raceway systems.
- B. Wireways.
- C. Wall duct.

1.02 RELATED REQUIREMENTS

- A. Section 26 05 26 Grounding and Bonding for Electrical Systems.
- B. Section 26 05 29 Hangers and Supports for Electrical Systems.
- C. Section 26 05 33.13 Conduit for Electrical Systems.
- D. Section 26 05 53 Identification for Electrical Systems: Identification products and requirements.

1.03 REFERENCE STANDARDS

A. NFPA 70 - National Electrical Code.

PART 2 PRODUCTS

2.01 RACEWAY REQUIREMENTS

- A. Provide all components, fittings, supports, and accessories required for a complete raceway system.
- B. Provide products listed, classified, and labeled as suitable for the purpose intended.
- C. Do not use raceways for applications other than as permitted by NFPA 70 and product listing.

END OF SECTION

SECTION 26 05 44

SLEEVES AND SLEEVE SEALS FOR ELECTRICAL RACEWAYS AND CABLING

GENERAL

1.01 SUMMARY

A. Section Includes:

- 1. Sleeves for raceway and cable penetration of non-fire-rated construction walls and floors.
- 2. Sleeve-seal systems.
- 3. Sleeve-seal fittings.
- 4. Grout.
- 5. Silicone sealants.

1.02 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Product Data: For sealants, documentation including printed statement of VOC content.
- C. Laboratory Test Reports: For sealants, documentation indicating that products comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

PRODUCTS

2.01 SLEEVES

A. Wall Sleeves:

- 1. Steel Pipe Sleeves: ASTM A 53/A 53M, Type E, Grade B, Schedule 40, zinc coated, plain ends.
- 2. Cast-Iron Pipe Sleeves: Cast or fabricated "wall pipe," equivalent to ductile-iron pressure pipe, with plain ends and integral waterstop unless otherwise indicated.
- B. Sleeves for Conduits Penetrating Non-Fire-Rated Gypsum Board Assemblies: Galvanized-steel sheet; 0.0239-inch minimum thickness; round tube closed with welded longitudinal joint, with tabs for screw-fastening the sleeve to the board.
- C. PVC-Pipe Sleeves: ASTM D 1785, Schedule 40.
- D. Molded-PVC Sleeves: With nailing flange for attaching to wooden forms.

- E. Molded-PE or -PP Sleeves: Removable, tapered-cup shaped, and smooth outer surface with nailing flange for attaching to wooden forms.
- F. Sleeves for Rectangular Openings:
 - 1. Material: Galvanized sheet steel.
 - 2. Minimum Metal Thickness:
 - a. For sleeve cross-section rectangle perimeter less than 50 inches and with no side larger than 16 inches, thickness shall be 0.052 inch.
 - b. For sleeve cross-section rectangle perimeter 50 inches or more and one or more sides larger than 16 inches, thickness shall be 0.138 inch.

2.02 SLEEVE-SEAL SYSTEMS

- A. Description: Modular sealing device, designed for field assembly, to fill annular space between sleeve and raceway or cable.
 - 1. Manufacturers: Provide products by one of the following manufacturers:
 - a. Advance Products & Systems, Inc.
 - b. CALPICO, Inc.
 - c. Metraflex Company (The).
 - d. Pipeline Seal and Insulator, Inc.
 - e. Proco Products, Inc.
 - 2. Sealing Elements: EPDM rubber interlocking links shaped to fit surface of pipe. Include type and number required for pipe material and size of pipe.
 - 3. Pressure Plates: Carbon steel.
 - 4. Connecting Bolts and Nuts: Carbon steel, with corrosion-resistant coating, of length required to secure pressure plates to sealing elements.

2.03 SLEEVE-SEAL FITTINGS

- A. Description: Manufactured plastic, sleeve-type, waterstop assembly made for embedding in concrete slab or wall. Unit shall have plastic or rubber waterstop collar with center opening to match piping OD.
 - 1. Manufacturers: Provide products by one of the following manufacturers:
 - a. Presealed Systems.
 - b. Or equal.

2.04 GROUT

- A. Description: Nonshrink; recommended for interior and exterior sealing openings in non-fire-rated walls or floors.
- B. Standard: ASTM C 1107/C 1107M, Grade B, post-hardening and volume-adjusting, dry, hydraulic-cement grout.
- C. Design Mix: 5000-psi, 28-day compressive strength.
- D. Packaging: Premixed and factory packaged.

2.05 SILICONE SEALANTS

- A. Silicone Sealants: Single-component, silicone-based, neutral-curing elastomeric sealants of grade indicated below.
 - 1. Grade: Pourable (self-leveling) formulation for openings in floors and other horizontal surfaces that are not fire rated.
 - 2. Sealant shall have VOC content of 250 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
 - Sealant shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."
- B. Silicone Foams: Multicomponent, silicone-based liquid elastomers that, when mixed, expand and cure in place to produce a flexible, nonshrinking foam.

EXECUTION

3.01 SLEEVE INSTALLATION FOR NON-FIRE-RATED ELECTRICAL PENETRATIONS

- A. Comply with NECA 1.
- B. Comply with NEMA VE 2 for cable tray and cable penetrations.
- C. Sleeves for Conduits Penetrating Above-Grade Non-Fire-Rated Concrete and Masonry-Unit Floors and Walls:
 - 1. Interior Penetrations of Non-Fire-Rated Walls and Floors:
 - a. Seal annular space between sleeve and raceway or cable, using joint sealant appropriate for size, depth, and location of joint.
 - b. Seal space outside of sleeves with mortar or grout. Pack sealing material solidly between sleeve and wall so no voids remain. Tool exposed surfaces smooth; protect material while curing.
 - 2. Use pipe sleeves unless penetration arrangement requires rectangular sleeved opening.

- 3. Size pipe sleeves to provide 1/4-inch annular clear space between sleeve and raceway or cable unless sleeve seal is to be installed or unless seismic criteria require different clearance.
- Install sleeves for wall penetrations unless core-drilled holes or formed openings are used. Install sleeves during erection of walls. Cut sleeves to length for mounting flush with both surfaces of walls. Deburr after cutting.
- 5. Install sleeves for floor penetrations. Extend sleeves installed in floors 2 inches above finished floor level. Install sleeves during erection of floors.
- D. Sleeves for Conduits Penetrating Non-Fire-Rated Gypsum Board Assemblies:
 - 1. Use circular metal sleeves unless penetration arrangement requires rectangular sleeved opening.
 - 2. Seal space outside of sleeves with approved joint compound for gypsum board assemblies.
- E. Roof-Penetration Sleeves: Seal penetration of individual raceways and cables with flexible boot-type flashing units applied in coordination with roofing work.
- F. Aboveground, Exterior-Wall Penetrations: Seal penetrations using steel pipe sleeves and mechanical sleeve seals. Select sleeve size to allow for 1-inch annular clear space between pipe and sleeve for installing mechanical sleeve seals.
- G. Underground, Exterior-Wall and Floor Penetrations: Install PVC Coated cast-iron pipe sleeves. Size sleeves to allow for 1-inch annular clear space between raceway or cable and sleeve for installing sleeve-seal system.

3.02 SLEEVE-SEAL-SYSTEM INSTALLATION

- A. Install sleeve-seal systems in sleeves in exterior concrete walls and slabs-on-grade at raceway entries into building.
- B. Install type and number of sealing elements recommended by manufacturer for raceway or cable material and size. Position raceway or cable in center of sleeve. Assemble mechanical sleeve seals and install in annular space between raceway or cable and sleeve. Tighten bolts against pressure plates that cause sealing elements to expand and make watertight seal.

3.03 SLEEVE-SEAL-FITTING INSTALLATION

- A. Install sleeve-seal fittings in new walls and slabs as they are constructed.
- B. Assemble fitting components of length to be flush with both surfaces of concrete slabs and walls. Position waterstop flange to be centered in concrete slab or wall.
- C. Secure nailing flanges to concrete forms.
- D. Using grout, seal the space around outside of sleeve-seal fittings.

END OF SECTION

SECTION 26 05 53

IDENTIFICATION FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.01 **SUMMARY**

- A. Section Includes:
 - 1. Nameplates.
 - 2. Labels.
 - 3. Wire markers.
 - 4. Conduit markers.
 - 5. Stencils.
 - 6. Underground Warning Tape.
 - 7. Lockout Devices.

1.02 SUBMITTALS

- A. Product Data:
 - 1. Submit manufacturer's catalog literature for each product required.
 - 2. Submit electrical identification schedule including list of wording, symbols, letter size, color coding, tag number, location, and function.
- B. Manufacturer's Installation Instructions: Indicate installation instructions, special procedures, and installation.
- C. Qualification Data: For Installer.

1.03 CLOSEOUT SUBMITTALS

A. Project Record Documents: Record actual locations of tagged devices; include tag numbers.

1.04 **QUALITY ASSURANCE**

A. Perform Work in accordance with standard.

1.05 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing Products specified in this Section with minimum three years documented experience.

B. Installer: Company specializing in performing Work of this Section with minimum three years documented experience and approved by manufacturer.

1.06 <u>DELIVERY, STORAGE, AND HANDLING</u>

- A. Accept identification products on site in original containers. Inspect for damage.
- B. Accept materials on site in original factory packaging, labeled with manufacturer's identification, including product density and thickness.
- C. Protect insulation from weather and construction traffic, dirt, water, chemical, and mechanical damage, by storing in original wrapping.

1.07 ENVIRONMENTAL REQUIREMENTS

A. Install labels and nameplates only when ambient temperature and humidity conditions for adhesive are within range recommended by manufacturer.

PART 2 PRODUCTS

2.01 NAMEPLATES ON EQUIPMENT

- A. All new distribution switchboards and panels shall have Engraved Plastic Nameplates and Signs: Engraving stock, melamine plastic laminate, minimum 1116 inch (1.6 mm) thick for signs up to 20 sq. in. (129 sq. cm) and 1/8 Inch (3.2 mm) thick for larger sizes. Engraved legend with white letters on black face for normal power, white letters on red face for emergency power.
 - 1. Punched or drilled for mechanical fasteners.
 - 2. Text is at ½ -inch (13 mm) high lettering.
- B. With the following Information for each panel:
 - 1. PANEL Name (Including voltage, phase, and wire)
 - 2. FED FROM (Source Panel Name)
- C. Nameplates shall be secured to equipment front using screws or rivets.
- D. Nameplates shall adequately describe the function of the particular equipment involved. Where nameplates are detailed on the drawings, Inscription and size of letters shall be as shown and shop drawing submitted for approval. Nameplates for panelboards and switchboards shall include the panel designation, voltage, phase and wire. For example, "PANEL A. 120/208V, 3PH, 4W". In addition, provide phonetic label in panel to describe where the panel is fed from. For example, "FED FROM MS". The name of the machine on the nameplates for a particular machine shall be the same as the one used on all motor starters, disconnect and push button station nameplates for that machine.
- E. The following Items shall be equipped with nameplates: All motors, motor starters, motor-control centers. Push button stations, control panels, switches, disconnect switches, transformers, panelboards, circuit breakers (i.e. all 2 pole, 3 pole C.B.'s). contractors or relays in separate enclosures, power receptacles where the nominal

voltage between any pair of contacts is greater than 150V, wall switches controlling outlets that are not located within sight of the controlling switch, high voltage boxes and cabinets, large electrical systems Junction and pull boxes (larger than 4 11/16"), terminal cabinets, terminal boards, and equipment racks. Nameplates shall also describe the associated panel and circuit number (if applicable).

F. Stamped metal master nameplates shall be installed on each distribution section, switchboard section, panelboard, and motor control center indicating the board designation, voltage, ampere rating, short-circuit rating, manufacturer's name, general order number, and item number.

2.02 PERMANENT MARKINGS

- A. All conduits at origination and termination ends including j-boxes shall be clearly labeled. All busways, cable trays and pullboxes shall be identified with permanent stenciled black letters and numbers which indicate the source panel (feeder supply source), circuit numbers and designated panel or load. For example, "PA-1, 3, 5 TO MG." For conduits, the letter height shall be one-third (1/3) the conduit size with ½ inch minimum height. For pullboxes and busways, the letter height shall be ½ inch minimum height and not larger than ¾ inch in height.
- B. The identifications for conduits, busways and cable trays shall be placed at every 50 feet intervals and within 10 feet of wall and floor penetrations, pullboxes, panels, distribution boards, switchboards and electrical equipment.
- C. Spare conduits, pullboxes, busways, and abandoned raceways (that are to remain as shown on the drawings) shall be identified as described above (A,B).
- D. The permanent marking identifications on the raceways and pullboxes shall be visible after the installations are made.

2.03 LABELS

A. Labels: Embossed adhesive tape, with 3/16 inch white letters on black background for normal power; white letters on red background for emergency power. Wall and floor mounted device plates for receptacles and switches shall be labeled.

2.04 WIRE MARKERS

- A. Description: Cloth tape, split sleeve, or tubing type wire markers.
- B. Legend:
 - 1. Power and Lighting Circuits: Branch circuit or feeder number as indicated on Drawings.
 - 2. Control Circuits: Control wire number as indicated on drawings.

2.05 CONDUIT AND RACEWAY MARKERS

A. Description: Permanent, detectable, red colored, continuous printed, polyethylene tape with suitable warning legend describing burial electrical lines. Taps shall be minimum 6 inches wide by 4 mils thick.

B. Color:

- 1. Conduit Labels:
 - a. Medium Voltage System (Normal Power): Black lettering on white background;
 - b. Medium Voltage System (Emergency Power): White lettering on red background.
 - c. 480 Volt System: Black lettering on white background for normal power; white lettering on red background for emergency power.
 - d. 208 Volt System: Black lettering on white background for normal power; white lettering on red background for emergency power.
- 2. Normal Power Conduit Color: No Color (plain silver).
- 3. Emergency Power Conduit Color: Orange.

C. Legend:

- 1. Medium Voltage System: HIGH VOLTAGE.
- 2. 480 Volt System: 480 VOLTS.
- 3. 208 Volt System: 208 VOLTS.

2.06 UNDERGROUND WARNING TAPE

A. Description: 6 inch wide plastic tape, detectable type, colored red with suitable warning legend describing buried electrical lines.

2.07 LOCKOUT DEVICES

- A. Lockout Hasps:
 - 1. Anodized aluminum hasp with erasable label surface; size minimum 7-1/4 x 3 inches.

PART 3 EXECUTION

3.01 PREPARATION

A. Degrease and clean surfaces to receive adhesive for identification materials.

3.02 INSTALLATION

- A. Install identifying devices after completion of painting.
- B. Nameplate Installation:
 - 1. Install nameplate parallel to equipment lines.

- 2. Install nameplate for each electrical distribution and control equipment enclosure with corrosive-resistant mechanical fasteners.
- 3. Install nameplates for each control panel and major control components located outside panel with corrosive-resistant mechanical fasteners.
- 4. Secure nameplate to equipment front using screws, or rivets.
- 5. Secure nameplate to inside surface of door on recessed panelboard in finished locations.
- 6. Install nameplates for the following:
 - a. Switchgear.
 - b. Switchboards.
 - c. Panelboards.
 - d. Transformers.
 - e. Disconnect Switches
 - f. Pushbutton Stations,
 - g. Terminal Cabinets.
 - h. Control Panels.
 - i. Enclosed circuit breakers.
 - j. Enclosed Controllers.
 - k. Variable-Frequency Controllers.

C. Label Installation:

- 1. Install label parallel to equipment lines.
- 2. Install label for identification of individual control device stations.
- 3. Install labels for permanent adhesion and seal with clear lacquer.

D. Wire Marker Installation:

- 1. Install wire marker for each conductor at panelboard gutters; pull boxes, outlet and junction boxes, and each load connection.
- 2. Mark data cabling at each end. Install additional marking at accessible locations along the cable run.
- 3. Install labels at data outlets identifying patch panel and port designation as indicated on Drawings.

- E. Underground Warning Tape Installation:
 - 1. Install underground warning tape along length of each underground conduit, raceway, or cable 6 to 8 inches below finished grade, directly above buried conduit, raceway, or cable.
 - 2. The following color code prevails for all all branch circuit and feeders(Numbers in parenthesis indicate system voltages):
- F. Neutral/White (120/208), Ground/Green, Neutral/Gray (277/480) and Phase A/Black (120/208)/Brown (480/277), Phase B/Red (120/208)/Yellow (480/277), Phase C/Blue (120/208)/Purple (480/277), three-way travelers/Orange, switch legs same color as phase leg.

END OF SECTION

SECTION 26 05 83

WIRING CONNECTIONS

PART 1 GENERAL

1.01 RELATED REQUIREMENTS

A. Section 26 28 16 - Enclosed Switches.

PART 2 PRODUCTS

2.01 MATERIALS

A. Disconnect Switches: As specified in Section 26 28 16 and in individual equipment sections.

2.02 EQUIPMENT CONNECTIONS

PART 3 EXECUTION

3.01 ELECTRICAL CONNECTIONS

- A. Make electrical connections in accordance with equipment manufacturer's instructions.
- B. Make conduit connections to equipment using flexible conduit. Use liquidtight flexible conduit with watertight connectors in damp or wet locations.
- C. Connect heat producing equipment using wire and cable with insulation suitable for temperatures encountered.
- D. Provide receptacle outlet to accommodate connection with attachment plug.
- E. Provide cord and cap where field-supplied attachment plug is required.
- F. Install suitable strain-relief clamps and fittings for cord connections at outlet boxes and equipment connection boxes.
- G. Install disconnect switches, controllers, control stations, and control devices to complete equipment wiring requirements.
- H. Install terminal block jumpers to complete equipment wiring requirements.
- I. Install interconnecting conduit and wiring between devices and equipment to complete equipment wiring requirements.

END OF SECTION

Wiring Connections 26 05 83 - 1

SECTION 26 24 16

PANELBOARDS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Power distribution panelboards.
- B. Overcurrent protective devices for panelboards.

1.02 RELATED REQUIREMENTS

- A. Section 26 05 26 Grounding and Bonding for Electrical Systems.
- B. Section 26 05 53 Identification for Electrical Systems: Identification products and requirements.

1.03 REFERENCE STANDARDS

- A. NEMA 250 Enclosures for Electrical Equipment (1000 Volts Maximum).
- B. NFPA 70 National Electrical Code.
- C. UL 50 Enclosures for Electrical Equipment, Non-Environmental Considerations.
- D. UL 50E Enclosures for Electrical Equipment, Environmental Considerations.
- E. UL 67 Panelboards.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordination:

- 1. Coordinate the work with other trades to avoid placement of ductwork, piping, equipment, or other potential obstructions within the dedicated equipment spaces and working clearances for electrical equipment required by NFPA 70.
- 2. Coordinate arrangement of electrical equipment with the dimensions and clearance requirements of the actual equipment to be installed.
- 3. Verify with manufacturer that conductor terminations are suitable for use with the conductors to be installed.
- 4. Notify Architect of any conflicts with or deviations from Contract Documents. Obtain direction before proceeding with work.

1.05 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

Panelboards 26 24 16 - 1

- B. Product Data: Provide manufacturer's standard catalog pages and data sheets for panelboards, enclosures, overcurrent protective devices, and other installed components and accessories.
- C. Shop Drawings: Indicate outline and support point dimensions, voltage, main bus ampacity, overcurrent protective device arrangement and sizes, short circuit current ratings, conduit entry locations, conductor terminal information, and installed features and accessories.
 - 1. Include dimensioned plan and elevation views of panelboards and adjacent equipment with all required clearances indicated.
 - 2. Include wiring diagrams showing all factory and field connections.
 - 3. Clearly indicate whether proposed short circuit current ratings are fully rated or, where acceptable, series rated systems.
 - 4. Include documentation of listed series ratings upon request.
 - 5. Identify mounting conditions required for equipment seismic qualification.
- D. Manufacturer's Installation Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, and installation of product.
- E. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
 - 1. See Section 01 60 00 Product Requirements, for additional provisions.
 - 2. Panelboard Keys: Two of each different key.

1.06 QUALITY ASSURANCE

A. Comply with requirements of NFPA 70.

PART 2 PRODUCTS

2.01 PANELBOARDS - GENERAL REQUIREMENTS

- A. Provide products listed, classified, and labeled as suitable for the purpose intended.
- B. Unless otherwise indicated, provide products suitable for continuous operation under the following service conditions:
 - 1. Altitude: Less than 6,600 feet.
 - 2. Ambient Temperature:
- C. Short Circuit Current Rating:
- D. Mains: Configure for top or bottom incoming feed as indicated or as required for the installation.

Panelboards 26 24 16 - 2

- E. Branch Overcurrent Protective Devices: Replaceable without disturbing adjacent devices.
- F. Bussing: Sized in accordance with UL 67 temperature rise requirements.
 - 1. Provide solidly bonded equipment ground bus in each panelboard, with a suitable lug for each feeder and branch circuit equipment grounding conductor.
- G. Conductor Terminations: Suitable for use with the conductors to be installed.
- H. Enclosures: Comply with NEMA 250, and list and label as complying with UL 50 and UL 50E.
 - 1. Environment Type per NEMA 250: Unless otherwise indicated, as specified for the following installation locations:
 - 2. Boxes: Galvanized steel unless otherwise indicated.
 - a. Provide wiring gutters sized to accommodate the conductors to be installed.
 - 3. Fronts:
 - 4. Lockable Doors: All locks keyed alike unless otherwise indicated.
- I. Future Provisions: Prepare all unused spaces for future installation of devices including bussing, connectors, mounting hardware and all other required provisions.

2.02 OVERCURRENT PROTECTIVE DEVICES

END OF SECTION

Panelboards 26 24 16 - 3

SECTION 26 28 16

ENCLOSED SWITCHES AND CIRCUIT BREAKERS

PART 1 GENERAL

1.01 SUMMARY

- A. Section Includes:
 - 1. Fusible switches.
 - 2. Nonfusible switches.
 - 3. Shunt trip switches.
 - 4. Enclosures.

1.02 **DEFINITIONS**

- A. NC: Normally closed.
- B. NO: Normally open.
- C. NEMA: National Electrical Manufacturers Association
- D. NETA: InterNational Electrical Testing Association.
- E. OCPD: Over Current Protective Device
- F. SPDT: Single pole, double throw.
- G. UL: Underwriter Laboratories.

1.03 PERFORMANCE REQUIREMENTS

- A. Seismic Performance: Enclosed switches and circuit breakers shall withstand the effects of earthquake motions determined according to ASCE/SEI 7.
 - 1. The term "withstand" means "the unit will remain in place without separation of any parts from the device when subjected to the seismic forces specified."

1.04 ACTION SUBMITTALS

- A. Product Data: For each type of enclosed switch, circuit breaker, accessory, and component indicated. Include dimensioned elevations, sections, weights, and manufacturers' technical data on features, performance, electrical characteristics, ratings, accessories, and finishes.
 - 1. Enclosure types and details for types other than NEMA 250, Type 1.
 - 2. Current and voltage ratings.

- 3. Short-circuit current ratings (interrupting and withstand, as appropriate).
- 4. Include evidence of UL listing for series rating of installed devices if such devices are specified.
- 5. Detail features, characteristics, ratings, and factory settings of individual overcurrent protective devices, accessories, and auxiliary components.
- 6. Include time-current coordination curves (average melt) for each type and rating of overcurrent protective device; include selectable ranges for each type of overcurrent protective device.
- 7. Include ISO certification.
- B. Shop Drawings: For enclosed switches and circuit breakers. Include plans, elevations, sections, details, and attachments to other work.
 - 1. Wiring Diagrams: For power, signal, and control wiring. Differentiate between manufacturer installed and field installed wiring.

1.05 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer and testing agency.
- B. Seismic Qualification Certificates: For enclosed switches and circuit breakers, accessories, and components, from manufacturer.
 - 1. Basis for Certification: Indicate whether withstand certification is based on actual test of assembled components or on calculation.
 - 2. Dimensioned Outline Drawings of Equipment Unit: Identify center of gravity and locate and describe mounting and anchorage provisions.
 - 3. Detailed description of equipment anchorage devices on which the certification is based and their installation requirements.
- C. Field quality-control reports.
 - 1. Test procedures used.
 - 2. Test results that comply with requirements.
 - 3. Results of failed tests and corrective action taken to achieve test results that comply with requirements.
- D. Manufacturer's field service report.

1.06 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For enclosed switches and circuit breakers to include in emergency, operation, and maintenance manuals. In addition to operation and maintenance data items specified in Section 01 78 00 - CLOSE-OUT SUBMITTALS, include the following:

- 1. Manufacturer's written instructions for testing and adjusting enclosed switches and circuit breakers.
- Time-current coordination curves (average melt) for each type and rating of overcurrent protective device; include selectable ranges for each type of overcurrent protective device.

1.07 QUALITY ASSURANCE

- A. American made products have been acceptable to OCTA. If non-domestic products are submitted, notice is hereby given that extensive testing shall be required to ensure quality and conformance to the Specifications. Testing shall be done by a recognized lab acceptable to OCTA and all tests shall be witnessed by OCTA. Testing procedures and test results shall be satisfactory to OCTA. Contractor shall be responsible for arranging the tests, transportation, food and lodging for, at minimum, OCTA, to witness the test at the testing lab. Include all costs for the above in the Contract price.
- B. Contractor shall ensure that the manufacturer has a minimum of 15 years experience in the production of switches and circuit breakers similar to the type and size specified in this project.
- C. Manufacturer shall have ISO 9001 Certification.
- D. Manufacturer shall have ability to readily provide replacement parts for a minimum period of ten (10) years, from the date of completion of the project. Furnish a letter from the manufacturer confirming the availability.
- E. Switches and circuit breakers shall be assembled at the manufacturer's own manufacturing facility using its own major components (e.g., trip units) for the assembly. These devices shall be normally carried by the manufacturer as standard catalog items.
- F. Provide certified test reports of shake table test done by manufacturer on similar units.
- G. Materials and equipment shall be new, modern in design and shall not have been in prior service except as required by factory tests. Switches and circuit breakers shall be manufactured within six months of installation.
- H. Source Limitations: Obtain Switches, circuit breakers, overcurrent protective devices, components, and accessories, within same product category, through one source from a single manufacturer through a local distributor unless otherwise noted. All power distribution equipment shall be of the same manufacturer.
- I. Comply with NFPA 70.
- J. Installer Qualifications: An employer of workers qualified as defined in NEMA PB 2.1 and trained in electrical safety as required by NFPA 70E.
- K. Product Options: Drawings indicate size, profiles, and dimensional requirements of switches and circuit breakers and are based on the specific system indicated. Refer to Part 2 "Product Requirements."

- L. Electrical Components, Devices, and Accessories: UL Listed and labeled as defined in NFPA 70, Article 100 and marked for intended location and application.
- M. Testing Agency Qualifications: Member of NETA;
 - Testing agency shall be an independent company; shall have been a member of NETA for a minimum of last ten (10) years and has permanent in-house testing engineers and technicians involved with testing of OCPDs, switches and breakers similar to those specified on this project.
 - 2. Testing company shall be located with 50 miles radius of the project.
 - 3. Testing Agency's Field Supervisor: Currently certified by NETA to supervise onsite testing to supervise on-site testing specified in Part 3.
 - 4. Field Testing technician and supervisor shall have minimum ten (10) years experience in field testing of switches and circuit breakers similar to the type and rating specified on this project.
- N. Product Selection for Restricted Space: Drawings indicate maximum dimensions for switches and circuit breakers including minimum clearances between adjacent surfaces and other items. Comply with indicated maximum dimensions.

1.08 PROJECT CONDITIONS

- A. Environmental Limitations: Rate equipment for continuous operation under the following conditions unless otherwise indicated:
 - 1. Ambient Temperature: Not less than minus 22 deg F and not exceeding 104 deg F.
 - 2. Altitude: Not exceeding 6600 feet.
- B. Interruption of Existing Electric Service: Do not interrupt electric service to facilities occupied by OCTA unless permitted under the following conditions and then only after arranging to provide temporary electric service according to requirements indicated:
 - 1. Notify OCTA no fewer than sixty days in advance of proposed interruption of electric service.
 - 2. Indicate method of providing temporary electric service.
 - 3. Do not proceed with interruption of electric service without OCTA's written permission.
 - 4. Comply with NFPA 70E.

1.09 COORDINATION

A. Coordinate layout and installation of switches, circuit breakers, and components with equipment served and adjacent surfaces. Maintain required workspace clearances and required clearances for equipment access doors and panels.

PART 2 PRODUCTS

2.01 FUSIBLE SWITCHES

- A. Manufacturers: Provide products by one of the following manufacturers:
 - 1. Square D; a brand of Schneider Electric
 - 2. Eaton Electrical Inc.; Cutler-Hammer Business Unit.
 - 3. General Electric Company; GE Consumer & Industrial Electrical Distribution.
 - 4. Siemens Energy & Automation, Inc.
- B. Type HD, Heavy Duty, Single Throw, 600-V ac, 1200 A and Smaller: UL 98 and NEMA KS 1, horsepower rated, with clips or bolt pads to accommodate indicated fuses, lockable handle with capability to accept three padlocks, and interlocked with cover in closed position.
- C. Switches shall be padlockable in open or closed position based on application requirements indicated on the drawings.

D. Accessories:

- 1. Equipment Ground Kit: Internally mounted and labeled for copper and aluminum ground conductors.
- 2. Neutral Kit: Internally mounted; insulated, capable of being grounded and bonded; labeled for copper and aluminum neutral conductors.
- 3. Class R Fuse Kit: Provides rejection of other fuse types when Class R fuses are specified.
- 4. Lugs: Mechanical type, suitable for number, size, and conductor material.
- 5. Service-Rated Switches: Labeled for use as service equipment.

2.02 NONFUSIBLE SWITCHES

- A. Manufacturers: Provide products by one of the following manufacturers:
 - 1. Square D; a brand of Schneider Electric
 - 2. Eaton Electrical Inc.; Cutler-Hammer Business Unit.
 - 3. General Electric Company; GE Consumer & Industrial Electrical Distribution.
 - 4. Siemens Energy & Automation, Inc.
- B. Type HD, Heavy Duty, Single Throw, 600-V ac, 1200 A and Smaller: UL 98 and NEMA KS 1, horsepower rated, lockable handle with capability to accept three padlocks, and interlocked with cover in closed position.

C. Accessories:

- 1. Equipment Ground Kit: Internally mounted and labeled for copper and aluminum ground conductors.
- 2. Neutral Kit: Factory installed internally mounted; insulated, capable of being grounded and bonded; labeled for copper and aluminum neutral conductors.
- 3. Lugs: Mechanical type, suitable for number, size, and conductor material.

2.03 MOLDED-CASE CIRCUIT BREAKERS

- A. Manufacturers: Provide products by one of the following manufacturers:
 - 1. Square D; a brand of Schneider Electric
 - 2. Eaton Electrical Inc.; Cutler-Hammer Business Unit.
 - 3. General Electric Company; GE Consumer & Industrial Electrical Distribution.
 - 4. Siemens Energy & Automation, Inc..
- B. General Requirements: Comply with UL 489, NEMA AB 1, and NEMA AB 3, fully rated with interrupting capacity to comply with available fault currents.
- C. Thermal-Magnetic Circuit Breakers: Inverse time-current element for low-level overloads and instantaneous magnetic trip element for short circuits. Adjustable magnetic trip setting for circuit-breaker frame sizes 250 A and larger.
- D. Adjustable, Instantaneous-Trip Circuit Breakers: Magnetic trip element with front-mounted, field-adjustable trip setting.
- E. Electronic Trip Circuit Breakers: Use for 400A frame size and above. Field-replaceable rating plug, rms sensing, with the following field-adjustable settings:
 - 1. Instantaneous trip.
 - 2. Long- and short-time pickup levels.
 - 3. Long- and short-time time adjustments.
 - 4. Ground-fault pickup level, time delay, and I2t response.
- F. Current-Limiting Circuit Breakers: Frame sizes 400 A and smaller, and let-through ratings less than NEMA FU 1, RK-5.
- G. Ground-Fault, Circuit-Interrupter (GFCI) Circuit Breakers: Single- and two-pole configurations with Class A ground-fault protection (6-mA trip).
- H. Ground-Fault, Equipment-Protection (GFEP) Circuit Breakers: With Class B ground-fault protection (30-mA trip).
- I. Features and Accessories:

- 1. Standard frame sizes, trip ratings, and number of poles.
- 2. Lugs: Mechanical type, suitable for number, size, trip ratings, and conductor material.
- 3. Application Listing: Appropriate for application; Type SWD for switching fluorescent lighting loads; Type HID for feeding fluorescent and high-intensity discharge lighting circuits.
- 4. Ground-Fault Protection: Comply with UL 1053; integrally mounted, self-powered type with mechanical ground-fault indicator; relay with adjustable pickup and time-delay settings, push-to-test feature, internal memory, and shunt trip unit; and three-phase, zero-sequence current transformer/sensor.
- 5. Communication Capability: Circuit-breaker-mounted communication module with functions and features compatible with power monitoring and control system.
- 6. Shunt Trip: Trip coil energized from separate circuit, with coil-clearing contact.
- 7. Undervoltage Trip: Set to operate at 35 to 75 percent of rated voltage without intentional time delay.
- 8. Auxiliary Contacts: One SPDT switch with "a" and "b" contacts; "a" contacts mimic circuit-breaker contacts, "b" contacts operate in reverse of circuit-breaker contacts.
- 9. Alarm Switch: One NO and NC contact that operates only when circuit breaker has tripped.
- 10. Key Interlock Kit: Externally mounted to prohibit circuit-breaker operation; key shall be removable only when circuit breaker is in off position.
- 11. Electrical Operator: Provide remote control for on, off, and reset operations.
- 12. Accessory Control Power Voltage: Integrally mounted, self-powered;.

2.04 ENCLOSURES

- A. Enclosed Switches and Circuit Breakers: NEMA AB 1, NEMA KS 1, NEMA 250, and UL 50, to comply with environmental conditions at installed location.
 - 1. Indoor, Dry and Clean Locations: NEMA 250, Type 1.
 - 2. Outdoor Locations: NEMA 250, Type 3R.
 - 3. Other Wet or Damp, Indoor Locations: NEMA 250, Type 4.
 - 4. Indoor Locations Subject to Dust, Falling Dirt, and Dripping Noncorrosive Liquids: NEMA 250, Type 12.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine elements and surfaces to receive enclosed switches and circuit breakers for compliance with installation tolerances and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION

- A. Install individual wall-mounted switches and circuit breakers with tops at uniform height unless otherwise indicated. Haximum height above finished floor to the center of the grip of device operating handle in its highest position shall be 6'-6"unless lower height is required per CEC 110.
- B. Comply with mounting and anchoring requirements specified in Section 260548 "Vibration and Seismic Controls for Electrical Systems."
- C. Temporary Lifting Provisions: Remove temporary lifting eyes, channels, and brackets and temporary blocking of moving parts from enclosures and components.
- D. Install fuses in fusible devices.
- E. Comply with NECA 1.

3.03 <u>IDENTIFICATION</u>

- A. Comply with requirements in Section 260553 "Identification for Electrical Systems."
 - 1. Identify field-installed conductors, interconnecting wiring, and components; provide warning signs.
 - 2. Label each enclosure with laminated-plastic nameplate.

3.04 FIELD QUALITY CONTROL

- A. Testing Agency: Engage a qualified testing agency to perform tests and inspections.
- B. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect, test, and adjust components, assemblies, and equipment installations, including connections.
- C. Perform tests and inspections.
 - 1. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect components, assemblies, and equipment installations, including connections, and to assist in testing.
- D. Acceptance Testing Preparation:

- 1. Test insulation resistance for each enclosed switch and circuit breaker, component, connecting supply, feeder, and control circuit.
- 2. Test continuity of each circuit.

E. Tests and Inspections:

- Perform each visual and mechanical inspection and electrical test stated in latest NETA Acceptance Testing Specification. Certify compliance with test parameters.
- 2. Correct malfunctioning units on-site, where possible, and retest to demonstrate compliance; otherwise, replace with new units and retest.
- 3. Perform the following infrared scan tests and inspections and prepare reports:
 - a. Initial Infrared Scanning: After Substantial Completion, but not more than 60 days after Final Acceptance, perform an infrared scan of each enclosed switch and circuit breaker. Remove front panels so joints and connections are accessible to portable scanner.
 - Follow-up Infrared Scanning: Perform an additional follow-up infrared scan of each enclosed switch and circuit breaker 11 months after date of Substantial Completion.
 - c. Instruments and Equipment: Use an infrared scanning device designed to measure temperature or to detect significant deviations from normal values. Provide calibration record for device.
- 4. Test and adjust controls, remote monitoring, and safeties. Replace damaged and malfunctioning controls and equipment.
- F. Enclosed switches and circuit breakers will be considered defective if they do not pass tests and inspections.
- G. Prepare test and inspection reports, including a certified report that identifies enclosed switches and circuit breakers and that describes scanning results. Include notation of deficiencies detected, remedial action taken, and observations after remedial action.

3.05 ADJUSTING

- A. Adjust moving parts and operable components to function smoothly, and lubricate as recommended by manufacturer.
- B. Set field-adjustable circuit-breaker trip ranges.

END OF SECTION

SECTION 28 10 00

ACCESS CONTROL

PART 1 GENERAL

1.01 **SUMMARY**

A. Project Intent:

- 1. The intent of this document is to specify the minimum criteria for the supply and installation of the access control systems at the OCTA Maintenance Facilities at Anaheim, Garden Grove, and Santa Ana Bus Bases.
- The existing primary electronic access control system is a Lenel OnGuard Access Control system
- 3. All electronic access control devices/systems will communicate through this primary existing system.
- 4. The electronic access control devices/systems include Nedap Transit Ultimate Long Range Reader, HID iCLASS R40 Readers, Zenitel TMIV+ Turbine Mini Video Intercom and ITSV-3 Video Desktop Intercom Station.

1.02 SYSTEM DESCRIPTION

- A. General Requirements
 - 1. The specified units shall be of manufacturer's official product line, designed for commercial and/or industrial 24/7/365 use.
 - 2. The specified units shall be based upon standard components and proven technologies.
- B. Sustainability
 - 1. The specified unit shall be manufactured in accordance with ISO 9001.

1.03 SUBMITTALS

- A. Product Data: Access control system units.
- B. Shop Drawings:
 - 1. Hardware and equipment locations.
 - 2. Block diagram and cable/conduit routing.
 - 3. System communications details.
 - 4. Hardware and equipment installation details.

- C. Installer qualification data.
- D. Field quality control reports.
- E. Operation and maintenance data.

1.04 QUALITY ASSURANCE

- A. The contractor or security sub-contractor shall be a licensed access control Contractor with a minimum of five (5) years' experience installing and servicing systems of similar scope and complexity and evidence that is completed at least three (3) projects of similar design and is currently engaged in the installation and maintenance of systems herein described.
- B. All installation, configuration, setup, program, and related work shall be performed by electronic technicians thoroughly trained by the manufacturers in the installation and service of the equipment provided.
- C. The contractor or designated sub-contractors shall submit credentials of completed manufacturer certification, verified by a third-party organization, as proof of the knowledge.
- D. The entire electronic access control system shall be installed and commissioned by the approved vendors for each of the three devices/systems to assure functionality and compliance with the various vendors installation requirements.
- E. The vendors shall be required to train and instruct client's personnel in the correct use, operation, maintenance, and supervision of the devices/systems prior to the handing over of the project.
- F. The Contractor shall be responsible for inspection and Quality Assurance (QA) for all materials and workmanship.
- G. The Contractor's or subcontractor's main resources within the project shall carry proper professional certification issued by the manufacturers and verified by a third-party organization to confirm sufficient product and technology knowledge.
- H. The Contractor shall carefully follow instructions in documentation provided by the manufacturers to ensure all steps have been taken to provide a reliable, easy-to-operate system functioning as detailed in the specifications and drawings.
- I. All equipment shall be tested and configured in accordance with instructions provided by the manufacturers prior to installation.
- J. All firmware found in products shall be the latest and most up-to-date version as specified by the manufacturers or by the product component providers.

- K. All equipment requiring users to log on using a password shall be configured with user/site-specific password/passwords. No system/product default passwords shall be allowed.
- L. A proper installation shall meet NEC (National Electrical Code US only) per the guidelines of that year's revision. When properly installed, equipment meets Low Voltage, Class 2 classification of the NEC.
- M. Contractor's scope shall design and installation of complete power distribution to support the devices/systems including complete cabling work, dedicated patch panels, and required electrical accessories with suitable protection devices from UPS and UPS output to devices/systems.

1.05 WARRANTY

- A. HID The manufacturer shall provide a five (5) year limited hardware warranty for product that is free from defects in design, workmanship, and materials under substantiated normal use. Defective products under the warranty period will be either repaired or replaced by the manufacturer.
- B. Nedap The manufacturer shall provide a two (2) year hardware warranty for product that is free from defects in design, workmanship, and materials under substantiated normal use, and Software against errors and defects in materials and workmanship for three (3) months from the date of delivery. Defective products under the warranty period will be either repaired or replaced by the manufacturer.
- C. Zenitel The manufacturer shall provide a hardware warranty of 36 (thirty-six) months after shipment date.

PART 2 PRODUCTS

2.01 GENERAL:

A. The products shall comply with established network and standards.

2.02 ACCESS CONTROL SYSTEMS SCHEDULE:

A. The product or product types listed below shall be supplied by the designated manufacturer. <u>No substitutions are allowed</u> as these devices/systems integrate with existing systems at each site.

2.03 HID READERS:

- A. Contactless Smart Card Reader
 - 1. The intent of this product is to allow the activation of the access control system and gate controller by a pedestrian or from a vehicle. The card readers are to

be integrated into the existing Lenel OnGuard access control system. Substitutions are not allowed. The specified product shall meet or exceed the following design specifications:

2. HID iCLASS SE R40

- 3. The iCLASS SE® R40 is part of HID Global's iCLASS SE platform for adaptable, interoperable access control. Designed for door applications requiring standard wall switch mounting, iCLASS SE® R40 supports a broad array of credential technologies and a variety of form factors, including cards, fobs and mobile devices. Configurable to support HID Mobile Access®.
 - Adjustable read settings control overall power and read range of Mobile IDs, enabling flexibility for both close-proximity "tap" and long-range "Twist and Go" distances.
 - b. Read settings administered using mobile phone during installation.
 - c. Directional antenna enables long- range reading distances of up to 6.6' in correct orientation in front of the reader and not behind it.

B. Long Range Electronic Card Reader

- The intent of this product is to allow the activation of the access control system and gate controller from a distance. The card readers are to be integrated into the existing Lenel OnGuard access control system. Substitutions are not allowed. The specified product shall meet or exceed the following design specifications:
 - a. Nedap Transit Ultimate
 - b. The long-range electronic access control card (credential) reader shall be a Nedap Transit Ultimate designed for secure parking and gate control. It shall provide discreet hands-free authentication for long range parking and gate control and be field configurable via a full user interface for ease of maintenance. It shall support RFID tags and shall have a unique 128-bit encryption key. Upon activation, the tag shall transmit its tag ID to the reader for five seconds only.
 - 1) Operating Frequency: 2.438 2.457 GHz, 433.62 & 434.22 MHz (RX-Cat 3) Ton <5sec.
 - 2) Typical Maximum Range of up to 15 meters (50 ft.).
 - 3) Input: 100-240 VAC, 0.3-0.6A (50 60 Hz) or 24 VDC, 0.7A; Output 24Vdc, 0.1A

- 4) Operating Temperature of -22° to 140° F (-30° to 60° C)
- 5) Communication interfaces: RS232 (default, standard included), RS422, RS485, HID Interface Board (HIB) and TCP/IP. Open industry standards protocols such as Wiegand and OSDP are supported.
- 5) Card Compatibility RFID

2.04 ZENITEL INTERCOM SYSTEM:

- A. Intercom System
 - 1. IP TOUCH SCREEN DESK MASTER. Desk master station equipped with 7" (1024×600) capacitive 5-point touch screen TFT LCD video display. Uses Android based OS system user interface that is very intuitive, familiar and easy to use. Station supports H.264 HD or MJPEG video, G.722 & G.729 audio codecs. Capable of Video Conference with other ITSV-3's, Call Forwarding, Call Queuing and Multicast. Provides wired LAN connection to network as well as Bluetooth capability for wireless headset along with WIFI connectivity if needed. DAK key shortcuts can be stored on the touchscreen for quick dialing of stations or features. Connection is to a PoE switch or power injector. Shall be ITSV-3 #1490003010.



1490003010

2. TURBINE MINI IP VIDEO SUBSTATION. This station is designed for indoor use, has a rating of IP42 with features such as HD video, wideband audio (7kHz), white thermoplastic front plate with one button, active noise cancellation, digital MEMS microphone and Class D amplifier. Station supports PoE and has an integrated web server. Sound detection is a standard software feature included with the station. Station is constructed of a robust die-cast aluminum frame. TMIV-1+ Station shall mount into a surface back box #1008140120 or flush mount 2-gang electrical back box #1008140020. Shall be TMIV-1+ #1008117010.



1008117010

3. Accessories

a. IP LINE CONTROL MODULE. The IP Line Connection Module has all TKIS-2 features available and in addition 8 relay outs and 8 control inputs. Power is via PoE or local power and unit use push in connections. Shall be IP-LCM-A #1008095201.



1008095201

b. FLOWIRE CONVERTER UNIT. This unit enables Ethernet to run on the same two wires as power, providing the ability to reuse existing wire infrastructure and allows IP devices to run over long distances. Single pair of wire provides necessary power and data to IP device. Shall be FCDC3 #1008080310.



1008080310

c. Other Components

- 1) VS-Client:
 - (a) Basis of Design: Zenitel Intercom Client; as manufactured by
 - (b) Description: Control room operator or office intercom client for the PC.

- (c) Provides Turbine-class audio with echo cancellation and noise reduction.
- (d) Compatible with Windows 7, 8, or 10.
- (e) User License, Model 1009661101: 1 user license.
- (f) User Licenses, Model 1009661106: 6 user licenses.

4. Software

 IC-EDGE Mobile App (IE-MOBL): 1009666000. Extends your IC-Edge system to a mobile device. Up to 10 Zenitel Mobiles can connect to an IC-Edge system.

PART 3 EXECUTION

3.01 INSTALLATION:

- A. Supply, install, test and commission high quality access control system (ACS) along with software, power supply, power distribution and required accessories throughout the Project facilities per technical specifications and drawings.
- B. Integrated testing and commissioning of ACS on LAN to be provided by Contractor.
- C. Training & handing over of all materials, manuals, spare parts, equipment, and appliances.
- D. Some information, such as exact equipment layout, wire routing, additional conduit and power requirements, etc. has been omitted. It shall be the responsibility of the Contractor to translate these specifications and drawings into a complete design package containing all necessary elements for a complete turnkey installation including all material, labor, warranties, shipping, and permits. The contractor shall provide all materials, equipment, labor and all other incidental material, tools, appliances, and transportation as required for a complete and functional electronic access control system which physically connects to the existing OCTA Lenel OnGuard system.
- E. Provide continuous on-site supervision of the installation technicians. On-site supervision shall include daily supervision of the work, updating work site progress drawings to reflect changes and installations details, preparing weekly progress reports and attendance at site coordination meetings as directed by OCTA.
- F. Provide continuous engineering and programming support during the installation as required to accommodate existing conditions and unforeseen conditions that may arise during performance of the work.
- G. Provide all miscellaneous hardware including cable management devices, termination cabinets, wire and cable labeling materials, fasteners, hangers and brackets as required.

- H. Coordinate the delivery and storage of all materials, wire, cable_equipment and miscellaneous hardware.
- Omission of any item from the specifications or drawings does not absolve the contractor from providing a complete and functioning electronic access control system.
- J. Disposal of any and all materials resulting from the work is the responsibility of the Contractor.

3.02 <u>TESTING</u>

- A. Initial testing: Prior to installation of the system, Contractor shall install Contractor's proposed IP
- B. Component Testing: Maximum reliability shall be achieved through extensive use of high-quality, pretested components. Each and every component shall be individually tested by the manufacturer prior to
- C. Tools, Testing and Calibration Equipment: The supplier shall provide all tools, testing, and calibration equipment necessary to ensure reliability and accuracy of the system.
- D. Commissioning: Contractor and Owner shall review video from each camera to confirm image quality and detail from each location at times that most critical to the Owner for surveillance.
- E. The vendor shall be required to train and instruct client's personnel in the correct use, operation, and supervision of the ACS prior to the handing over of the project.
- F. The supplier shall be responsible for inspection and Quality Assurance (QA) for all materials and workmanship.

END OF SECTION

SECTION 28 21 00

VIDEO SURVEILLANCE CAMERAS

PART 1 GENERAL

1.01 SYSTEM DESCRIPTION

A. General Requirements

- 1. The specified unit shall be of manufacturer's official product line, designed for commercial and/or industrial 24/7/365 use.
- 2. The specified units shall be based upon standard components and proven technology using open and published protocols.

B. Sustainability

- 1. The specified unit shall be manufactured in accordance with ISO 14001.
- 2. The specified unit shall be compliant with the EU directives 2011/65/EU (RoHS) and 2012/19/EU (WEEE).
- 3. The specified unit shall be compliant with the EU regulation 1907/2006 (REACH).
- 4. The specified unit, including all its components, shall not contain any added PVC.
- 5. The manufacturer shall have signed and supported the UN Global Compact initiative as defined by United Nations.

1.02 CERTIFICATIONS AND STANDARDS

- A. General abbreviations and acronyms
 - 1. ABR: Average Bit Rate
 - 2. API: Application Programming Interface
 - 3. Aspect ratio: A ratio of width to height in images
 - 4. Bit Rate: The number of bits/time unit sent over a network
 - 5. Bonjour: Enables automatic discovery of computers, devices, and services on IP networks.
 - 6. DHCP: Dynamic Host Configuration Protocol
 - 7. DNS: Domain Name System
 - 8. EIS: Electronic Image Stabilization
 - 9. FPS: Frames per Second
 - 10. FTP: File Transfer Protocol

- 11. SFTP: Secure File Transfer Protocol
- 12. H.264 (Video Compression Format)
- 13. H.265 (Video Compression Format)
- 14. IEEE 802.1x (EAP-TLS): Authentication framework for network devices
- 15. IP: Internet Protocol
- 16. IR light: Infrared light
- 17. ISO: International Standards Organization
- 18. JPEG: Joint Photographic Experts Group (image format)
- 19. LAN: Local Area Network
- 20. LED: Light-Emitting Diode
- 21. Lux: A standard unit of illumination measurement
- 22. MBR: Maximum Bit Rate
- 23. MPEG: Moving Picture Experts Group
- 24. Multicast: Communication between a single sender and multiple receivers on a network
- 25. NTP: Network Time Protocol
- 26. NTSC: National Television System Committee a color encoding system based on 60Hz
- 27. ONVIF: Global standard for the interface of IP-based physical security products
- 28. PACS: Physical Access Control System
- 29. PAL: Phase Alternating Line a color encoding system based on 50Hz
- 30. PoE: Power over Ethernet (IEEE 802.3af/at) standard for providing power over network cable
- 31. Progressive scan: An image scanning technology which scans the entire picture
- 32. PTZ: Pan/Tilt/Zoom
- 33. QoS: Quality of Service
- 34. RAID: Redundant Array of Independent Disks
- 35. RMD: Radar Motion Detection
- 36. SMTP: Simple Mail Transfer Protocol
- 37. SMPTE: Society of Motion Picture and Television Engineers
- 38. SNMP: Simple Network Management Protocol
- 39. SSL: Secure Sockets Layer
- 40. TCP: Transmission Control Protocol
- 41. TLS: Transport Layer Security

- 42. Unicast: Communication between a single sender and single receiver on a network
- 43. UPnP: Universal Plug and Play
- 44. UPS: Uninterruptible Power Supply
- 45. VBR: Variable Bit Rate
- 46. VMS: Video Management System
- 47. WDR: Wide dynamic range
- B. The specified unit shall carry the following EMC approvals:
 - 1. EN 55032 Class A
 - 2. EN 55024
 - 3. EN/IEC 61000-6-1
 - 4. EN/IEC 61000-6-2
 - 5. FCC Part 15 Subpart B Class A
 - 6. VCCI Class A
 - 7. RCM AS/NZS CISPR 32 Class A
 - 8. ICES-3(A)/NMB-3(A)
 - 9. KCC KN32 Class A
 - 10. KC KN35
- C. The specified unit shall meet the following product safety standards:
 - 1. IEC/EN/UL 60950-22
 - 2. IEC/EN/UL 62368-1
 - 3. IEC/EN 62471
 - 4. IS 13252
- D. The specified unit shall meet relevant parts of the following video standards:
 - 1. SMPTE 296M (HDTV 720p)
 - 2. SMPTE 274M (HDTV 1080p)
 - 3. SMPTE ST 2036-1 (UHDTV)
- E. The specified unit shall meet the following standards:
 - 1. MPEG-4:
 - a. ISO/IEC 14496-10 Advanced Video Coding (H.264)
 - b. ISO/IEC 23008-5 Advanced Video Coding (H.265)

2. Networking:

- a. IEEE 802.3af/802.3at (Power over Ethernet)
- b. IEEE 802.1x (EAP-TLS) (Authentication)
- c. IPv4 (RFC 791)
- d. IPv6 (RFC 2460)
- e. QoS DiffServ (RFC 2475)
- f. NIST SP500-267
- 3. Mechanical Environment:
 - a. IEC/EN 60529 IP66/67
 - b. NEMA 250 Type 4X
 - c. NEMA TS 2 (Subsection 2.2.7-2.2.9)
 - d. IEC/EN 62262 IK10
 - e. IEC 60068-2-1
 - f. IEC 60068-2-2
 - g. IEC 60068-2-6
 - h. IEC 60068-2-14
 - i. IEC 60068-2-27
 - j. IEC 60068-2-78
- 4. Railway environment:
 - a. EN 50121-4
 - b. IEC 62236-4
- 4. Network:
 - a. NIST SP500-267

1.03 **SUBMITTALS**

- A. Product Data: For each type of product indicated. Include dimensions and data on features, performance, electrical characteristics, ratings, and finishes.
- B. Shop Drawings: For video surveillance. Include plans, elevations, sections, details, and attachments to other work.

- Detail equipment assemblies and indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
- 2. Functional Block Diagram: Show single-line interconnections between components for signal transmission and control. Show cable types and sizes.
- C. Installer qualification data.
- D. Design Data: Include an equipment list consisting of every piece of equipment by model number, manufacturer, serial number, location, and date of original installation. Add pretesting record of each piece of equipment, listing name of person testing, date of test, set points of adjustments, name and description of the view of preset positions, description of alarms, and description of unit output responses to an alarm.
- E. Field quality-control reports.
- F. Product Warranty: Sample of special warranty.

1.04 **QUALITY ASSURANCE**

- A. Installer Qualifications: The contractor or security sub-contractor shall be a licensed security Contractor with a minimum of five (5) years' experience installing and servicing systems of similar scope and complexity and evidence that is completed at least three (3) projects of similar design and is currently engaged in the installation and maintenance of systems herein described.
- B. All installation, configuration, setup, program, and related work shall be performed by electronic technicians thoroughly trained by the manufacturer in the installation and service of the equipment provided.
- C. The contractor or designated sub-contractor shall submit credentials of completed manufacturer certification, verified by a third-party organization, as proof of the knowledge.
- D. The specified unit shall be manufactured in accordance with ISO 9001.
- E. The entire system shall be installed and commissioned from a single vendor to assure reliability and continued service.
- F. The vendor shall be required to train and instruct client's personnel in the correct use, operation, and supervision of the system prior to the handing over of the project.
- G. The supplier shall be responsible for inspection and Quality Assurance (QA) for all materials and workmanship.
- H. The contractor's or subcontractor's main resources within the project shall carry proper professional certification issued by the manufacturer and verified by a third-party organization to confirm sufficient product and technology knowledge.

- The contractor shall carefully follow instructions in documentation provided by the manufacturer to ensure all steps have been taken to provide a reliable, easy-tooperate system.
- J. All equipment shall be tested and configured in accordance with instructions provided by the manufacturer prior to installation.
- K. All firmware found in products shall be the latest and most up-to-date version as specified by the manufacturer or by the product component provider.
- L. All equipment requiring users to log on using a password shall be configured with user/site-specific password/passwords. No system/product default passwords shall be allowed.
- M. A proper installation shall meet NEC (National Electrical Code US only) per the guidelines of that year's revision. When properly installed, equipment meets Low Voltage, Class 2 classification of the NEC.
- N. Contractor's scope shall include design and installation of complete power distribution to support the PoE IP CCTV system including complete cabling work, dedicated patch panels per the drawings, and required electrical accessories with suitable protection devices from UPS and UPS output to IP CCTV cameras.

1.05 WARRANTY

A. The manufacturer shall provide a five (5) year limited hardware warranty for product that is free from defects in design, workmanship, and materials under substantiated normal use. Defective products under the warranty period will be either repaired or replaced by the manufacturer.

PART 2 PRODUCTS

2.01 GENERAL:

- A. The product shall be IP-based and comply with established network and video standards.
- B. The product shall be powered by the switch utilizing the network cable. Power injectors (midspans) shall be provided by the contractor when required for proper operation.
- C. The product shall be fully supported by an open and published API (Application Programmers Interface), which shall provide necessary information for integration of functionality into third-party applications.

2.02 VIDEO SURVEILLANCE SCHEDULE:

A. The product or product types listed below describing various resolutions, form-factor, and features shall be supplied by a single manufacturer for video surveillance system.

- B. The product name and model numbers will be as follows:
 - 1. Ultra-high light-sensitive network camera shall be AXIS Q1798–LE
 - 2. Approved substitution Cameras must be AXIS. Alternative AXIS camera models can be proposed to OCTA. All camera system components must be submitted for approval to OCTA in accordance with substitution requirements as set forth in the general provisions of the project manual.

2.03 <u>VIDEO SURVEILLANCE CAMERAS:</u>

- A. Ultra-High Light-Sensitive Network Cameras
 - 1. The specified product shall meet or exceed the following design specifications:
 - a. The product shall operate on an open-source and Linux-based platform and include a built-in web server.
 - b. The product shall be equipped with an IR-sensitive progressive scan megapixel sensor.
 - c. The product shall provide a removable IR-cut filter, providing day/night functionality.
 - d. The product shall be manufactured with a repaintable metal casing.
 - e. The product shall be manufactured with a metal (aluminum) casing.
 - f. The product shall provide local video storage utilizing a microSD/microSDHC/microSDXC memory card expansion.
 - g. The product shall be manufactured with a UV-resistant IP66/IP67, NEMA 250 4X-rated, and IK10 impact-resistant aluminum enclosure with integrated dehumidifying membrane and weathershield with black anti-glare coating.
 - 2. The specified product shall meet or exceed the following performance specifications:
 - a. Illumination
 - 1. The product shall meet or exceed the following illumination specifications:
 - a. Color: 0.03 lux at 50 IRE F1.7
 - b. B/W: 0.006 lux at 50 IRE F1.7
 - c. 0 lux with IR illumination on

b. Resolution

- 1. The product shall be designed to provide video streams in 4K (3840x2160) at up to 30 frames per second (60Hz mode) or 25 frames per second (50Hz mode) using H.264, H265 or Motion JPEG.
- 2. The product shall support video resolutions including:
 - a. 2016x1512 (3 MP, 4:3)
 - b. 3840x2160 (4K Ultra HD)
 - c. 3072x1728 (5 MP, 16:9)
 - d. 2592x1944 (5 MP, 4:3)
 - e. 1920x1080 (HDTV 1080p)
 - f. 1280x720 (HDTV 720p)
- 3. The product shall provide both landscape format (4:3 and 16:9 aspect ratio) as well as corridor format (3:4 and 9:16 aspect ratio).

c. Encoding

- 1. The product shall provide independently configured simultaneous H.264 and Motion JPEG streams.
- 2. The product shall provide configurable compression levels.
- 3. The product shall support standard baseline profile with motion estimation.
- 4. The product shall support motion estimation in H.264/MPEG-4 Part 10/AVC.
- 5. The product shall support the following video encoding algorithms:
 - a. Motion JPEG encoding in a selectable range from 1 up to 25/30 frames per second.
 - b. Baseline Profile H.264 encoding with motion estimation in up to 25/30 frames per second.
 - c. Main Profile H.264 and H.265 encoding with motion estimation and context-adaptive binary arithmetic coding (CABAC) in up to 25/30 frames per second.
 - d. High Profile H.264 encoding with motion estimation up to 25/30 frames per second.
- 6. The product shall in H.264 | H.265 support combining Average Bit Rate (ABR) and Maximum Bit Rate (MBR)

- 7. The product shall be able to deliver predictable storage using Average Bit Rate (ABR) bitrate controlling algorithm based on a bitrate budget and selected retention time.
 - a. The product shall be able to deliver predictable storage using Average Bit Rate (ABR) bitrate controlling algorithm based on a bitrate budget and the selected retention time.
 - 1. The ABR bitrate algorithm, depending on the bitrate budget and the selected retention time, shall adjust the bitrate to meet the bitrate budget over the whole retention time.
 - The ABR algorithm shall have a method to keep the video quality even during busy periods by allowing the current bitrate to be significantly above the configured average bitrate during significant parts of the retention time.
 - b. The product shall in H.264 | H.265 support flexible retention period for Average Bit Rate (ABR) algorithm up to 1 year.
 - c. When using Average Bit Rate (ABR), the product shall keep bitrate history up to at least 30 days.
 - d. The product shall in H.264 | H.265 support reuse of past Average Bit Rate (ABR) history if a stream is disconnected and the product reconnects with the same basic stream parameters.
 - e. When using Average Bit Rate (ABR), the product shall in H.264 | H.265 support multiple parallel stream with independent ABR-history.
 - f. The product shall issue bitrate degradation events when using Average Bit Rate (ABR) if the configuration is predicted to be
 - 1. unrealistic
 - 2. not fulfilling basic quality requirements
 - 3. not fulfilling the bitrate budget.
- 8. The product shall support scene adaptive bitrate control with one of the following capabilities to lower bandwidth and storage:
 - a. Automatic dynamic Region of Interest to reduce bitrate in unprioritized regions in order to lower bandwidth and storage requirements.
 - b. Automatic dynamic Group of Pictures to lower bandwidth and storage requirements
 - c. Automatic dynamic Frames per Second to lower bandwidth and storage requirements

- d. Transmission
 - 1. The product shall allow for video to be transported over:
 - a. HTTP (Unicast)
 - b. HTTPS (Unicast)
 - c. RTP (Unicast & Multicast)
 - d. RTP over RTSP (Unicast)
 - e. RTP over RTSP over HTTP (Unicast)
 - f. SRTP (Unicast & Multicast)
 - 2. The product shall support Quality of Service (QoS) to be able to prioritize traffic.
- e. Image
 - 1. The product shall incorporate automatic and manual white balance.
 - 2. The product shall incorporate an electronic shutter operating in the range of 1/45500 s to 2 s.
 - 3. The product shall incorporate capture mode with the following settings:
 - a. 4K: 25/30 fps (50/60 Hz)
 - b. 3712x2784: 20 fps (50/60 Hz)
 - 4. The product shall incorporate forensic wide dynamic range functionality providing up to 120 dB dynamic range.
 - 5. The product shall support manually defined values for:
 - a. Saturation
 - b. Brightness
 - c. Sharpness
 - d. Contrast
 - 6. The product shall incorporate a function to manually correct barrel distortion by using a slider to correct distortion in the image.
 - 7. The product shall allow for rotation of the image in steps of 90°.
 - 8. The product shall allow for rotation of the image.

- 9. The product shall incorporate a function for Electronic Image Stabilization (EIS) for real-time image stabilization.
- 10. The product shall incorporate automatic defog functionality.

f. Audio

- 1. The product shall support simplex audio:
 - a. Input sources
 - 1. External microphone
 - 2. External microphone (balanced)
 - 3. External line device
 - 4. Digital external line device
 - 5. Ring power technology (with selected microphone models)
 - b. The product shall support automatic gain control.

2. Encoding

- a. The product shall support:
 - 1. AAC LC at 8/16/32/48 kHz
 - 2. LPCM
 - 3. G.711 PCM at 8 kHz
 - 4. G.726 ADPCM at 8 kHz
 - 5. Opus at 8/16/48kHz

g. IR Illumination

1. The product shall be equipped with built-in IR LEDs with a wavelength of 850 nm and adjustable intensity, with a range of reach more than 50 m (164 ft) in a wide field of view and 100 m (328 ft) in a full tele view.

h. User Interface

- 1. Web server
 - a. The product shall contain a built-in web server making video and configuration available to multiple clients in a standard operating system and browser environment using HTTP, without the need for additional software.

b. Optional components downloaded from the product for specific tasks shall be signed by an organization providing digital trust services.

2. Language Specification

a. The product shall provide a function for altering the language of the user interface and shall include support for at least ten different languages.

3. IP addresses

- a. The product shall support both fixed IP addresses and dynamically assigned IP addresses provided by a Dynamic Host Control Protocol (DHCP) server.
- b. The product shall allow for automatic detection of the product based on UPnP and Bonjour when using a computer with an operating system supporting this feature.
- c. The product shall provide support for both IPv4 and IPv6.
- d. The product shall provide support for IPv6 USGv6.

i. Event Functionality

- 1. The product shall be equipped with an integrated event functionality:
 - a. Audio
 - 1. Audio detection
 - b. Device status
 - 1. Operating temperature
 - 2. IP address
 - 3. Network lost
 - 4. Shock detection
 - 5. Storage failure
 - 6. System ready
 - c. Edge storage
 - 1. Recording ongoing
 - 2. Storage disruption

- d. I/O
 - 1. Digital input
 - 2. Manual trigger
 - 3. Virtual inputs
- e. PTZ
 - 1. Malfunctioning
 - 2. Movement
 - 3. Preset position reached
 - 4. Ready
- f. Scheduled and recurring
- g. Video
 - 1. Average bitrate degradation
 - 2. Day-night mode
 - 3. Live stream open
 - 4. Tampering
- 2. Response to triggers shall include event actions:
 - a. Day and night mode
 - b. Defog
 - c. Guard tours
 - d. I/O
 - e. Upload of images and video clips: FTP, HTTP, HTTPS, SFTP, email or network share
 - f. IR illumination
 - g. Send notification: HTTP, HTTPS, TCP, and email
 - h. Overlay text
 - i. Preset positions

- j. Prioritized text
- k. Recordings
- I. SNMP trap messages
- m. WDR mode
- 3. The product shall provide memory for pre- and post-alarm recordings.

j. Edge storage

- 1. The product shall support continuous and event controlled recording to:
 - a. Local memory added to the products MicroSD-card slot
 - b. Network attached storage, located on the local network
- 2. The product shall incorporate encryption functionality for the SD card.
- 3. The product shall be able to detect and notify edge storage disruptions.

k. Protocol

- The product shall incorporate support for at least IPv4, IPv6 USGv6, ICMPv4/ICMPv6, HTTP, HTTPS, HTTP/2, TLS, QoS Layer 3 DiffServ, FTP, SFTP, CIFS/SMB, SMTP, mDNS (Bonjour), UPnP®, SNMP v1/v2c/v3 (MIB-II), DNS/DNSv6, DDNS, NTP, RTSP, RTP, SRTP, TCP, UDP, IGMPv1/v2/v3, RTCP, DHCPv4/v6, SOCKS, SSH, LLDP, CDP, MQTT v3.1.1, Syslog, Link-Local address (ZeroConf).
- 2. The SMTP implementation shall include support for SMTP authentication.

I. Text overlay

- 1. The product shall:
 - a. Provide embedded on-screen text with support for date & time, and a customer-specific text, product name, of at least 45 ASCII characters.
 - b. Provide the possibility to choose different font sizes for embedded on-screen text, and to use white or black text on at least four different backgrounds.
 - c. Provide the ability to manually set up and configure privacy masks to the image.
 - d. Allow for the overlay of a graphical image, such as a logotype, into the image.

m. Security

1. The product shall support the following:

a. Secure web browsing

- 1. The use of HTTPS and TLS, providing the ability to upload signed certificates to encrypt and secure authentication and communication of both administration data and video streams.
- Restrict access to the built-in web server by usernames and passwords at three different levels.

b. Certificate management

 Provide centralized certificate management, with both pre-installed CA certificates and the ability to upload additional CA certificates. The certificates shall be signed by an organization providing digital trust services.

c. Enhanced security features

- 1. The use of signed firmware validates the firmware's integrity before accepting to install it.
- 2. The use of a secure boot process, based on the use of signed firmware, ensures that the product can boot only with authorized firmware.

d. Authentication

- 1. IEEE 802.1X (EAP-TLS) authentication.
- Restrict access to pre-defined IP addresses, commonly known as IP address filtering.
- e. Brute force delay protection

2. Long-Term Supported (LTS) firmware

- a. The manufacturer must provide LTS firmware that only contains corrections for critical bugs, security flaws, and performance issues.
- b. The device should maintain cybersecurity without introducing any significant functional changes or affecting any existing integrations.

n. System integration

- 1. The product shall be fully supported by an open and published API (Application Programmers Interface), which shall provide necessary information for integration of functionality into third-party applications.
- The product shall conform to ONVIF profile G as defined by the ONVIF Organization.

- 3. The product shall conform to ONVIF profile S as defined by the ONVIF Organization.
- 4. The product shall conform to ONVIF profile T as defined by the ONVIF Organization.
- The product shall conform to ONVIF profile M as defined by the ONVIF Organization.

o. Analytics

- 1. The product shall provide a platform allowing the upload of third-party applications into the product.
- The product shall be supplied with preinstalled advanced video analytics capabilities, capable of detecting and classifying humans and vehicles in noncritical indoor and outdoor spaces.

p. Embedded applications

1. The product shall provide a platform allowing the upload of third-party applications into the product.

q. Installation and maintenance

- 1. The product shall be supplied with Windows-based management software which allows the assignment of IP addresses, upgrade of firmware and backup of the products' configuration.
- 2. The product shall support the use of SNMP-based management tools according to SNMP v1, 2c & 3 / MIB-II.
- 3. The product shall allow updates of the software (firmware) over the network, using FTP or HTTP.
- 4. The product shall provide the ability to apply a rectangle of customer-defined number of pixels to the image, which can be used as a pixel counter identifying the size of objects in number of pixels.
- 5. The product shall accept external time synchronization from an NTP (Network Time Protocol) server.
- 6. The product shall store all customer-specific settings in a non-volatile memory that shall not be lost during power cuts or soft reset.
- 7. The product shall provide remote zoom functionality.

r. Access log

- 1. The product shall provide a log file, containing information about the 250 latest connections and access attempts since the unit's latest restart. The file shall include information about the connecting IP addresses and the time of connecting.
- 2. The product shall provide a connection list of all currently connected viewers. The file shall include information about connecting IP address, time of connecting and the type of stream accessed.

s. product diagnostics

- The product shall be equipped with LEDs capable of providing visible status information. LEDs shall indicate the product's operational status and provide information about power, communication with receiver, the network status and the product status.
- 2. The product shall be monitored by a Watchdog functionality, which shall automatically re-initiate processes or restart the unit if a malfunction is detected.
- 3. The product shall send a notification when the unit has rebooted, and all services are initialized.

t. Hardware interfaces

1. Network interface

a. The product shall be equipped with one 10BASE-T/100BASE-TX/1000BASE-T Ethernet-port using an RJ45 connector and shall support auto negotiation of network speed and transfer mode (full and half duplex).

2. Inputs/Outputs

a. The product shall be equipped with two configurable I/O ports, accessible via a removable terminal block. These inputs/outputs shall be configurable to respond to normally open (NO) or normally closed (NC) dry contacts. The output shall be able to provide 12 V DC, 50 mA.

3. Audio

a. The product shall be equipped with one 3.5 mm jack for line/mic input.

4. Power

a. The product shall be equipped with AC and DC power connector.

5. Other

a. The product shall be equipped with IDC punchdown connector.

u. Enclosure

- 1. The product shall:
 - a. Be manufactured with an IP66/IP67-, NEMA250 4X-rated and IK10 impact-resistant aluminum enclosure.
 - b. Be fitted with a dehumidifying membrane.
 - c. Be fitted with a fixed weathershield with black anti-glare coating.

v. Power

- 1. The product shall provide power over Ethernet IEEE 802.3at Type 2 Class 4
 - a. Max: 24.0 W
 - b. Typical: 13.3 W
- 2. 20 28 V DC
 - a. Max: 23.2 W
 - b. Typical: 12.9 W
- 3. 20-24 V AC
 - a. Max: 33.0 VA
 - b. Typical: 19.4 VA

w. Environmental

- 1. The product shall:
 - a. Operate in a temperature range of -40 °C to 60 °C (-40 °F to 140 °F)
 - b. Operate in a humidity range of 10–100% RH (condensing).

PART 3 EXECUTION

3.01 <u>INSTALLATION:</u>

- A. Supply, install, test and commission high quality CCTV surveillance system along with software, power supply, power distribution and required accessories throughout the Project facilities per technical specifications and drawings.
- B. Integrated testing and commissioning of CCTV system on LAN to be provided by Contractor.

- C. Training & handing over of all materials, manuals, spare parts, equipment, and appliances.
- D. Some information, such as exact equipment layout, wire routing, additional conduit and power requirements, etc. has been omitted. It shall be the responsibility of the Contractor to translate these specifications and drawings into a complete design package containing all necessary elements for a complete turnkey installation including all material, labor, warranties, shipping, and permits._The contractor shall provide all materials, equipment, labor and all other incidental material, tools, appliances, and transportation as required for a complete and functional CCTV system which physically connects to the existing OCTA camera system.
- E. Provide continuous on-site supervision of the installation technicians. On-site supervision shall include daily supervision of the work, updating work site progress drawings to reflect changes and installations details, preparing weekly progress reports and attendance at site coordination meetings as directed by OCTA.
- F. Provide continuous engineering and programming support during the installation as required to accommodate existing conditions and unforeseen conditions that may arise during performance of the work.
- G. Provide all miscellaneous hardware including cable management devices, termination cabinets, wire and cable labeling materials, fasteners, hangers and brackets as required.
- H. Coordinate the delivery and storage of all materials, wire, cable_equipment and miscellaneous hardware.
- I. Omission of any item from the specifications or drawings does not absolve the contractor from providing a complete and functioning CCTV camera system.
- J. Disposal of any and all materials resulting from the work is the responsibility of the Contractor.

3.02 TESTING

- A. Initial testing: Prior to installation of the system, Contractor shall install Contractor's proposed IP
- B. Component Testing: Maximum reliability shall be achieved through extensive use of high-quality, pretested components. Each and every component shall be individually tested by the manufacturer prior to
- C. Tools, Testing and Calibration Equipment: The supplier shall provide all tools, testing, and calibration equipment necessary to ensure reliability and accuracy of the system.
- D. Commissioning: Contractor and Owner shall review video from each camera to confirm image quality and detail from each location at times that most critical to the Owner for surveillance.

- E. The vendor shall be required to train and instruct client's personnel in the correct use, operation, and supervision of the CCTV cameras prior to the handing over of the project.
- F. The supplier shall be responsible for inspection and Quality Assurance (QA) for all materials and workmanship.

END OF SECTION

SECTION 31 10 00

SITE CLEARING

PART 1 - GENERAL

1.01 <u>SECTION INCLUDES</u>

- A. Clearing and disposing of vegetation, trees, shrubs, stumps and roots; trimming limbs and branches on retained trees and shrubs; removing and disposing of refuse, rubbish, trash and debris; and removing and disposing of structures, appurtenances, pavements, curbs, gutters, sidewalks and other materials necessary for site clearing within the Limits of Construction, as indicated.
- B. Underground Facilities Remove underground facilities, of whatever nature encountered, to the extent indicated or as directed by OCTA. Remove by cutting out reinforced concrete, plain concrete and other masonry and appurtenances embedded or attached thereto, timbers and other materials encountered.

1.02 RELATED SECTIONS

A. Section 01 33 00: Submittal Procedures

1.03 REFERENCES

- A. Standard Specifications for Public Works Construction (SSPWC)
- B. South Coast Air Quality Management District (SCAQMD):
 - 1. Rule 402 Nuisance
 - 2. Rule 403 Fugitive Dust

1.04 QUALITY ASSURANCE (NOT USED)

1.05 SUBMITTALS

A. Refer to Section 01 33 00 - Submittal Procedures, for submittal requirements and procedures.

1.06 DEFINITIONS (NOT USED)

1.07 WORKSITE CONDITIONS

- A. Dust Control:
 - As specified in Section 01 57 19, Temporary Environmental Control, SCAQMD Rules 402 and 403, and other regulatory requirements associated with dust control.

Site Clearing 31 10 00 - 1

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 CLEARING AND GRUBBING

- A. Remove and dispose of indicated, timber, shrubs, stumps, large roots, refuse, trash, rubbish and any other material encountered. Remove roots and any other material encountered protruding through, or appearing on, the ground surface to a depth of one foot below the surface.
- B. Remove or protect in place trees within the construction area as indicated. Do not cut tree roots, protected in place, without prior approval.
- C. Contact OCTA or the utility owner, for excavation requirements in the vicinity of below ground utilities and services.

3.02 STRUCTURES AND PAVEMENT

- A. Structures Remove indicated structures to the extent required to eliminate obstructions to new construction.
- B. Pavement Remove indicated pavement, sidewalks, ditch pavement, curb and curb gutter per Section 401 of SSPWC.

3.03 DISPOSAL OF MATERIALS

A. Dispose of materials outside the Worksite within areas provided by the Contractor and acceptable to OCTA.

3.04 OWNERSHIP OF MATERIALS

A. Except as otherwise indicated, materials resulting from demolition of structures, appurtenances, and other materials removed by the Contractor become the property of the Contractor; dispose of in Contractor provided areas. Remove and store designated appurtenances and structures owned by utility companies at a site selected by the utility.

END OF SECTION

Site Clearing 31 10 00 - 2

SECTION 32 11 23

CRUSHED AGGREGATE BASE

PART 1 - GENERAL

1.01 <u>SECTION INCLUDES</u>

- A. Furnishing, spreading, and compacting crushed aggregate and crushed miscellaneous base to lines, grades, and dimensions as indicated.
 - Standard Specifications for Public Works Construction (SSPWC) Latest Edition, except as modified by the Orange County Public Works Department Special Provisions - General Notes.

1.02 RELATED SECTIONS

- A. Section 01 33 00: Submittal Procedures
- B. Section 01 43 20: Project Quality Program Requirements Design/Bid/Build
- C. Section 03 30 00: Cast-in-Place Concrete
- D. Section 32 12 16: Asphalt Paving
- E. Section 32 13 13: Concrete Paving

1.03 REFERENCES

- A. Standard Specifications for Public works Construction (SSPWC):
 - 1. Section 200 Untreated Base Materials
 - 2. Section 301 Subgrade Preparation, Treated Materials and Placement of Base Materials
- B. Orange County Public Works Department Special Provision General Notes.
- C. American Association of State Highway and Transportation Officials (AASHTO) Testing Methods.
- D. Caltrans: Standard Specifications (Latest Edition).

1.04 QUALITY ASSURANCE

- A. Comply with Project Quality Program Requirements (see 1.02 above).
- B. Perform field tests in accordance with ASTM D2922 to determine compliance with specified requirements for density and compaction of aggregate base material, and

with ASTM D3017 to determine moisture content compliance of the installed base course.

1.05 SUBMITTALS

- A. Refer to Sections 01 33 00 Submittal Procedures, for submittal requirements and procedures.
- B. Safety Data Sheets (SDS): Manufacturer's Safety Data Sheets for each type of material used in Work.

1.06 <u>DEFINITIONS (NOT USED)</u>

PART 2 – PRODUCTS

2.01 MATERIALS

- A. Aggregate at the time the base material is deposited on the prepared sub grade shall conform with ASTM D1241 and the following requirements.
 - 1. Crushed Miscellaneous Base
 - a. Miscellaneous Base shall conform with SSPWC Subsection 200-2.4
 - b. Miscellaneous Base shall conform to the Fine gradation specified in SSPWC Subsection 200-2.4.2.
- B. Crushed Aggregate Base
 - 1. Aggregate Base shall conform with SSPWC Subsection 200-2.2

PART 3 – EXECUTION

A. In accordance with SSPWC 301.

3.02 **EXAMINATION**

- A. Request an inspection by OCTA or its designee and obtain written acceptance of the prepared subgrade or subbase before proceeding with the placement of aggregate base course.
- B. The subgrade or subbase to receive aggregate base course, immediately prior to spreading, shall conform to the compaction and elevation tolerances indicated for the material involved and shall be free of standing water and loose or extraneous material.

END OF SECTION

SECTION 32 12 16

ASPHALT PAVING

PART 1 - GENERAL

1.01 <u>SECTION INCLUDES</u>

- A. Furnishing and placing asphalt concrete pavement to thicknesses, lines and grades indicated, in accordance with following:
 - Standard Specifications for Public Works Construction (SSPWC) Latest Edition, except as modified by the Orange County Public Works Department Special Provisions for Asphalt Concrete Standard Plan 1805.

1.02 RELATED SECTIONS

- A. Section 01 33 00: Submittal Procedures
- B. Section 01 43 20: Project Quality Program Requirements Design/Bid/Build

1.03 REFERENCES

- A. Standard Specifications for Public works Construction (SSPWC):
 - 1. Section 203 Paving Asphalt
 - 2. Section 302 Roadway Surfacing
- B. Orange County Public Works Department Special Provision 1805.
- C. American Association of State Highway and Transportation Officials (AASHTO) Testing Methods.
- D. Caltrans: Standard Specifications (Latest Edition).

1.04 QUALITY ASSURANCE

A. Comply with Project Quality Program Requirements (see 1.02 above).

1.05 SUBMITTALS

- A. Refer to Sections 01 33 00 Submittal Procedures, for submittal requirements and procedures.
- B. Test reports of materials used.
- C. Material qualification data, asphaltic concrete mix design, and job control test results for review and acceptance by OCTA or its designee.

D. Safety Data Sheets (SDS): Manufacturer's Safety Data Sheets for each type of material used in Work.

1.06 <u>DEFINITIONS (NOT USED)</u>

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Asphalt Concrete: SSPWC, Subsection 203-6, Class and grade as indicated.
- B. Liquid Asphalt: SSPWC, Subsection 203-2.
- C. Asphalt Emulsions: SSPWC, Subsection 203-3 CSS-1h Emulsified Asphalt.
- D. D. Prime Coat and Tack Coat: In accordance with SSPWC, Subsections 302-5.3 Prime Coat and 302-5.4 Tack Coat, respectively.

PART 3 - EXECUTION

3.01 APPLICATION FO PRIME COAT

A. In conformance with SSPWC Subsection 302-5.3.

3.02 APPLICATION OF TACK COAT

A. In conformance with SSPWC Subsection 302-5.4.

3.03 APPLICATION OF ASPHALT CONCRETE PAVEMENT

A. In accordance with SSPWC, Subsection 302-5.

3.04 RECONDITIONING OF ASPHALT PAVING BASE COURSE

- A. Recondition previously constructed base course as specified below:
 - Immediately before applying prime coat, remove debris and other objectionable substance from surface by means of power broom or blower supplemented with handbrooms.
 - 2. After cleaning operation and before application of prime coat, OCTA or its designee will inspect area to determine fitness of areas to receive bituminous priming material.
 - 3. Immediately before application and as directed by OCTA or its designee, ensure uniform spread of bituminous material by lightly sprinkling with water, excessively dry portions of base course prepared for treatment.
- B. Base Course: OCTA or its designee will inspect and test surface of base course for adequate compaction and surface tolerances.

- 1. Correct ruts and soft, yielding spots that may appear in base course, areas having inadequate compaction, and underlying course surface deviations exceeding specified requirements.
- 2. Loosen affected areas, removing unsatisfactory material and adding approved material where required.
- 3. Reshape and re-compacting to line and grade and to specified density requirements to satisfaction of OCTA or its designee.

3.05 **JOINING PAVEMENT**

- A. Carefully lay joints between existing and new pavements or between Work of successive days in a manner to ensure continuous bond between existing and new Sections.
 - 1. Expose, clean and cut edges to straight, vertical surfaces.
 - 2. Paint joints with uniform coat of tack coat before the fresh mixture is placed.

3.06 DEFECTIVE MATERIALS

- A. Materials not complying with specified requirements are not acceptable.
 - 1. Remove and replace defective materials as directed by OCTA or its designee.

3.07 TESTING

- A. Notify OCTA or its designee when Work is ready to be tested.
- B. Remove areas not accepted. Remove and replace defective areas to the satisfaction of OCTA or its designee.

END OF SECTION

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SECTION 32 13 13

CONCRETE PAVING

PART 1 - GENERAL

1.01 <u>SECTION INCLUDES</u>

- A. Furnishing and placing Portland Cement Concrete Pavement, including walks and curbing, to dimensions, thicknesses, lines and grades indicated, in accordance with following:
 - Standard Specifications for Public Works Construction (SSPWC) Latest Edition, except as modified by the Orange County Public Works Department Special Provisions for Portland Cement Concrete Standard Plan 1803.

1.02 RELATED SECTIONS

- A. Section 01 33 00: Submittal Procedures
- B. Section 01 43 00: Quality Assurance
- C. Section 01 45 00: Quality Control

1.03 REFERENCES

- A. Standard Specifications for Public works Construction (SSPWC):
 - 1. Section 201 Concrete, Mortar, and Related Materials
 - 2. Section 302 Roadway Surfacing
- B. Orange County Public Works Department Special Provision 1803.
- C. American Association of State Highway and Transportation Officials (AASHTO) Testing Methods.
- D. Caltrans: Standard Specifications (Latest Edition).

1.04 **QUALITY ASSURANCE**

A. Comply with Project Quality Program Requirements (see 1.02 above).

1.05 SUBMITTALS

- A. Refer to Sections 01 33 00 Submittal Procedures, for submittal requirements and procedures.
- B. Test reports of materials used.

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- C. Material qualification data, Portland Cement Concrete Pavement mix design, and job control test results for review and acceptance by OCTA or its designee.
- D. Safety Data Sheets (SDS): Manufacturer's Safety Data Sheets for each type of material used in Work.

1.06 DEFINITIONS (NOT USED)

PART 2 – PRODUCTS

2.01 MATERIALS

A. In accordance with SSPWC 201, Class and grade as indicated.

PART 3 – EXECUTION

A. In accordance with SSPWC 302-6.

3.02 TESTING

- A. Notify OCTA or its designee when Work is ready to be tested.
- B. Remove areas not accepted. Remove and replace defective areas to the satisfaction of OCTA or its designee.

END OF SECTION

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SECTION 32 15 40

CRUSHED STONE SURFACING

PART 1 - GENERAL

1.01 <u>SECTION INCLUDES</u>

- A. Compacted crushed stone paving course.
 - 1. Drawings and general provisions of the Contract apply to this Section.
 - 2. Review and coordinate these documents with additional requirements and information that apply to Work under this Section.

1.02 RELATED SECTIONS

- A. Section 01 33 00: Submittal Procedures
- B. Section 01 43 00: Quality Assurance
- C. Section 31 20 00: Earthwork

1.03 REFERENCES

- A. Standard Specifications for Public works Construction (SSPWC):
 - 1. Section 200 Rock Materials
- B. American Association of State Highway and Transportation Officials (AASHTO):
 - 1. AASHTO T027-11-UL: Method of Test for Sieve Analysis of Fine and Coarse Aggregates

1.04 **QUALITY ASSURANCE**

A. Comply with Project Quality Program Requirements (see 1.02 above).

1.05 **SUBMITTALS**

- A. Refer to Sections 01 33 00 Submittal Procedures, for submittal requirements and procedures.
- B. Safety Data Sheets (SDS): Manufacturer's Safety Data Sheets for each type of material used in Work.

1.06 <u>DEFINITIONS (NOT USED)</u>

PART 2 - PRODUCTS

2.01 MATERIALS

A. Coarse Stone: Crushed, washed natural stone; free of shale, clay, friable materials and debris; graded in accordance with AASHTO T027-11-UL within the following limits:

Sieve Size:	Percent Passing:
2 inches (50 mm)	[100]
1 inch (25 mm)	[95]
3/4 inch (20 mm)	[95] to [100]
5/8/ inch (16 mm)	[75] to [100]
3/8 inch (10 mm)	[55] to [85]
No. [4]	[35] to [60]
No. [16]	[15] to [35]
No. [40]	[10] to [25]
No. [200]	[5] to [10]

B. Sand: Natural river or bank sand; washed, free of silt, clay, loam, friable or soluble materials, and organic matter.

PART 3 - EXECUTION

3.01 INSPECTION

- A. OCTA or its designee may retain the services of an independent inspection agency to verify that compacted subgrade, granular base, or stabilized soil is dry and ready to receive Work of this Section.
- B. OCTA or its designee may retain the services of an independent surveyor to verify that gradients and elevations of base are correct.
- C. Beginning of installation means acceptance of existing conditions.

3.02 PLACING STONE PAVING

- A. Spread stone material over prepared base to a total compacted thickness as indicated.
- B. Place stone in 3 inches layers and compact.
- C. Level surfaces to elevations and gradients indicated.

- D. Add small quantities of sand to stone mix as appropriate to assist compaction.
- E. Compact placed stone materials to achieve dry density as indicated.
- F. Add water to assist compaction.
 - 1. With an excess water condition, rework topping and aerate to reduce moisture content.
- G. Perform hand tamping in areas inaccessible to compaction equipment.

END OF SECTION

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SECTION 32 17 23

PAVEMENT STRIPING AND MARKING

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Furnishing and applying pavement markings, including messages, arrows and striping, as indicated and in accordance with following:
 - 1. California Code of Regulations (CCR), Title 24, Part 2 California Building Code (CBC).
 - Standard Specifications for Public Works Construction (SSPWC), Latest Edition and Supplements, and Subsections 210-1.6 –Paint for Traffic Striping, Pavement Marking and Curb Marking; and 310-5.6 Painting Traffic Striping, Pavement Marking and Curb Marking.

1.02 RELATED SECTIONS

A. Section 01 33 00: Submittal Procedures

1.03 REFERENCES

A. Standard Specifications for Public Works Construction (SSPWC), Latest Edition.

1.04 SUBMITTALS

- A. Refer to Sections 01 33 00 Submittal Procedures, for general submittal requirements and procedures.
- B. Manufacturer's product data.

PART 2 - PRODUCTS

2.01 PAINT FOR TRAFFIC STRIPING AND PAVEMENT MARKING

A. In accordance with SSPWC, Subsection 210-1.6.

Part 3 - EXECUTION

3.01 SURFACE PREPARATION AND APPLICATION

A. In accordance with SSPWC, Subsection 310-5.6.

3.02 APPLICATION

- A. Provide pavement striping and markings of lengths, widths and configurations indicated or specified.
 - 1. Apply paint by machine, except for special areas and markings which are not adaptable to machine application, in which case hand application will be permitted.
- B. Provide equipment adaptable to traveling at uniform, predetermined speed which will produce uniform application of paint.
 - 1. Provide paint machine of pressurized spray type, capable of applying paint at uniform rate and through nozzles which spray paint directly upon pavement, capable of applying three separate stripes, either solid or broken, at same time.
 - 2. Provide paint tanks having mechanical agitator.
 - 3. Provide nozzles having cutoff valve which will automatically apply broken lines, and line guides consisting of metallic shrouds or air blasts.
- C. Provide handpainting equipment consisting of brushes, templates, and guides.
- D. Apply of paint conforming to SSPWC, Subsection 310-5.6.

3.02 ADJUSTING

A. Repair or replace pavement markings which fail to present satisfactory and uniform day and night appearance, those which fail to satisfy specified requirements, markings which are marred or damaged by traffic or by other causes, at no additional cost to OCTA. Correct stripes which deviate more than allowable tolerances by removing affected portion of stripe; paint new stripe in accordance with specified requirements. Completely remove arrows and stripes that do not meet specified requirements and repaint. Subject to acceptance by the OCTA or its designee, damaged portions may be repaired.

3.03 CLEANUP

- A. Remove misted, dripped and spattered paint.
 - 1. Remove paint by means which will not damage the surface from which removed.

3.04 ACCEPTANCE

A. Contractor is responsible for maintenance of pavement markings until accepted by OCTA or its designee.

END OF SECTION 32 17 23

SECTION 32 17 29

PAVEMENT EMBEDDED WARNING LIGHTS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. In-roadway warning lights, actuators, controls, and battery power backup.
- B. Wiring between components and power and control unit.
- C. Saw-cutting existing pavement.
- D. Connection to facility power source.
- E. Poles for support of devices specified in this section.

1.02 REFERENCE STANDARDS

- A. 36 CFR 1191 Americans with Disabilities Act (ADA) Accessibility Guidelines for Buildings and Facilities; Architectural Barriers Act (ABA) Accessibility Guidelines.
- B. ADA Standards 2010 ADA Standards for Accessible Design.
- C. FHWA MUTCD Manual on Uniform Traffic Control Devices.
- D. NFPA 70 National Electrical Code.
- E. NEMA 250 Enclosures for Electrical Equipment (1000 Volts Maximum).

1.03 ADMINISTRATIVE REQUIREMENTS

- A. Coordination: Coordinate traffic control with Owner to minimize disruption; provide barricades.
- B. Preinstallation Meeting: Conduct a preinstallation meeting one week prior to the start of work of this section; require attendance by all affected installers.

1.04 **SUBMITTALS**

- A. Product Data: Manufacturer's data sheets on each product to be used, including:
 - 1. Preparation instructions and recommendations.
 - 2. Storage and handling requirements and recommendations.
 - 3. Installation methods.
 - 4. Specimen warranty.

- B. Shop Drawings: Field-measured site drawings approved by manufacturer showing:
 - 1. Location and alignment of each in-roadway warning light, actuator, and sign.
 - 2. Location of power/control units and method of mounting.
 - 3. Location of electrical connection to facility power service and electrical characteristics required.
 - 4. Location of conduit and boxes for wiring between components, for information of electrical installer.
 - 5. Relate location dimensions to some existing construction that will exist when installation begins.
- C. Post-Installation Field Report: Indicating results of inspection after installation.
- D. Installer's Qualification Statement.
- E. Operation and Maintenance Data: Operating, troubleshooting, repair, and replacement instructions; include parts list, recommended spare parts to keep on hand, and where parts are obtainable.
- F. Warranty: Comply with manufacturer's requirements for activation of warranty; promptly notify Owner of warranty start and end dates; submit warranty terms and conditions.
- G. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
 - 1. Extra Stock: One power control units.
 - 2. Spare Parts: One each of signal heads, base mounting plates, and power control unit back pans.
 - 3. Tools: One each of every special tool required for maintenance.

1.05 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than three years of experience.
- B. Installer Qualifications: Manufacturer's own employees or company specializing in installing roadway lighting, traffic lights, or roadway signs with minimum of two years experience and approved by manufacturer.
 - 1. If installer has experience installing the products specified, submit details of those projects, with owner's project contact information.
 - 2. If installer does not have experience installing the products specified, provide the services of the manufacturer's approved technician for on-site supervision.

1.06 FIELD CONDITIONS

A. Do not install components when ambient temperature is below 40 degrees F or when pavement is wet.

1.07 WARRANTY

- A. See Section 01 78 00 Closeout Submittals, for additional warranty requirements.
- B. Provide manufacturer's standard five year product warranty.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. In-Roadway Warning Lights, Actuators, and Controls:
 - 1. Light Guard Systems, Inc: www.lightguardsystems.com/#sle.
 - 2. Intelligent Traffic Equipment Marketing, Ltd: www.itemltd.com/#sle.

2.02 SYSTEM DESCRIPTION

- A. Provide all components designed and constructed to comprise a complete system that uses flashing lights to warn oncoming vehicles that a pedestrian is in or entering the crosswalk.
 - 1. Comply with applicable provisions of FHWA MUTCD.
 - 2. Comply with applicable provisions of NFPA 70.
 - a. Exception, Where Approved by Authority Having Jurisdiction: In-roadway conductors in existing pavement may be direct buried at 2 inch depth.
 - 3. Provide lights and configuration so that lights are visible in daylight from distance of 400 feet, minimum.
 - 4. Warning lights are to be installed in existing pavement.
 - 5. Applicable crosswalks and pathways are indicated on the drawings.
- B. Sequence of Operation:
 - 1. Flash Rate: Pattern mode selector with the following options.
 - a. On.
 - b. On/off flash.
 - c. 60/40 flash.
 - d. Pulsed flash.

- e. "Emergency" Vehicle style: Two 124 millisecond pulses followed by four 25 millisecond pulses.
- 2. Flashing Run Time: Adjust to suit crossing distance, using walking speed of 3.5 feet per second; consult Owner for special conditions and pedestrians that might require longer crossing times.
- 3. When any actuator is triggered, flashing run time starts.
- 4. If another actuator is triggered, run time starts over.
- 5. Pedestrian exiting crosswalk does not trigger actuator.
- C. When feasible, locate in-roadway warning lights out of normal tire track paths, such as in center of lanes, at the centerline of the roadway, and at edge of roadway.
- D. One-Lane One-Way Roadways: Provide three warning lights on vehicle approach side of crosswalk; locate at each edge and in center of lane.
- E. Two-Lane Roadways: Provide minimum of five warning lights on both sides of crosswalk.
 - 1. Locate one at shoulder/curb edge, one in center of each lane, and one on center line between lanes.
 - 2. Lights facing away from traffic direction are not required.
- F. Actuators: Unless otherwise indicated provide pedestal mounted manual actuators to start lights flashing.
 - 1. Manual Actuators: Use one pushbutton actuator at each walkway entrance.
 - a. Locate and mount as indicated on the drawings.
 - 2. Wide Roadways With Pedestrian-Accessible Median: Provide separate sets of actuators for each portion of roadway separated by the median, allowing pedestrians to stop on median.
- G. Provide one power and control unit per crosswalk unless otherwise indicated.
 - 1. Locate power and control units where indicated on drawings.
 - 2. Pad-mounted.
- H. Power Source: From facility; 120 V AC, single phase.

2.03 COMPONENTS

A. In-Roadway Warning Lights: Uni-directional lights embedded in the pavement and arranged so that lights are visible to oncoming vehicles but not to the pedestrian in the crosswalk; capable of withstanding normal vehicle tire impact without cracking or other permanent damage or deformation.

- 1. Fixture Housing: Replaceable signal head containing lamps, prism lens, and electronic components mounted in base plate permanently installed in pavement; self-clearing design that keeps road debris from blocking warning lights; watertight sealed; stainless steel bolt connections.
- 2. Lens: Borofloat hardened glass prism; completely filling space between face of housing and lamps; maximum 1/8 inch above roadway surface; focusing light beam at 2 degrees elevation with 30 degrees spread. Expose no plastic lens or body components to traffic.
- 3. Lamps: 16 LED lamps; amber.
- 4. Housing Height: Maximum of 1/8 inch above roadway surface; maximum of 3 inches below roadway surface.
- 5. Housing Material: Heat treated stainless steel.
- 6. Base Material: Corrosion-resistant aluminum alloy.
- 7. Diameter: 7 inches, nominal.
- 8. Electrical: Watertight, snap connectors.
- B. LED Lamps: Light emitting diode type lamps, non-diffused.
- C. Power and Control Units: Microprocessor-based, with field-replaceable control module, surge suppression, and internal branch circuit protection.
 - 1. Power Supply From Facility: Provide AC to DC converter.
 - a. Battery Backup: Manufacturer's standard as required by components, location, and requirements for independent operation.
 - 2. Each controller capable of independently controlling one or two systems.
 - 3. Provide signal interface controller option for integration with existing traffic signal controller.
 - 4. Programming Interface: Minimum 5 line, 20 character liquid crystal screen with 2 megabyte external memory and the following features.
 - a. Display current mode of operation on screen.
 - b. Provide diagnostic mode activated by pushbutton; display fault messages in order of system priority, and a 90 day log file including any change in status, number of activations, reboots, or power failures.
 - c. Flashing duration programmable between 1 and 99 seconds.
 - d. Provide manual over-ride to set to continuous flashing.
 - e. Two channels, to provide operation of two separate crosswalk systems.

- f. Transient/Inrush current limiting; internal on all outputs,
- g. Circuit breakers: Internal, auto-reset on outputs, selectable amperage thresholds on two channels.
- h. Power Factor Correction 96 provided, Power Output limiting 96 120 percent, Short Circuit 96 Continuous protection, intermittent cycle permitted.
- i. Automatic photocell activation of day/night mode.
- j. Night brightness adjustable between 15 to 100 percent.
- k. Logic inputs for connecting sequential pedestrian detectors to determine direction of pedestrian travel.
- I. Inputs for sequential contact closure for calculation of a trigger speed of approaching traffic.
- m. Programmable auxiliary contacts to provide control to external signaling devices.
- n. Prioritization of traffic flow after pedestrian service while storing pedestrian calls.
- o. Internal battery power to control circuitry, internal clock and SRAM where user settings are stored.
- 5. Enclosure: Weatherproof cabinet, NEMA 250 Type 4 fiberglass or NEMA 250 Type 3R aluminum, with padlock catch; white.
- 6. Output Operating Voltage: 12 to 48 V DC.
- 7. Output DC Load: 16 A, maximum.
- 8. Operating Temperature: -30 to 165 degrees F.
- D. Pushbutton Manual Actuators: ADA Standards compliant stainless steel pushbutton and sign enhanced with four-lamp LED light bar; for pole mounting; cast aluminum housing.
 - 1. Sign Text: "Push Button for Crosswalk Warning Device"; MUTCD R10-25.
 - 2. Sign Style: Right or left facing figure as applicable.
 - 3. Sign Color: Yellow background with black text.
 - 4. Lamp Color: Amber.
 - 5. Mounting Height: As required by local authority.
 - 6. Include Braille on sign; comply with California DOT requirements.

E. Conductors:

- In-Roadway, Serving Lighting Fixtures: Stranded #14 AWG, Type RHW (600 V power cables, 90 degrees C dry, 75 degrees C wet); YEL, RED, and BLK in color.
- 2. In-Roadway, Serving Other Components: Stranded #18 AWG/ 8 conductor, Type TC (600 V power cables, 90 degrees C) with TFN insulation and PVC jacket.
- 3. Not Embedded in Roadway and Not in Conduit: Stranded #18 AWG, Type RHH or RHW-2 (Type EPR/Hypalon 600 V power cables, 90 degrees C dry, 75 degrees C wet).
- 4. In Conduit and Not Embedded in Roadway: As required by NFPA 70.
- F. Conduit: Provide conduit where required by NFPA 70 of the type required by NFPA 70.
- G. Paving Joint Sealant: Manufacturer's standard, loop detector filler type.
- H. Epoxy Adhesive: Two-part; manufacturer approved.
- I. Poles: 4 inch diameter extruded aluminum or galvanized steel pipe, of sufficient length to extend 36 inches into ground and mount devices at recommended heights.
- J. Concrete for Pole Footings:
 - 1. Concrete for Pole Footings: 3000 psi compressive strength at 28 days.
 - 2. Size: Comply with local traffic engineering guidelines and regulations.

PART 3 EXECUTION

3.01 **EXAMINATION**

A. Verify that permanent power supply is available and in correct location.

3.02 PREPARATION

- A. Arrange for traffic control measures necessary to secure pavement areas for the work.
- B. Have approved layout and alignment drawings on hand.

3.03 INSTALLATION

- A. Install in accordance with manufacturer's instructions in manner necessary to maintain manufacturer's warranty.
- B. Perform electrical work in accordance with manufacturer's written instructions and NFPA 70.

- C. In existing pavement, install in-roadway conductors at 2-1/2 inch depth, or conductor and actuator together at 3-1/2 inch depth. Seal saw cuts with approved paving joint sealant.
- D. Test and adjust after installation for proper operation, in accordance with manufacturer's instructions.

3.04 CLEANING AND PROTECTION

- A. Clean installed work to like-new condition.
- B. Protect installed products until completion of project.
- C. Touch-up, repair or replace damaged products before Substantial Completion.

3.05 CLOSEOUT ACTIVITIES

- A. Demonstrate operation of equipment to Owner's designated personnel.
- B. Complete commissioning report and submit to manufacturer or distributor of crosswalk warning light system.

END OF SECTION

SECTION 32 31 00

SECURITY GATES - STRUCTURAL CANTILEVER SLIDE TYPE

PART 1 GENERAL

1.01 SECTION INCLUDES

A. The work in this section shall include furnishing all labor, materials, equipment and appliances necessary to complete all Fortress Structural Gate and Hydraulic Operator System(s) required for this project in strict accordance with this specification section and drawings.

1.02 REFERENCE STANDARDS

- A. Underwriters Laboratory Gate Operator Requirements (UL 325).
 - Operators shall be built to UL325 standards and be listed by a testing laboratory. Complete all electrical work according to local codes and National Electrical code. All fieldwork shall be performed in a neat and professional manner, completed to journeyman standards.
 - 2) Current safety standards require the use of multiple external sensors to be capable of reversing the gate in either direction upon sensing an obstruction.
 - 3) Vehicle gates should never be used by pedestrians. Separate pedestrian gates must always be provided when foot traffic is present.
 - 4) Current safety standards require gate operators to be designed and labeled for specific usage classes. Hydraulic Operator TYM-HYD gate operators are to be used on Class III and Class IV installations only.
- B. ASTM F 2200 Standard Specification for Automated Vehicular Gate Construction.
- C. ASTM F 1184 Standard Specification for Industrial and Commercial Horizontal Slide Gates, Type II, Class 2.
- D. American Welding Society AWS D1.2 Structural Welding Code.

1.03 **SUBMITTALS**

- A. Product Data:
 - 1. Provide manufacturer's catalog cuts with printed specifications and installation instructions.

- 2. Deliver two (2) copies of operation and maintenance data covering the installed products, including name, address and telephone number of the nearest fully equipped service center.
- 3. Each operator shall bear a label indicating that the operator mechanism has been tested for full power and pressure of all hydraulic components, full stress tests of all mechanical components and electrical tests of all overload devices.

B. Shop drawings:

- 1. Supply shop drawings showing the relationship of operating systems with gate components, including details of all major components and design of the power distribution system.
- 2. Include complete details of gate construction, gate height and post spacing dimensions.

C. Certification of Performance Criteria:

- 1. Manufacturer of gate system shall provide certification stating the gate system includes the following material components that provide superior performance and longevity. Alternate designs built to minimum standards that do not include these additional structural features shall not be accepted.
 - a. Gate track system shall be keyed to interlock into gate frame member (providing 200% additional strength when compared to weld only keyless systems). When interlocked with and welded to the "keyed" frame top member, gate track forms a composite structure.
 - b. Gate shall have a minimum counterbalance length of 50% opening width which provides a 36% increase in lateral resistance (when compared to ASTM minimum of 40% counterbalance). If gate is ever to be automated, counterbalance section shall be filled with fabric or other specified material.
 - c. To provide superior structural integrity, major vertical members shall be spaced at intervals less than the gate frame height and each vertical member, including pickets, shall be welded in place.
 - d. Entire gate frame (including counterbalance section) shall include 2 adjustable stainless or galvanized steel cables (minimum 3/16") per bay to allow complete gate frame adjustment (maintaining strongest structural square and level orientation).
 - e. Gate truck assemblies shall be tested for continuous duty and shall have precision ground and hardened components. Bearings shall be pre-lubricated and contain shock resistant outer races and captured seals.
 - f. Gate truck assemblies shall be supported by a minimum 5/8" plated steel bolt with self aligning capability, rated to support a 2,000 # reaction load.

- g. Hanger brackets shall be hot dipped galvanized steel with a minimum 3/8" thickness that is also gusseted for additional strength.
- h. Gate top track and supporting hangar bracket assemblies shall be certified by a licensed professional engineer to withstand a 2,000 lb. vertical reaction load without exceeding allowable stresses.

D. Certifications:

- 1. The Structural Cantilever Slide Gate must be cycle-tested and certified per paragraph 2.04 C.
- 2. The aluminum welders and welding process for gate manufacture must be certified per paragraph 2.04 D.
- 3. Operator Manufacturer: A company specializing in the manufacture of hydraulic gate operators of the type specified, with a minimum of ten years experience.
- 4. Manufacturer shall supply gate design performance certification as per paragraph 1.03 C.

1.04 QUALITY ASSURANCE

- A. The entire system shall be installed and commissioned from a single vendor to assure reliability and continued service.
- B. The vendor shall be required to train and instruct client's personnel in the correct use, operation, maintenance, and supervision of the gate system prior to the handing over of the project.
- C. The supplier shall be responsible for inspection and Quality Assurance (QA) for all materials and workmanship.
- D. The contractor's main resources within the project shall carry proper professional certification issued by the gate manufacturer and verified by a third-party organization to confirm sufficient product and technology knowledge.
- E. The contractor shall carefully follow instructions in documentation provided by the manufacturer to ensure all steps have been taken to provide a reliable, easy-to-operate system.
- F. All equipment shall be tested and configured in accordance with instructions provided by the manufacturer prior to installation.
- G. A proper installation shall meet NEC (National Electrical Code) per the guidelines of that year's revision.
- H. For motorized gate systems, Contractor's scope shall include the design and installation of the complete power distribution system to support the gate system.

PART 2 PRODUCTS

2.01 HYDRAULIC GATE OPERATORS:

- A. Hydraulic Gate Operator TYM-HYD with controller to be supplied by Tymetal Corp., 678 Wilbur Avenue, Greenwich, NY 12834 (800) 328 4283.
- B. Approved substitution All other hydraulic gate operator systems must be submitted for approval to OCTA and the design team in accordance with substitution requirements as set forth in the general provisions of the project manual.

2.02 **OPERATION**

- Operation shall be by means of a metal rail passing between a pair of solid metal A. wheels with polyurethane treads. Operator motors shall be hydraulic, geroller type, and system shall not include belts, gears, pulleys, roller chains or sprockets to transfer power from operator to gate panel. The operator shall generate a minimum horizontal pull of 300 pounds without the drive wheels slipping and without distortion of supporting arms. Operator shall be capable of handling gates weighing up to 5,000 pounds. The operator shall be speed controlled by an electronic Variable Frequency Drive (VFD) which will accelerate and decelerate the gate gradually to prevent shock loads to the gate and operator assembly. The maximum gate velocity of the Model TYM-HYD-VF2/3 operator shall be selectable between 26" (.66 m) per second and 36" (.91 m) per second. Upon starting, the VFD will gradually accelerate the gate to its maximum speed and when stopping, gradually reduce gate velocity to less than 1 foot per second, whereupon a limit switch will stop the electric motor. Two adjustable hydraulic brake valves (one for each direction) assist in slowing the gate to a precise stop.
- B. Standard mechanical components shall include as a minimum:
 - Supporting arms: Cast aluminum channel. Arms shall incorporate a fully bushed,
 1-1/2" bronze bearing surface, acting on arm pivot pins. (item 2 below)
 - 2. Arm pivot pins: 3/4" diameter, stainless steel, with integral tabs for ease of removal.
 - 3. Tension spring: 2-1/2" heavy duty, 800 pound capacity.
 - 4. Tension adjustment: Finger tightened nut, not requiring the use of tools.
 - 5. Drive release: Must instantly release tension on both drive wheels, and disengage them from contact with drive rail in a single motion, for manual operation.
 - 6. Limit switches: Fully adjustable, toggle types, with plug connection to control panel.
 - 7. Electrical enclosure: Oversized, metal, with hinged lid gasketed for protection from intrusion of foreign objects, and providing ample space for the addition of accessories.

- 8. Chassis: 1/4" steel base plate, and 10 Ga. sides and back welded and ground smooth.
- Cover: 10GA. sheet steel, hot-dip galvanized, and gasketed. Box shall be powder coated gray. All joints welded, filled and ground smooth. Finished corners square and true with no visible joints. The cover shall be locked with a detention quality mogul lock.
- 10. Finish: Fully zinc plated then finish coat of high gloss powder paint withstanding 1000-hour salt spray test.
- 11. Drive wheels: 8" Dia. Metal hub with polyurethane tread.
- 12. Drive rail: Shall be extruded 6061 T6, not less than 1/8" thick. Drive rail shall incorporate alignment pins for ease of replacement or splicing. Pins shall enable a perfect butt splice.
- 13. Hydraulic hose: Shall be 1/4" synthetic, rated to 2750 p.s.i.
- 14. Hydraulic valves: Shall be individually replaceable cartridge type, in an integrated hydraulic manifold.
- 15. Hose fittings: At manifold shall be quick-disconnect type, others shall be swivel type.
- 16. Hydraulic fluid: High viscosity index type with temperature range of -30F to 180F.
- 17. A zero to 2000-PSI pressure gauge, mounted on the manifold for diagnostics, shall be a standard component.
- 18. The hydraulic fluid reservoir shall be formed from a single piece of metal, non-welded, and shall be powder painted on the inside and the outside, to prevent fluid contamination.
- 19. Heater with thermostat control for cold or damp climates.
- C. Minimum standard electrical components:
 - 1. Pump motor: Shall be a 2 HP, 56C, TEFC, three phase, continuous duty motor, with a service factor of 1.15, or greater. (Note, the VFD converts single phase to drive a three phase motor).
 - 2. All components shall have overload protection.
 - 3. Controls: Smart Touch Controller Board with 256K memory containing:
 - a. inherent entrapment sensor;
 - b. built in "warn before operate" system;

- c. built in timer to close;
- d. liquid crystal display for system configuration and reporting of control status;
- e. 23 programmable output relay options;
- f. anti-tailgate mode;
- g. built-in power surge/lightening strike protection;
- h. Menu configuration, event logging and system diagnostics are easily accessible with a PC and free START software;
- i. RS232 port for connection to laptop or other computer peripheral and RS485 connection of Master/Slave systems.
- 4. Transformer: 75 VA, non-jumpered taps, for all common voltages.
- 5. Control circuit: 24VDC.
- D. Required external sensors: See 1.02 A2. Specify photo eyes or gate edges or a combination thereof to be installed such that the gate is capable of reversing in either direction upon sensing an obstruction.
- E. Optional control devices: (consider one or more of the following: card reader, key-switch, radio control, pushbuttons, vehicle detectors, keypads or seven day timers).
- F. 208/230 VAC single phase and 208/230/460 VAC three phase available. 115 is not available. (50 Hertz is available specify voltage.)

2.03 FACTORY TESTING

- A. Fully assemble and test, at the factory, each gate operator to assure smooth operation, sequencing and electrical connection integrity. Apply physical loads to the operator to simulate field conditions. Tests shall simulate physical and electrical loads equal to the fully rated capacity of the operator components.
- B. Check all operator mechanical connections for tightness and alignment. Check all welds for completeness and continuity. Check welded corners and edges to assure they are square and straight.
- C. Inspect operator painted finish for completeness and gloss. Touch up imperfections prior to shipment.
- D. Check all hydraulic hoses and electrical wires to assure that chafing cannot occur during shipping or operation.

2.04 STRUCTURAL CANTILEVER SLIDE GATE MANUFACTURERS:

- A. The cantilever sliding gate shall be manufactured by Tymetal Corp., 678 Wilbur Avenue Greenwich, NY 12834 (800) 328 4283.
- B. Approved substitution All other cantilever sliding gate systems must be submitted for approval to OCTA and the design team in accordance with substitution requirements as set forth in the general provisions of the project manual.
- C. Cantilever Slide Gate manufacturer shall submit test results upon request stating that the gate panel has been tested in an operated system for 200,000 cycles.
- D. Gate manufacturer shall provide independent certification as to the use of a documented Welding Procedure Specification and Procedure Qualification Record to insure conformance to the AWS D1.2 welding code. Upon request, Individual Certificates of Welder Qualification documenting successful completion of the requirements of the AWS D1.2 code shall also be provided.

2.05 STRUCTURAL CANTILEVER SLIDE GATE:

A. Fortress Structural Cantilever Slide Gate System dimensions shall be as shown on the detail drawings.

B. Structural Gate Frame:

1. The gate frame shall be fabricated from 6063-T6 aluminum alloy extrusions. The top member shall be a 3" x 5" (76mm x 127mm) aluminum structural channel/tube extrusion weighing not less than 3.0 lb/lf (4.4kg/m) for Internal Picket designs or 2.6 lb/lf (3.8kg/m) for External Picket designs. To maintain structural integrity this frame member shall be "keyed" to interlock with the "keyed" track member. If fabricated as a single horizontal piece, the bottom member shall be a 2" x 5" (51mm x 127mm) aluminum structural tube weighing not less than 2.0 lb/lf (2.9kg/m). If fabricated in two horizontal pieces, the bottom member shall be a 5" (127mm) aluminum structural channel weighing not less than 2.6 lb/lf (3.8kg/m). When the gate frame is manufactured in two horizontal pieces or sections, they shall be spliced in the field (the gate frame shall be fabricated in one or multiple sections depending on size requirements or project constraints).

2. Vertical Members (Ornamental Picket):

a. Ornamental Picket (Internal and External): The vertical members at the ends of the opening portion of the frame shall be 2" x 2" (51mm x 51mm) in the cross section weighing not less than 1.1 lb/lf (1.6kg/m). The major vertical members separating each bay shall be 1" x 2" (25mm x 51mm) in cross section weighing not less than .82 lb/lf (1.2kg/m).

C. Splicing:

1. A ¼" x 5" x 24" galvanized steel splice plate shall be used to secure the two bottom channel members together utilizing eight (8) plated carriage bolts with lock nuts.

The top members will be spliced together using a $\frac{1}{4}$ " x 2" x 24" aluminum splice plate secured with six (6) drive rivets on one side and welded to the top member on the other side. The track is overlapped onto the opposing section in an alternating fashion, interlocking with the top primary member.

D. Gate Track:

- 1. The gate shall have a separate semi-enclosed "keyed" track, extruded from 6005A-T61 or 6105-T5 aluminum alloy, weighing not less than 2.9 lb/lf. Track members are to be located on each side of the top member. When interlocked and welded to the "keyed" top member, it forms a composite structure with the top of the gate frame. Welds are to be placed alternately along the top and side of the track at 9" centers with welds being a minimum of 2" long.
- E. All welds on the gate frame shall conform to Welding Procedure Specification and Procedure Qualification Record to insure conformance to the AWS D1.2 Structural Welding Code. All individual welders shall be certified to AWS D1.2 welding code. See 1.02 D.

F. Gate Mounting:

- 1. The gate frame is to be supported from the track by four (4) swivel type, self-aligning, 4-wheeled, sealed lubricant, ball-bearing truck assemblies.
- 2. The bottom of each support post shall have a bracket equipped with a pair of 3" (76mm) UHMW guide wheels Wheel cover protectors shall be included with bottom guides to comply with UL325.
- 3. Gap protectors shall be provided and installed, compliant with ASTM F 2200.

G. Diagonal Bracing:

1. Diagonal "X" bracing of 3/16" or 1/4" diameter stainless or galvanized steel cable shall be installed throughout the entire gate frame.

H. Gate Filler:

1. Ornamental Picket: Picket sizes shall be (1" or ¾") (25mm or 19mm) square. Pickets may extend through only the clear opening portion or through the entire length of the gate as required. If a motorized gate operator is to be applied to the gate and the specified picket spacing allows for openings in the gate frame that exceed 2¼" (57mm), a secondary gate filler shall be secured at each end of the gate frame and tied at each 1" x 2" (25mm x 51mm) or 2" x 2" (51mm x 51mm) vertical member. The secondary gate filler shall extend to a minimum height of 72" (1.2m) above grade and shall be sized to prevent a 2¼" (57mm) diameter sphere from passing through openings anywhere along the length of the gate frame, and in that portion of the adjacent fence that the gate covers in the open position.

I. Posts:

1. Double sets of support posts shall be minimum 4" O.D. (102mm) round SS40 or 4" x 4" x 3/16" wall square steel tubing, grade 500. Gate posts shall be galvanized and supported in concrete footings as specified by the design team. The gate can also be wall mounted on the secure side of the opening.

J. Finish:

- Gate to be aluminum, color coated with polyester powder complying with AAMA 2604. If powder coated, the gate (including track member) and all accessories shall be pretreated chemically by sand blasting or other acceptable method to ensure proper coating adherence.
- 2. Colors: Three different colors will be selected from manufacturer's standard range, one for each Bus Base site.

K. Gate Lock:

- 1. Gate system shall be furnished with a secure gate catcher. The catcher shall prevent the gate panel from being pried open while the gate is in the closed and locked position.
- 2. Gate system shall be furnished with an electro-mechanical lock. Lock shall be supplied with status indication and with a six tumbler mechanical lock. All gates shall be keyed alike. Lock requires additional 115V power supplied by others.

PART 3 EXECUTION

3.01 SITE INSPECTION:

- A. Final grades and installation conditions shall be examined. Installation shall not begin until all unsatisfactory conditions are corrected.
- B. Locate concrete mounting pad in accordance with approved shop drawings.
- C. Make sure that gate is level and operating smoothly under manual conditions before installation of gate operators. Do not proceed until gate panel is aligned and operates without binding.

3.02 **INSTALLATION**:

- A. Equipment in this section shall be installed in strict accordance with the company's printed instructions, current at the time of installation (unless otherwise shown on the contract drawings).
- B. Installation is to be performed by an authorized installer certified by the gate manufacturer.

- C. Supply, install, test and commission gate system along with power supply, power distribution, gate controller, and all required accessories throughout the Project facilities per technical specifications and drawings.
- Coordinate locations of operators with contract drawings, other trades and shop drawings.
- E. Installer shall ensure that the electric service to the operator is at least 20 AMPS. Operator wattage is 2400.
- F. The gate and installation shall conform to:
 - 1. ASTM F 1184 standards for aluminum cantilever slide gates, Type II, Class 2.
 - 2. ASTM F 2200 standard specification for automated vehicular gate construction.
 - 3. UL325 standards.
- G. The installing contractor shall be responsible to ensure that appropriate external primary entrapment safety devices be installed for the specific site conditions to protect against all potential entrapment zones. Proper operation of these safety devices shall be verified and training as to the operation and maintenance of these devices for the users and owners shall be documented.
- H. Integrated testing and commissioning of gate systems to be provided by the Contractor.
- I. Contractor to provide training & handing over of all materials, equipment, and appliances.
- J. Some information, such as exact equipment layout, wire routing, additional conduit, and power requirements, etc. has been omitted. It shall be the responsibility of the Contractor to translate these specifications and drawings into a complete design package containing all necessary elements for a complete turnkey installation including all material, labor, warranties, shipping, and permits. The contractor shall provide all materials, equipment, labor and all other incidental material, tools, appliances, and transportation as required for a complete and functional gate system.
- K. Provide continuous on-site supervision of the installation technicians. On-site supervision shall include daily supervision of the work, updating work site progress drawings to reflect changes and installations details, preparing weekly progress reports and attendance at site coordination meetings as directed by OCTA.
- L. Provide continuous engineering and programming support during the installation as required to accommodate existing conditions and unforeseen conditions that may arise during performance of the work.
- M. Provide all miscellaneous hardware as required.

- N. Coordinate the delivery and storage of all materials, equipment, and miscellaneous hardware.
- O. Omission of any item from the specifications or drawings does not absolve the contractor from providing complete and functioning gate systems.

3.03 TESTING:

- A. Component Testing: Maximum reliability shall be achieved through extensive use of high-quality, pretested components. Each and every component shall be individually tested by the manufacturer prior to installation.
- B. Tools, Testing and Calibration Equipment: The supplier shall provide all tools, testing, and calibration equipment necessary to ensure reliability and accuracy of the gate system.
- C. The vendor shall be required to train and instruct client's personnel in the correct use, operation, and supervision of the gate systems prior to the handing over of the project.
- D. The supplier shall be responsible for inspection and Quality Assurance (QA) for all materials and workmanship.

3.04 SYSTEM VALIDATION:

- A. The complete system shall be adjusted to assure it is performing properly. Test gate operator through a minimum of ten full cycles and adjust to ensure operation without binding, scraping or uneven motion. Test limit switches for proper "at rest" gate position.
- B. Gate lock shall be aligned properly to lock and unlock without binding. Test gate lock through a minimum of ten full cycles and verify secure locking.
- C. All anchor bolts shall be fully concealed in the finished installation.
- D. Test and Explain Safety Features:
 - 1. Each system feature and device is a separate component of the gate system.
 - 2. Read and follow all instructions for each component.
 - 3. Ensure that all instructions for mechanical components, safety devices and the gate operator are available for everyone who will be using the gate system.
 - 4. The warning signs shipped with the gate operator must be installed in prominent position on both sides of the gate.
- E. Ensure the owner is clear with regard to the safety points concerning the basic operational guidelines of the safety features of the gate operator system. These safety points are listed in the operator manual and must be read prior to system use.

END OF SECTION

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SECTION 32 31 22

SECURITY GATES - PEDESTRIAN SWING TYPE

PART 1 GENERAL

1.01 SECTION INCLUDES

A. The work in this section shall include furnishing all labor, materials, equipment and appliances necessary to complete installation of Pedestrian Swing Gate System(s) required for this project in strict accordance with this specification section and drawings.

1.02 REFERENCE STANDARDS

- A. American Welding Society AWS D1.1 / D1.1M Structural Welding Code.
- B. ASTM A 123 Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel.

1.03 **SUBMITTALS**

- A. Product Data:
 - 1. Provide manufacturer's catalog cuts with printed specifications and installation instructions.
 - 2. Furnish detailed sequence of operation (description of system).
- B. Shop Drawings: Include plans, elevations, sections, gate locations, post spacing, and mounting details. Include wiring diagrams for power, signal, and control wiring.
- C. Samples: For color specified.
- D. Certifications
 - 1. The steel welders and welding process must be certified per section 1.08 A-2.

1.04 **QUALITY ASSURANCE**

- A. The entire system shall be installed and commissioned from a single vendor to assure reliability and continued service.
- B. The vendor shall be required to train and instruct OCTA personnel in the correct use, operation, maintenance, and supervision of the gate system prior to the handing over of the project.

- C. The supplier shall be responsible for inspection and Quality Assurance (QA) for all materials and workmanship.
- D. The contractor's or subcontractor's main resources within the project shall carry proper professional certification issued by the manufacturer and verified by a third-party organization to confirm sufficient product and technology knowledge.
- E. The contractor shall carefully follow instructions in documentation provided by the manufacturer to ensure all steps have been taken to provide a reliable, easy-to-operate system.
- F. All equipment shall be tested and configured in accordance with instructions provided by the manufacturer prior to installation.
- G. A proper installation shall meet NEC (National Electrical Code) per the guidelines of that year's revision.

PART 2 PRODUCTS

2.01 PEDESTRIAN SWING GATE MANUFACTURERS:

- A. The Pedestrian Swing Gate Systems shall be manufactured by Tymetal Corp., 678 Wilbur Avenue, Greenwich, NY 12834 (800) 328 4283.
- B. Approved substitution All other pedestrian swing gate systems must be submitted for approval to OCTA and the design team in accordance with substitution requirements as set forth in the general provisions of the project manual.
- C. Gate manufacturer shall provide independent certification as to the use of a documented Welding Procedure Specification and Procedure Qualification Record to ensure conformance to the AWS D1.1 / D1.1M Structural Welding Code Steel. Upon request, Individual Certificates of Welder Qualification documenting successful completion of the requirements of the AWS D1.1 / D1.1M code.
- D. Store gate frames on building site, in an upright position, under cover, on wood sills or floors, and in a manner that prevents rust or damage. Ventilate canvas or plastic covers to prevent moisture traps.

2.02 SYSTEM DIMENSIONS:

A. Each gate shall have a clear gate opening width of 4 feet 0 inches (1.22m) and a gate height of 7 feet 0 inches (2.13m).

2.03 SYSTEM FUNCTION:

- A. General Description:
 - 1. Pedestrian Swing Gate System shall be designed as an exterior security swing gate.

2. The swing gate(s) shall be pre-assembled, pre-hung and tested at the manufacturer's location.

B. Operation:

1. When the gate is in the closed position, it shall be impossible for the gate to be opened except by electrical or mechanical means, except in the case of emergency egress requirements.

C. Pedestrian Swing Gate Lock:

1. Gate shall be furnished with an electro-mechanical lock. Lock requires 115V power Supply by others.

D. Self-Closing:

1. The Pedestrian Swing Gate System shall be equipped with an automatic door closer

E. Door Position Indication Switch:

1. The Pedestrian Swing Gate System shall be equipped with a door position switch.

2.04 **SYSTEM COMPONENTS:**

A. Security Gate Panel Filler:

1. Gate panel filler shall be ½" x 3" x 8 gauge weld mesh with ornamental pickets on "exterior" side.

B. Coating:

1. The entire gate frame and door assembly shall be hot-dip galvanized after fabrication and welding.

C. Hinges:

1. Two (2) needle bearing hinges per gate shall be furnished and shall have a thrust capacity (door weight) of 600 lbs per pair.

D. Electro-mechanical Lock:

1. 115v Electro-mechanical swing gate lock, keyed both sides, shall be supplied with one key per key code.

E. Door Closer:

1. Door closer case and internal parts shall be steel and cast iron with constant viscosity liquid from 120 degrees F to -30 degrees F. Rust inhibitor paint shall be applied.

- F. Door Pulls:
 - 1. Door pulls shall be Tymetal standard pull, ADA accessible.
- G. Door Position Indicator Switch:
 - 1. Rotary door position switch shall be TYM 8750/16353.

2.05 **FABRICATION**:

A. General:

- 1. Pedestrian Swing Gate systems shall be fully assembled at the factory and shipped to the project site ready for installation.
- All welds on the gate frame shall conform to Welding Procedure Specification and Procedure Qualification Record to ensure conformance to AWS D1.1 / D1.1M Structural Welding Code – Steel. All individual welders shall be certified to AWS D1.1 / D1.1M welding code. See 1.04 C.
- 3. Steel members shall be straight, true and free from dents, buckle, twist or rough edges. All joints shall be tight metal-to-metal welded finish. All welds shall show uniform section and deep penetration. Clean weld spatter off so that surfaces are easily cleaned.
- 4. The entire gate frame, door, and filler panel assembly shall be hot-dip galvanized after fabrication and welding, followed by powder coating.
- B. Frames, Stiles and Rails:
 - 1. Steel members shall be tubular in cross-section with a minimum wall thickness of 3/16" (5mm). Members shall be mitered and welded at the corners.

2.06 **FINISH**:

- A. Galvanizing and Powder Coated:
 - 1. All exposed system parts shall be zinc galvanized or as otherwise specified.
 - 2. Powder coat frame, door, filler panel and other fabricated components after assembly and galvanizing. Powder coating to be AAMA 2604 compliant. Provide one color, selected from manufacturer's standard range.

PART 3 EXECUTION

3.01 SITE INSPECTION:

A. Final grades and installation conditions shall be examined. Installation shall not begin until all unsatisfactory conditions are corrected, which is the responsibility of the Contractor.

3.02 **INSTALLATION**:

- A. Equipment in this section shall be installed in strict accordance with the company's printed instructions unless otherwise shown on the contract drawings.
- B. Installation is to be performed by an authorized installer certified by the gate manufacturer.
- C. Supply, install, test and commission gate system along with power supply, power distribution, gate controller, and all required accessories throughout the Project facilities per technical specifications and drawings.
- D. Integrated testing and commissioning of gate systems to be provided by the Contractor.
- E. Provide training & handing over of all materials, manuals, equipment, spares, and appliances.
- F. Some information, such as exact equipment layout, wire routing, additional conduit and power requirements, etc. has been omitted. It shall be the responsibility of the Contractor to translate these specifications and drawings into a complete design package containing all necessary elements for a complete turnkey installation including all material, labor, warranties, shipping, and permits. The contractor shall provide all materials, equipment, labor and all other incidental material, tools, appliances, and transportation as required for a complete and functional gate system.
- G. Provide continuous on-site supervision of the installation technicians. On-site supervision shall include daily supervision of the work, updating work site progress drawings to reflect changes and installations details, preparing weekly progress reports and attendance at site coordination meetings as directed by OCTA.
- H. Provide continuous engineering and programming support during the installation as required to accommodate existing conditions and unforeseen conditions that may arise during performance of the work.
- I. Provide all miscellaneous hardware as required.
- J. Coordinate the delivery and storage of all materials, equipment, and miscellaneous hardware.
- K. Omission of any item from the specifications or drawings does not absolve the Contractor from providing a complete and functioning gate system.

3.03 TESTING

- A. Component Testing: Maximum reliability shall be achieved through extensive use of high-quality, pretested components. Each and every component shall be individually tested by the manufacturer prior to installation.
- B. Tools, Testing and Calibration Equipment: The supplier shall provide all tools, testing, and calibration equipment necessary to ensure reliability and accuracy of the gate system.
- C. The vendor shall be required to train and instruct client's personnel in the correct use, operation, and supervision of the gate systems prior to the handing over of the project.
- D. The supplier shall be responsible for inspection and Quality Assurance (QA) for all materials and workmanship.

3.04 SYSTEM VALIDATION:

- A. The complete system shall be adjusted to assure it is performing properly.
- B. The system shall be operated for a sufficient period of time to determine that the system is in proper working order.

END OF SECTION

SECTION 33 01 00

OPERATION AND MAINTENANCE OF UTILITIES

PART 1 - GENERAL

1.01 <u>SECTION INCLUDES</u>

A. Protection and maintenance of utilities included within, adjacent to, or affected by Work under this Contract. Maintain and protect utilities encountered in Work, unless otherwise indicated. Secure undercut facilities so they provide uninterrupted service.

1.02 RELATED SECTIONS

- A. Section 01 33 00: Submittal Procedures
- B. Section 01 43 20: Project Quality Program Requirements Design/Bid/Build
- C. Section 03 05 15 Portland Cement Concrete
- D. Section 31 10 00 Site Clearing

1.03 REFERENCES (NOT USED)

1.04 QUALITY ASSURANCE

A. Comply with Project Quality Program Requirements (see 1.02 above).

1.05 SUBMITTALS

- A. Refer to Section 01 33 00 Submittal Procedures, for submittal requirements and procedures.
- B. Descriptive literature and manufacture's data.
- C. Prepare Working Drawings and calculations for sanitary sewer, storm drain, electrical, water, gas and telephone systems. Appropriate utility owner will review and approve submittals pertaining to its facilities.

1.06 <u>DEFINITIONS (NOT USED)</u>

1.07 WORKSITE CONDITIONS

A. Do not start Work until OCTA and utility owners have approved Contractor's plan for performing Work.

1.08 UTILITY LOCATIONS

A. Contract Drawings indicate known existing public and private utilities, sanitary sewer and storm drains, in approximate locations and rearrangement of utilities to extent

known, within limits of the Contract, which are expected to affect Work. Locations are not guaranteed nor is there any guarantee that all existing utility facilities within limits of Contract have been indicated. Utilities rearranged for this, or other contracts, have been shown in proposed location; coordinate with utility owners and determine actual facility locations. Location of utility facilities, as indicated, does not relieve Contractor of obligation to coordinate Work affecting facilities with utility owners involved.

- 1. For purpose of this Section, a utility shall be considered accurately indicated to the extent that:
 - a. The facility's actual location (position) is:
 - 1) Within five feet for underground utilities, including ATMS duct banks and vaults (but excluding ATMS fiber optic lines leading off or feeding ATMS vaults/vaults, and lateral service connections).
 - 2) Within three feet for overhead utilities, of the approximate horizontal centerline location of the indicated utility.
 - 3) Within six inches vertically of any point of feature where an elevation for such point or feature is indicated.
 - b. The facility's actual size does not differ from the size indicated by more than 25 percent of the size indicated.
 - c. The utility material is not materially different than that indicated.
- B. Mark proposed excavation and notify Underground Service Alert (USA) of Southern California at least three working days before start of excavation so that USA member organizations existing utility facilities can be marked. USA locates facilities for members only. Notify nonmember utilities to mark their facilities separately. Locate subsurface structures before Work in vicinity begins. Use hand tools when exposing subsurface structures or excavating within two feet of utility markings as required by state law.
- C. Notify affect utility owner, and OCTA, of damage to utility facilities and assume financial liability for repairs to be made by the utility owner's forces for damage caused by Contractor's acts of carelessness and neglect, and otherwise caused by Contractor's operations. Do not make repairs to utility facilities without written approval from facility owner. Adjust existing pull, junction and valve boxes, curb cock and meter boxes to match new sidewalks and street pavement.
- D. Notify affected utility owner, and OCTA, of utilities not indicated or marked in field.
- E. Exercise extreme caution in vicinity of critical systems (fire service, gas, water supply, fire alarm system) to prevent service interruptions. The existing communications and signals duct bank below the proposed location of the equipment pad is one of OCTA's most critical systems.

1.09 <u>UTILITY REARRANGEMENT</u>

- A. Rearrangement of existing utilities is not expected to be required by the project. If the Contractor wishes to have utilities temporarily or permanently relocated for its own convenience, Contractor shall make arrangements with utility companies or agencies and reimburse at Contractor's expense.
- B. Notify owners a minimum of two weeks in advance of the time proposed to perform Work that would endanger existing utility facilities and cooperate with owners in relocating and protecting facilities during construction operations.
- C. Permit utility owners, and personnel engaged by them, access to Worksite in order to maintain, relocate or inspect their facilities, and cooperate with owners in performing this Work.

1.10 EXISTING SERVICE CONNECTIONS

A. Existing service connections to buildings may not be indicated on the drawings. The Contractor shall protect, support and maintain service connections and ensure continuous service.

1.11 PRESERVATION OF PROPERTY

A. Protect existing utilities not indicated as "Abandoned". Remove abandoned facilities as necessary to complete other Work. Cut and cap or plug abandoned facilities per utility company standards, at limits of excavation unless otherwise indicated.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Provide materials conforming to requirements of respective Specification sections for each utility system as required or, if not specified, conform to requirements of respective utility owner.

PART 3 - EXECUTION

3.01 EXCAVATION AND BACKFILLING

A. Perform excavation and backfilling as specified in section 31 20 00, Earthwork. Notify owner of each utility two days in advance of backfilling. Each owner – Inspect, and accept by sign-off, condition of facility prior to backfilling. Correct deficiencies indicated by inspection and obtain acceptances of respective utility owners.

3.02 <u>REMOVAL AND RESTORATION OF PAVEMENTS, SIDEWALKS, CURBS AND</u> GUTTERS

A. Perform removal and restoration of surface structures as required for Work under this Contract. Construct asphalt concrete paving as specified in Section 32 12 16, Asphalt Paving. Construct Portland cement concrete paving as specified in Section 32 13 13, Cement Paving. Construct curbs, gutters and sidewalks as specified in

Section 32 16 13, Concrete Curbs, Gutters and Sidewalks. Restore surface structures to condition existing before start of construction.

3.03 WATER MAINS

- A. Local Water Utility, in this Specification refers to local jurisdiction requirements.
- B. Maintain, support, and protect local water utility facilities during operations. Design supports to avoid damage to pipe coating.
- C. Local water utility will observe installation and removal of temporary supports from its facilities, and placing of bedding and backfill around and over its facilities.
- D. Where sections of abandoned water mains are to be removed, cut and cap pipe to remain.
- E. Repair damaged coatings to facility owners piping at no cost to OCTA.
- F. Coordinate installation of water meters and new water services with local water utility; minimize service interruptions.

3.04 GAS MAINS AND SERVICES

- A. Maintain continuity of existing facilities and support and protect SoCal Gas (SCG) facilities during operations.
- B. Where gas mains are to be taken out of service or abandoned, coordinate with SCG to disconnect the mains, service, and cap mains to remain.
- C. Work around gas facilities by conforming to Standard Specifications of SCG and Contractor's Master Handbook.
- D. Immediately report damaged coatings to SCG, immediately.
- E. Where sections of abandoned gas mains are to be removed, cut and cap pipe to remain.

END OF SECTION

SECTION VII: LIST OF DRAWINGS - EXHIBIT C

LIST OF DRAWINGS

By this reference, the following drawings are incorporated in this Invitation For Bids.

ANAHEIM BUS BASE

Drawing Number	Drawing Name				
GENERAL					
G-ANA-001	TITLE SHEET				
CIVIL					
CG-ANA-100	ANAHEIM BUS BASE CIVIL NOTES				
CG-ANA-101	ANAHEIM BUS BASE CITIL NOTES				
CD-ANA-101	ANAHEIM GATES 3 & 4 CIVIL DEMOLITION – SHEET 1 OF 1				
CD-ANA-103	ANAHEIM GATES 1 & 2 CIVIL DEMOLITION				
CP-ANA-101	ANAHEIM GATES 3 & 4 CIVIL SITE LAYOUT – SHEET 1 OF 2				
CP-ANA-102	ANAHEIM GATES 3 & 4 CIVIL SITE LAYOUT – SHEET 2 OF 2				
CP-ANA-103	ANAHEIM GATES 1 & 2 CIVIL SITE LAYOUT				
CP-ANA-104	ANAHEIM BUS BASE CIVIL DETAILS				
CP-ANA-105	CIVIL/STRUCTURAL ENLARGED GATE PLANS, SECTIONS, AND DETAILS I				
CP-ANA-106	CIVIL/STRUCTURAL ENLARGED GATE PLANS, SECTIONS, AND DETAILS II				
CP-ANA-107	CIVIL/STRUCTURAL ENLARGED GATE PLANS, SECTIONS, AND DETAILS III				
CP-ANA-108	CIVIL/STRUCTURAL ENLARGED GATE PLANS, SECTIONS, AND DETAILS IV				
ELECTRICAL					
E-ANA-001	ELECTRICAL LEGEND				
E-ANA-002	ELECTRICAL LEGEND CONTINUED				
E-ANA-003	ELECTRICAL GENERAL NOTES & ABBREVIATIONS				
E-ANA-004	ELECTRICAL CUT SHEETS				
E-ANA-006	ELECTRICAL CUT SHEETS				
E-ANA-010	ELECTRICAL OVERALL SITE PLAN – DEMOLITION				
E-ANA-011	ELECTRICAL OVERALL SITE PLAN – RENOVATION				
E-ANA-100	ELECTRICAL ENLARGED PLANS – DEMOLITION				
E-ANA-101	ELECTRICAL ENLARGED PLANS – RENOVATION				
E-ANA-102	ELECTRICAL ENLARGED PLANS – RENOVATION				
E-ANA-501	ELECTRICAL DETAILS				
E-ANA-601	ELECTRICAL ELECTRICAL SCHEDULES				
E-ANA-602	ELECTRICAL 30 DAY LOAD SUMMARY				
E-ANA-701	ELECTRICAL SINGLE LINE DIAGRAM (SHOWN FOR REFERENCE)				
E-ANA-702	ELECTRICAL SINGLE LINE DIAGRAM – CONTINUED				
E-ANA-801	ELECTRICAL TITLE 24				
SECURITY					

IFB 3-2279 EXHIBIT C

SE-ANA-001	SECURITY GENERAL NOTES AND LEGEND
SE-ANA-010	SECURITY OVERALL SITE PLAN – DEMOLITION
SE-ANA-011	SECURITY OVERALL SITE PLAN – RENOVATION
SE-ANA-101	SECURITY ENLARGED PLANS – DEMOLITION
SE-ANA-102	SECURITY ENLARGED PLANS – RENOVATION
SE-ANA-501	SECURITY DETAILS
SE-ANA-502	SECURITY DETAILS
SE-ANA-503	SECURITY DETAILS
SE-ANA-504	SECURITY DETAILS
SE-ANA-505	SECURITY TYPICAL CAMERA MOUNTING DETAILS
SE-ANA-506	SECURITY POLE MOUNTING DETAILS
SE-ANA-507	SECURITY DOOR DETAILS

GARDEN GROVE BUS BASE

Drawing Number	Drawing Name
GENERAL	
G-GG-001	TITLE SHEET
CIVIL	
CG-GG-100	GARDEN GROVE BUS BASE CIVIL NOTES
CG-GG-101	GARDEN GROVE BUS BASE CITIL NOTES
CD-GG-101	GARDEN GROVE GATE 1 CIVIL DEMOLITION
CD-GG-102	GARDEN GROVE GATE 2 CIVIL DEMOLITION
CD-GG-103	GARDEN GROVE GATE 3 CIVIL DEMOLITION
CP-GG-101	GARDEN GROVE GATE 1 CIVIL SITE LAYOUT
CP-GG-102	GARDEN GROVE GATE 2 CIVIL SITE LAYOUT
CP-GG-103	GARDEN GROVE GATE 3 CIVIL SITE LAYOUT
CP-GG-104	GARDEN GROVE BUS BASE CIVIL DETAILS
CP-GG-105	CIVIL/STRUCTURAL INFILL FENCE PLAN, SECTIONS, AND DETAILS
CP-GG-106	CIVIL/STRUCTURAL ENLARGED GATE PLANS
CP-GG-107	CIVIL/STRUCTURAL SECTIONS AND DETAILS
ELECTRICAL	
E-GG-001	ELECTRICAL LEGEND
E-GG-003	ELECTRICAL GENERAL NOTES & ABBREVIATIONS
E-GG-004	ELECTRICAL CUT SHEETS
E-GG-010	ELECTRICAL OVERALL SITE PLAN – DEMOLITION
E-GG-011	ELECTRICAL OVERALL SITE PLAN – RENOVATION
E-GG-100	ELECTRICAL ENLARGED PLANS – DEMOLITION
E-GG-101	ELECTRICAL ENLARGED PLANS – RENOVATION
E-GG-102	ELECTRICAL ENLARGED PLANS – RENOVATION
E-GG-501	ELECTRICAL DETAILS
E-GG-601	ELECTRICAL PANEL SCHEDULES
E-GG-602	ELECTRICAL 30 DAY LOAD SUMMARY
E-GG-701	ELECTRICAL SINGLE LINE DIAGRAM
SECURITY	
SE-GG-001	SECURITY GENERAL NOTES AND LEGEND
SE-GG-010	SECURITY OVERALL SITE PLAN – DEMOLITION
SE-GG-011	SECURITY OVERALL SITE PLAN – RENOVATION
SE-GG-100	SECURITY ENLARGED PLANS – DEMOLITION
SE-GG-101	SECURITY ENLARGED PLANS – RENOVATION
SE-GG-501	SECURITY DETAILS
SE-GG-502	SECURITY DETAILS
SE-GG-503	SECURITY DETAILS
SE-GG-504	SECURITY DETAILS
SE-GG-505	SECURITY TYPICAL CAMERA MOUNTING DETAILS
SE-GG-506	SECURITY POLE MOUNTING DETAIL

SANTA ANA BUS BASE

Drawing Number	Drawing Name
GENERAL	
G-SA-001	TITLE SHEET
CIVIL	
CG-SA-100	SANTA ANA BUS BASE CIVIL NOTES
CG-SA-101	SANTA ANA BUS BASE CITIL NOTES
CD-SA-101	SANTA ANA GATE 1 CIVIL DEMOLITION
CD-SA-103	SANTA ANA GATE 2 CIVIL DEMOLITION
CD-SA-104	SANTA ANA GATE 3 CIVIL DEMOLITION
CP-SA-101	SANTA ANA GATE 1 CIVIL SITE LAYOUT
CP-SA-102	SANTA ANA GATE 1 CIVIL SITE LAYOUT
CP-SA-103	SANTA ANA GATE 2 CIVIL SITE LAYOUT
CP-SA-104	SANTA ANA GATE 3 CIVIL SITE LAYOUT
CP-SA-105	SANTA ANA BUS BASE CIVIL DETAILS
CP-SA-106	CIVIL/STRUCTURAL ENLARGED GATE PLANS
CP-SA-107	CIVIL/STRUCTURAL SECTIONS AND DETAILS
ELECTRICAL	
E-SA-001	ELECTRICAL LEGEND
E-SA-002	ELECTRICAL LEGEND CONTINUED
E-SA-003	ELECTRICAL GENERAL NOTES & ABBREVIATIONS
E-SA-004	ELECTRICAL CUT SHEETS
E-SA-010	ELECTRICAL OVERALL SITE PLAN
E-SA-100	ELECTRICAL ENLARGED PLANS – DEMOLITION
E-SA-101	ELECTRICAL ENLARGED PLANS – RENOVATION
E-SA-102	ELECTRICAL ENLARGED PLANS – RENOVATION
E-SA-501	ELECTRICAL DETAILS
E-SA-601	ELECTRICAL PANEL AND ELECTRICAL SCHEDULES
E-SA-602	ELECTRICAL LOAD SUMMARY
E-SA-701	ELECTRICAL SINGLE LINE DIAGRAM
SECURITY	
SE-SA-001	SECURITY GENERAL NOTES AND LEGEND
SE-SA-010	SECURITY OVERALL SITE PLAN – DEMOLITION
SE-SA-011	SECURITY OVERALL SITE PLAN – RENOVATION
SE-SA-100	SECURITY ENLARGED PLANS – DEMOLITION
SE-SA-101	SECURITY ENLARGED PLANS – RENOVATION
SE-SA-501	SECURITY DETAILS
SE-SA-502	SECURITY DETAILS
SE-SA-503	SECURITY DETAILS
SE-SA-504	SECURITY DETAILS
SE-SA-505	SECURITY TYPICAL CAMERA MOUNTING DETAILS
SE-SA-506	SECURITY POLE MOUNTING DETAIL

SECURITY GATES INSTALLATION AT ANAHEIM, GARDEN GROVE, AND SANTA ANA BUS BASES

CONTRACT NO. C-3-2279

GANNETT FLEMING
CONTACT: FREDRICK CROOKS, AIA

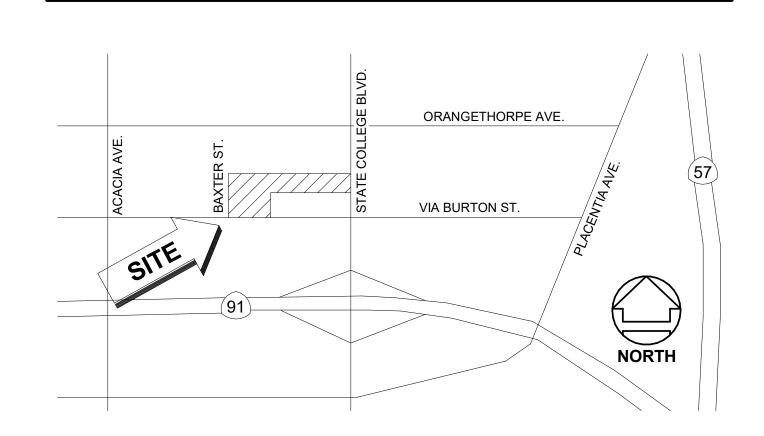
601 SOUTH FIGUEROA STREET, SUITE 3800 LOS ANGELES, CALIFORNIA 90017

PHONE: 213.409.6632 FAX: 213.559.9508

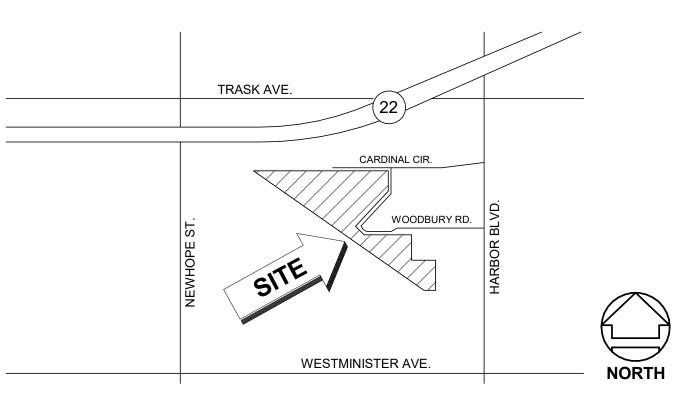
1717 E. VIA BURTON ANAHEIM, CA 92806 11790 CARDINAL CIRCLE GARDEN GROVE, CA 92843

4301 W. MACARTHUR BLVD. SANTA ANA, CA 92704

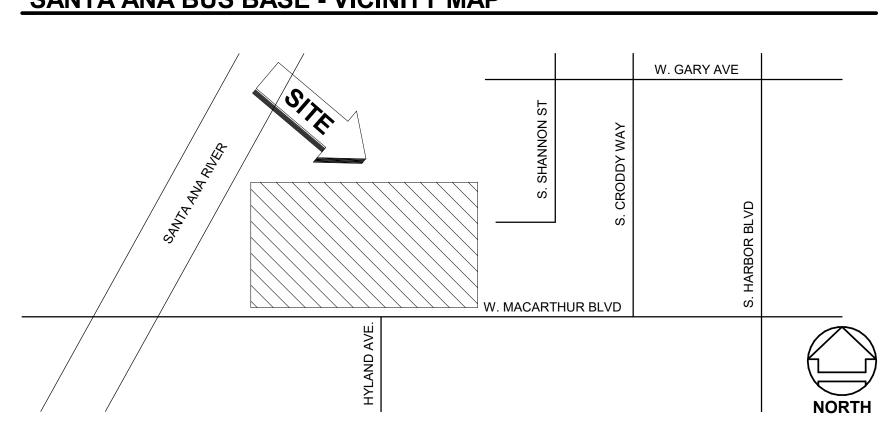
ANAHEIM BUS BASE - VICINITY MAP



GARDEN GROVE BUS BASE - VICINITY MAP



SANTA ANA BUS BASE - VICINITY MAP



JOB # 067909-02
DESIGN BY: AH
DRAWN BY: MK
CHECKED BY: FC
DATE: 01.20.2023
SCALE: 12" = 1'-0"
SHEET:

G-000





SECURITY GATES INSTALLATION OCTA - ANAHEIM BUS BASE

1717 E. VIA BURTON ANAHEIM, CA 92806

CONTRACT NO. C-3-2279

GANNETT FLEMING

CONTACT: FREDRICK CROOKS. AIA

601 SOUTH FIGUEROA STREET, SUITE 3800 LOS ANGELES, CALIFORNIA 90017

PHONE: 213.409.6632 FAX: 213.559.9508

GENERAL NOTES

- . CONTRACTOR SHALL COORDINATE AND SCHEDULE WORK OF ALL TRADES WITH THE OWNER'S REPRESENTATIVE. EACH SUBCONTRACTOR SHALL START HIS WORK PROMPTLY, PURSUE IT IN ACCORDANCE WITH CONTRACTOR'S PROGRESS SCHEDULE. NORMALLY EXPECTED RAINFALL CONDITIONS SHALL NOT BE CAUSE FOR AUTHORIZED EXTENSION.
- 2. PROVIDE TEMPORARY SAFETY BARRIERS AS REQUIRED BY CODE AND TAKE ALL NECESSARY PRECAUTIONS TO ENSURE PUBLIC SAFETY AND WELFARE.
- 3. ALL DEBRIS SHALL BE REMOVED AND LEGALLY DISPOSED OF OFF SITE DAILY AND MAINTAINED IN CLEAN ROOM CONDITION AT ALL TIMES.
- 4. AGENCY APPROVED PLANS SHALL BE KEPT IN A PLAN RACK AND SHALL NOT BE MARKED OR USED BY ANY WORKMEN. ALL CONSTRUCTION SETS SHALL REFLECT THE SAME LATEST INFORMATION. THE CONTRACTOR SHALL ALSO MAINTAIN IN GOOD CONDITION, ONE COMPLETE SET OF PLANS WITH ALL REVISIONS, ADDENDA, AND CHANGE ORDERS ON THE PREMISES AT ALL TIMES, AND IT IS TO BE UNDER THE CARE OF THE JOB SUPERINTENDENT.
- 5. PROVIDE TEMPORARY UTILITIES AS NECESSARY FOR THE CONSTRUCTION.
- CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS AND COORDINATE WITH ALL TRADES. NOTIFY THE ARCHITECT IMMEDIATELY OF ANY DISCREPANCIES OR CONFLICT PRIOR TO PROCEEDING WITH ANY WORK.
- 7. CONTRACTOR SHALL PROTECT ALL WORK FROM INCLEMENT WEATHER AND
- 8. ALL WORK PERTAINING TO THIS PROJECT SHALL CONFORM TO THE PLANS AND SPECIFICATIONS AND CITY OF ANAHEIM BUILDING CODE REQUIREMENTS. FURTHER THE CONTRACTOR SHALL COMPLY WITH THE STATE DEPARTMENT OF INDUSTRIAL RELATIONS, DIVISION OF INDUSTRIAL SAFETY (O.S.H.A.).
- 9. THE CONTRACTOR SHALL OBTAIN ALL PERMITS, LICENSES, AND INSPECTIONS FROM THE CITY OF ANAHEIM TO COMPLETE THE WORK.
- 10. THE PROTECTION OF ALL STRUCTURES AND UTILITIES ON THE SITE IS THE
- 11. INFORM OCTA 72 HOURS PRIOR TO BEGINNING OF WORK.
- 12. INTENT OF THE DOCUMENTS:

RESPONSIBILITY OF CONTRACTOR.

- THE EXTENT OF THE WORK IS ONLY INDICATED GENERALLY ON THE DRAWINGS AND SHALL NOT BE CONSIDERED AS THE COMPLETE SCOPE. CONDITIONS INDICATED ARE BASED ON LIMITED SURVEYS OF EXISTING CONDITIONS AND
- 13. IT IS THE INTENT OF THESE CONSTRUCTION DOCUMENTS TO INCLUDE ITEMS AND COMPONENTS OF THE PROPER EXECUTION OF THE WORK, AND THE PROVISIONS FOR A COMPLETE AND FUNCTIONAL FACILITY. IN THAT REGARD ALL APPURTENANT AND ACCESSORY ITEMS AND COMPONENTS REQUIRED FOR CONSTRUCTION OF COMPLETE AND FUNCTIONAL SYSTEMS WITHIN THE CONSTRUCTION SHALL BE PROVIDED WHETHER SPECIFICALLY IDENTIFIED IN THESE CONSTRUCTION DOCUMENTS OR NOT.
- 14. DEVIATIONS AND CONDITIONS WHICH COULD NOT BE REASONABLY ANTICIPATED SHALL BE GOVERNED BY PROVISION IN THE CONDITIONS OF THE CONTRACT PERTAINING TO UNFORESEEN CONDITIONS.
- 15. INSPECTION OF SITE:
- BEFORE SUBMITTING BID, CONTRACTOR SHALL VISIT THE SITE, VERIFY ALL EXISTING ITEMS SHOWN ON THE PLANS OR SPECIFIED AND BE FAMILIAR WITH THE WORKING CONDITIONS. HAZARDS. EXISTING ELEVATIONS AND THE LOCAL REQUIREMENTS INVOLVED; SUBMISSION OF BIDS SHALL BE DEEMED EVIDENCE OF SUCH VISIT. ALL PROPOSALS SHALL TAKE THESE EXISTING CONDITIONS INTO CONSIDERATIONS AND THE LACK OF SPECIFIC INFORMATION ON THE DRAWINGS SHALL NOT RELIEVE THE CONTRACTOR OF ANY RESPONSIBILITY. NO REQUEST FOR ADDITIONAL PAYMENT SHALL BE CONSIDERED AS VALID, DUE TO FAILURE TO ALLOW FOR CONDITIONS WHICH CURRENTLY EXIST.
- 16. EXISTING LOCATIONS:
- LOCATIONS AND ELEVATIONS OF THE VARIOUS ITEMS INCLUDED WITHIN THIS SCOPE OF THIS WORK HAVE BEEN OBTAINED FROM EXISTING AND LIMITED SURVEYS. EXAMINATION OF THE SITE, VERIFY LOCATIONS, ELEVATIONS AND QUANTITIES OF THE SITE, VERIFY LOCATIONS, ELEVATIONS AND QUANTITIES OF ALL ITEMS, UTILITIES AND SERVICES REQUIRED AND BE ADEQUATELY INFORMED AS TO THEIR RELATION TO THE WORK. THE SUBMISSION OF SUCH BID SHALL DEEMED EVIDENCE OF SUCH A VISIT.
- 17. ONGOING OCTA OPERATIONS OCTA WILL CONTINUE TO USE THE FACILITIES THROUGH OUT THE CONSTRUCTION ACTIVITIES. CONSTRUCTION ACTIVITIES SHALL NOT INTERFERE WITH ONGOING OPERATIONS AT THE FACILITIES. THE CONTRACTOR SHALL COORDINATE AND SEQUENCE WORK WITH OCTA PROJECT MANAGER TO MINIMIZE DISRUPTIONS TO OWNER'S CONTINUING OPERATIONS. CONTRACTOR SHALL ARRANGE HIS WORK TO OFFER LEAST INTERFERENCE WITH OCTA DAILY WORK OPERATIONS AND MAINTENANCE. OCTA PROJECT MANAGER WILL COORDINATE WORK ACTIVITIES, AND TEMPORARY CHANGES IN FACILITY ACTIVITY WHICH ARE NECESSARY FOR CONTRACTOR'S WORK.

- 18. EXISTING SYSTEMS, EQUIPMENT AND SERVICES: CONTRACTOR SHALL MAKE ARRANGEMENTS FOR TEMPORARY DEACTIVATION OR RELOCATION OF EXISTING SYSTEMS, EQUIPMENT, UTILITIES AND SERVICES REQUIRED TO FACILITATE THE SCOPE OF WORK. KEEP DEACTIVATION PERIODS TO A MINIMUM. USE INTERMITTENT PERIODS AS DIRECTED. SCHEDULE WITH OWNER DEACTIVATION PERIODS TO MINIMUM. USE INTERMITTENT PERIODS AS DIRECTED. SCHEDULE WITH OWNER DEACTIVATION PERIODS FOR SYSTEMS TO REMAIN IN SERVICE. ALL UTILITIES SHALL BE OPERATIONAL AT END OF WORK
- 19. WORK UNDER THIS CONTRACT SHALL BE DONE SO THAT EXISTING BUS OPERATIONS AND MAINTENANCE FACILITIES SHALL REMAIN IN FULL OPERATIONS DURING CONSTRUCTION. CONTRACTOR SHALL ARRANGE HIS WORK TO OFFER LEAST INTERFERENCE WITH OCTA DAILY WORK OPERATIONS AND MAINTENANCE. OCTA PROJECT MANAGER WILL COORDINATE WORK ACTIVITIES, AND TEMPORARY CHANGES IN FACILITY WHICH ARE NECESSARY FOR CONTRACTOR'S WORK. CONTRACTOR SHALL COORDINATE HIS WORK
- 20. CONTRACTOR WILL BE REQUIRED TO COVER ALL OCTA EQUIPMENT, MATERIAL, AND ACCESSORIES DURING CONSTRUCTION WORK TO PREVENT DAMAGE.
- 21. CONTRACTOR SHALL TAKE ALL PREVENTIVE MEASURES DURING CONSTRUCTION WORK BELOW. OCTA FACILITY WILL BE OPERATIONAL DURING CONSTRUCTION. THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR AND SHALL REPLACE OR REMEDY ANY FAULTY, IMPROPER OR INFERIOR MATERIAL OR WORKMANSHIP OR ANY DAMAGE TO WORK OR ADJACENT
- 22. THE CONTRACTOR SHALL REPORT TO THE ARCHITECT / ENGINEER THROUGH PROJECT MANAGER ANY ERROR. INCONSISTENCY. OR OMISSION HE MAY DISCOVER. THE CONTRACTOR IS RESPONSIBLE FOR CORRECTING ANY ERROR AFTER THE START OF CONSTRUCTION WHICH HAS NOT BEEN BROUGHT TO THE ATTENTION OF THE ARCHITECT. THE CONTRACTOR IS RESPONSIBLE FOR CORRECTING ANY ERROR AT NO COST TO THE AUTHORITY AFTER THE START
- 23. DO NOT SCALE DRAWINGS: ON SITE VERIFICATION OF ALL DIMENSIONS AND CONDITIONS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. NOTIFY ARCHITECT OF ANY DISCREPANCY.
- 24. THE ARCHITECT'S REVIEW OF SHOP DRAWINGS SHALL NOT RELIEVE THE CONTRACTOR FROM RESPONSIBILITY FOR DEVIATION FROM DRAWINGS OR SPECIFICATIONS UNLESS HE HAS (IN WRITING) CALLED THE ARCHITECT'S ATTENTION TO SUCH DEVIATIONS AT THE TIME OF SUBMISSION AND RECEIVED FURTHER CLARIFICATION FROM THE ARCHITECT; NOR SHALL IT RELIEVE HIM OF RESPONSIBILITY FOR ERRORS IN THE SHOP DRAWINGS.
- 25. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO LOCATE ALL EXISTING UTILITIES, WHETHER SHOWN HEREON OR NOTE, AND TO PROTECT THEM FROM DAMAGE. THE CONTRACTOR SHALL BEAR ALL EXPENSE OF REPAIR OR REPLACEMENT OF UTILITIES OR OTHER PROPERTY DAMAGED BY OPERATIONS IN CONJUNCTION WITH THE EXECUTION OF THE WORK.
- 26. EXISTING ELEVATIONS AND LOCATIONS TO BE JOINED SHALL BE VERIFIED BY THE CONTRACTOR BEFORE CONSTRUCTION. IF THEY DIFFER FROM THOSE SHOWN ON THE DRAWINGS, THE CONTRACTOR SHALL NOTIFY THE ARCHITECT SO THAT MODIFICATIONS CAN BE MADE BEFORE PROCEEDING WITH THE WORK.
- 27. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COMPLETE SECURITY OF HIS WORK AND MATERIAL AND EQUIPMENT WHILE JOB IS IN PROGRESS AND UNTIL JOB IS COMPLETED.
- 28. THE STRUCTURE IS DESIGNED AS A STABLE UNIT AFTER ALL COMPONENTS ARE IN PLACE. THE CONTRACTOR SHALL BE RESPONSIBLE TO PROVIDE TEMPORARY BRACING AS REQUIRED OR PORTION THEREOF DURING CONSTRUCTION.
- 29. PROVIDE ALL NECESSARY BLOCKING, BACKING, SLEEVES, AND FRAMING FOR A
- 30. ALL TRADES SHALL DO THEIR OWN CUTTING, FITTING, PATCHING, ETC. TO MAKE THE WORK OF ALL TRADES COME TOGETHER PROPERLY AND FIT TO RECEIVE WORK OF OTHER TRADES.
- 31. CONTRACTOR SHALL NOT BREAK SETS FOR TRADE BIDDING. THE CONTRACTOR DOES SO AT HIS OWN RESPONSIBILITY AND THE OWNER AND / OR ARCHITECT TAKES NO RESPONSIBILITY IF HE DOES SO.
- 32. CONSTRUCTION HOURS 7:00 AM TO 3:30 PM. ALL EXISTING FACILITIES SHALL BE OPERATIONAL AT THE END OF THE WORK DAY. (3:30 PM).
- 33. ALL MATERIALS SHALL BE NEW, UNLESS NOTED OTHERWISE
- 34. THE CONTRACTOR SHALL PROVIDE ALL BARRICADES, WARNING SIGNS, AND PROTECTIVE DEVICES AND SHALL TAKE ALL PRECAUTIONARY MEASURES TO PROTECT ALL PERSONNEL, PROPERTY, AND WORK SITE.
- 35. THE CONTRACTOR SHALL POST IN ADVANCE CONSTRUCTION WARNING SIGNS, AND SHALL INFORM THE AUTHORITY PROJECT ENGINEER 72 HOURS BEFORE STARTING CONSTRUCTION WORK.

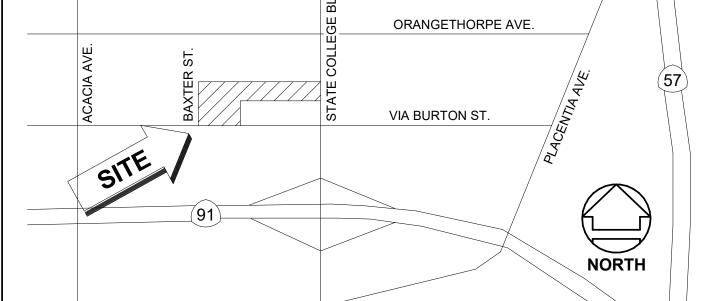
SUMMARY OF WORK

- THE FOLLOWING SUMMARY OF WORK DESCRIPTIONS ARE GENERAL IN NATURE AND 6. MODIFY BUS BASE SITE, GARAGE, AND PARKING CONFIGURATIONS TO NOT INTENDED TO CAPTURE EVERY ITEM REQUIRED TO ACHIEVE THE INTENDED WORK RESULTS ENCOMPASSED BY THE CONTRACT DOCUMENTS.
- DEMOLISH THE INDICATED EXISTING ROLLING VEHICULAR SECURITY GATES A1 & A2 AT THE GARAGE FACING VIA BURTON AND REPLACE WITH NEW OVERHEAD. COILING GRILLES, INCLUDING POSTS AND OPERATORS, PROVIDE RELATED ELECTRICAL DEMOLITION AND NEW ELECTRICAL WIRING, CONDUITS, BOXES, DISCONNECTS, AND CONNECTIONS UNLESS EXISTING ARE INDICATED TO BE REUSED.
- DEMOLISH THE INDICATED EXISTING ROLLING VEHICULAR SECURITY GATES A3 & A4 FACING STATE COLLEGE BLVD AND REPLACE WITH NEW CANTILEVERED SLIDE GATES, INCLUDING POSTS, FOUNDATIONS, AND OPERATORS. PROVIDE RELATED ELECTRICAL DEMOLITION AND NEW ELECTRICAL WIRING, CONDUITS, BOXES, DISCONNECTS, AND CONNECTIONS UNLESS EXISTING ARE INDICATED TO BE REUSED.
- FURNISH AND INSTALL PEDESTRIAN SECURITY GATES A5 & A6. MODIFY EXISTING MASONRY WALL AND FOUNDATION AS INDICATED FOR GATE A5. MODIFY EXISTING CONCRETE WALL, FOUNDATION, AND FENCE AT GARAGE FOR GATE A6 PROVIDE RELATED WIRING, CONDUITS, BOXES, AND CONNECTIONS FOR ELECTRONIC GATE HARDWARE, ACCESS CONTROL AND SURVEILLANCE SYSTEMS. PROVIDE LUMINAIRES AT PEDESTRIAN GATES.
- DELINEATE WITH PAVEMENT STRIPING PEDESTRIAN PATHWAY AS INDICATED FROM GATE A5 THROUGH BUS PARKING AREA TO OPERATIONS BUILDING. FURNISH AND INSTALL IN-ROADWAY WARNING LIGHT (IRWL) SYSTEMS ALONG THE PEDESTRIAN PATHWAY WHERE INDICATED, INCLUDING POST-MOUNTED ACTIVATION SWITCHES AND ELECTRICAL WIRING, CONDUITS, BOXES, DISCONNECTS, AND CONNECTIONS BETWEEN IRWL DEVICES AND INDICATED POWER SOURCES. MODIFY EXISTING SIDEWALK AS INDICATED FOR ACCESS FROM NEW PEDESTRIAN PATHWAY. PROVIDE CONCRETE WALKWAY AS INDICATED FROM GATE A5 TO PUBLIC SIDEWALK.
- DELINEATE WITH PAVEMENT STRIPING PEDESTRIAN PATHWAY IN GARAGE AS INDICATED FROM GATE A6 TO DOORWAY TO OPERATIONS BUILDING. FURNISH AND INSTALL CHAIN-LINK FENCING AND GATE INSIDE GARAGE ADJACENT TO GATE A6 TO CREATE DESIGNATED PERMANENT STORAGE AREA. PROVIDE CONCRETE WALKWAY AS INDICATED FROM GATE A6 TO PUBLIC SIDEWALK

- ACCOMMODATE NEW SECURITY GATES AND IN-ROADWAY WARNING LIGHT SYSTEMS. CUT AND PATCH ASPHALT AND CONCRETE PAVING. PROVIDE ALL NECESSARY EARTHWORK AND UTILITY TRENCHING. UPON COMPLETION OF EARTHWORK, RESTORE FINISHED GRADE AND PAVING TO MATCH EXISTING EXCEPT WHERE NEW FINISHED GRADE SURFACE IS INDICATED.
- 7. PROVIDE THE INDICATED PAINTED PAVEMENT STRIPING AND OTHER PAVEMENT MARKINGS, PROVIDE SEALED CONSTRUCTION JOINTS NEW VEHICULAR SECURITY GATES SHALL BE INTEGRATED WITH EXISTING BUS
- GATES SHALL BE ACCESS CONTROLLED. GATE CONTROL FOR GARAGE BADGES READER) AND INTERCOM SYSTEM, AS APPLICABLE. GATE CONTROL FOR BUSES SHALL USE THE TRANSPONDER SYSTEM ON THE BUS, CARD
- 10. AT EACH INTERCOM, AN INTEGRATED SURVEILLANCE CAMERA SHALL BE PROVIDED TO RECOGNIZE THE DRIVER OR PEDESTRIAN WHO IS ASKING FOR ACCESS TO THE BUS BASES. EXISTING SURVEILLANCE CAMERAS SHALL REMAIN AND BE UTILIZED UNLESS INDICATED TO BE REMOVED. NEW SURVEILLANCE CAMERAS SHALL BE INSTALLED TO RECOGNIZE THE LICENSE PLATE NUMBER OF THE VEHICLE REQUESTING ACCESS. NEW SURVEILLANCE CAMERAS SHALL BE COMPATIBLE AND INTEGRATED INTO THE OCTA BUS BASE EXISTING VIDEO
- 11. FURNISH AND INSTALL CUSTOM STEEL PICKET FENCE WHERE INDICATED.
- PAINT NEW BOLLARDS.
- 14. REPLACE AND UPGRADE ELECTRICAL PANEL AS INDICATED.

GENERAL

- BASE GATE CONTROL SYSTEM AND SHALL HAVE THE ABILITY TO BE OPERATED MANUALLY BY AUTHORIZED OCTA STAFF IN THE EVENT OF AN EMERGENCY AND/OR POWER OUTAGE.
- INTEGRATE NEW SECURITY GATE CONTROL SYSTEMS, INCLUDING INTERCOMS, WITH EXISTING BUS BASE SECURITY SYSTEM AND BUS OPERATIONS. ENTRANCE VEHICLES AND PEDESTRIANS SHALL USE CARD READER SYSTEM (EMPLOYEE READER SYSTEM (EMPLOYEE BADGES READER), AND THE INTERCOM SYSTEM AS APPLICABLE. EMBED SENSOR LOOPS IN THE PAVEMENT AT VEHICULAR EXIT GATES TO OPEN THE GATES AUTOMATICALLY UPON PRESENCE OF AN EXITING VEHICLE. FURNISH AND INSTALL EMBEDDED SAFETY LOOPS ON EACH SIDE OF EACH VEHICULAR GATE TO PREVENT GATE FROM CLOSING PREMATURELY.
- SURVEILLANCE SYSTEM (VSS) MILESTONE VSS PLATFORM.
- 12. FURNISH AND INSTALL NEW GALVANIZED STEEL BOLLARDS WHERE INDICATED.
- 13. FURNISH AND INSTALL INDICATED SIGNAGE.
- **VICINITY MAP** ORANGETHORPE AVE.



SITE PLAN MAINTENANCE OCTA TWO-STORY PARKING GARAGE AREAS OF WORK VIA BURTON ST.

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EDITION.

- CONTRACTOR SHALL MEET ALL STANDARDS IN THE COUNTY OF ORANGE -ORANGE COUNTY PUBLIC WORKS DEPARTMENT - SEPTEMBER 2018
- THE STANDARD PLANS FOR PUBLIC WORKS CONSTRUCTION OF PUBLIC WORKS STANDARDS, INC. ARE HERINAFTER CALLED SPPWC. THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION OF PUBLIC WORKS STANDARDS, INC. ARE HERINAFTER CALLED SSPWC.
- THE 2021 EDITION OF THE SPPWC STANDARD PLANS AND STANARD SPECIFICATIONS SHALL BE USED. WHEN OCPW HAS MADE CONDITIONS TO THE SPPWC STANDARD PLANS OR SPECIFICATIONS, THOSE CONDITIONS SHALL BE FOLLOWED.
- 4. DEVELOPER SHALL MEAN THE SUBDIVISION DEVELOPER, PERMITTEE, OR SHALL MEAN CONTRACTOR IN THE CASE OF A PUBLIC WORKS CONTRACT WITH THE COUNTY OF ORANGE
- THE DEVELOPER SHALL OBTAIN AN ENCROACHMENT PERMIT FROM OCPW PRIOR TO WORK WITHIN PUBLIC RIGHT-OF-WAY.
- 6. THE DEVELOPER SHALL TELEPHONE OCPW AT LEAST 48 HOURS PRIOR TO STARTING CONSTRUCTION WORK SUBJECT TO OCPW INSPECTION.
- CORRESPONDING STATE OF CALIFORNIA TEST METHODS MAY BE SUBSTITUTED FOR DESIGNATED ASTM TEST METHODS FOR WORK SUBJECT TO OCPW INSPECTION. RELATIVE COMPACTION: FOR WORK SUBJECT TO OCPW INSPECTION, IN-PLACE DENSITY SHALL BE DETERMINED BY CALIFORNIA TEST METHOD 231, PART I. LABORATORY MAXIMUM DENSITY SHALL BE DETERMINED BY CALIFORNIA TEST METHOD 216, PART II. PRIVATE LABORATORIES PERFORMING RELATIVE COMPACTION TESTING FOR OCPW SHALL PROVIDE A CALTRANS LABORATORY CERTIFICATION AND CERTIFICATION(S) FOR EACH TECHNICIAN PERFORMING THESE COMPACTION TEST PRIOR TO THE START OF WORK.
- JOINTS BETWEEN NEW PAVEMENT AND EXISTING PAVEMENT SHALL BE MADE BY SAWCUTTING OR COLD PLANING (MINIMUM 1 1/2 INCHES) EXISTING PAVEMENT TO EFFECT A NEAT JOINT. OR AS DIRECTED BY THE ENGINEER.
- WITH CONTRACTOR'S REQUEST FOR USE OF MATERIALS, CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CONSTRUCTION MATERIALS TESTING VERIFYING COMPLIANCE WITH SPECIFICATIONS AND SHALL SUBMIT TEST RESULTS. COUNTY WILL PERFORM QUALITY ACCEPTANCE TESTING AS DETERMINED NECESSARY. ACCEPTANCE OF MATERIALS WILL BE BASED ON GRADE SAMPLES.
- 10. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COSTS ASSOCIATED WITH RETESTING OF FAILED MATERIALS TESTS OR COMPACTION TESTS.
- 11. PORTLAND CEMENT CONCRETE SHALL CONFORM TO OCPW 1803. 12. ASPHALT CONCRETE SHALL CONFORM TO OCPW 1805.
- 13. NEW SIDEWALK JOINTS SHALL CONFORM TO OCPW 112-2-OC
- 14. NEW SIDWALK IS ASSUMED TO BE CONSTRUCTED ON EXPANSIVE SOILS AND SHALL CONFORM TO OCPW 1204.
- 15. REMOVAL AND REPLACEMENT OF ASPHALT CONCRETE SHALL CONFORM TO OCPW 133-3-OC.
- 16. REMOVAL AND REPLACEMENT OF CONCRETE PAVEMENT SHALL CONFORM TO SPPWC 132-4.
- 17. ALL EXISTING TOPOGRAPHIC FEATURES AND UTILITIES SHOWN ARE GENERATED BY COMPUTER AIDED DRAFTING SOFTWARE FROM PREVIOUS PROJECTS AND HAND MEASUREMENTS TAKEN IN THE FIELD. TOPOGRAPHIC SURVEY INCLUDING ESTABLISHING HORIZONTAL AND VERTICAL CONTROL POINTS WERE NOT INCLUDED IN THIS PROJECT.
- 18. DO NOT SCALE OFF DRAWINGS TO LOCATE EXISTING SITE FEATURES OR UTILITIES. ANY UTILITIES SHOWN ARE APPROXIMATE.
- 19. CONTRACTOR SHALL VERIFY CLEARANCE TO ALL UTILITIES PRIOR TO CONSTRUCTION. IF CONFLICTS EXIST, CONTRACTOR SHALL NOTIFY THE ENGINEER.
- 20. CONTRACTOR SHALL FOLLOW ALL BLUESTAKE LAW FOR THE PROJECT AREAS.
- 21. NEW APPLICATIONS OF PAINT SHALL BE APPLIED IN TWO EQUAL THICKNESSES AND SHALL INCLUDE 50 PERCENT OF THE REQUIRED BEADS WITH EACH APPLICATION.
- 22. ALL PROPOSED PAVEMENT MARKINGS, WITH THE EXCEPTION OF THE PEDESTRIAN PATHWAY, SHALL BE YELLOW ACETONE BASED OR THERMOPLASTIC AND BE IN ACCORDANCE WITH SSPWC SECTION 214. THE PAINTED PEDESTRIAN PATHWAY SHALL BE GREEN WATERBORNE TRAFFIC LINE PAINT IN ACCORDANCE WITH SSPWC SECTION 214.
- 23. THE GALVANIZED METAL OF THE BOLLARDS SHALL BE PAINTED BASE YELLOW IN ACCORDANCE WITH SSPWC SECTION 210, WITH A VINYL WASH, PRIMER. AND FINISH COAT PER TABLE 210-1.5.
- 24. REMOVAL OF EXISTING STRIPING SHALL BE IN ACCORDANCE WITH SSPWC **SECTION 314-2.**
- 25. INSTALLATION OF NEW PAVEMENT MARKINGS SHALL BE IN ACCORDANCE WITH SSPWC SECTION 314-4.
- 26. SHOULD THE CONTRACTOR SELECT AND RECEIVE APPROVAL FOR A GATE SYSTEM THAT REQUIRES A GROUND MOUNTED TRACK, THE REMOVAL OF THE EXISTING TRACK SHALL CONFORM TO SPPWC REQUIREMENTS LISTED ABOVE.

GENERAL STRUCTURAL NOTES

- 1.01 GENERAL
- A. THE STRUCTURAL DRAWINGS SHOW THE COMPLETED PROJECT THEY DO NOT INCLUDE COMPONENTS THAT MAY BE NECESSARY FOR CONSTRUCTION SAFETY. THE CONTRACTOR IS RESPONSIBLE FOR SAFETY IN AND AROUND THE JOB SITE DURING CONSTRUCTION.
- 1.02 COORDINATION
- A. VERIFY ALL SITE DIMENSIONS, ELEVATIONS, AND SLOPES WITH DRAWINGS BY OTHERS. DIMENSIONS CONTROLLED BY OR RELATED TO MECHANICAL OR ELECTRICAL EQUIPMENT SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION.
- B. ENGINEERING DESIGN PROVIDED BY OTHERS AND SUBMITTED FOR REVIEW SHALL BEAR THE SEAL AND SIGNATURE OF AN INSURED PROFESSIONAL STRUCTURAL OR CIVIL ENGINEER REGISTERED IN THE STATE IN WHICH THE SUBMITTED ITEMS WILL BE INSTALLED WHO IS A RECOGNIZED EXPERT IN THE TYPE OF WORK SHOWN AND
- C. ANY CHANGES PROPOSED BY THE CONTRACTOR TO THE DESIGN OF THE STRUCTURE DURING CONSTRUCTION SHALL BE SUBMITTED FOR REVIEW TO THE STRUCTURAL ENGINEER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COORDINATION OF STRUCTURAL AND NON-STRUCTURAL ELEMENTS AFFECTED BY PROPOSED CHANGES. THE COST OF DESIGN EFFORT NECESSITATED BY PROPOSED CHANGES SHALL BE BORNE BY THE CONTRACTOR.
- D. THE COST OF DESIGN EFFORT RESULTING FROM ERRORS OR OMISSIONS IN CONSTRUCTION SHALL BE BORNE BY THE CONTRACTOR.
- E. IN CASE OF CONFLICTS, THE MORE COSTLY REQUIREMENTS GOVERN SUBMIT CLARIFICATION REQUEST PRIOR TO PROCEEDING WITH
- F. VERIFY NEW AND EXISTING DIMENSIONS AND CONDITIONS PRIOR TO STARTING WORK. NOTIFY THE ENGINEER OF ANY DISCREPANCIES OR INCONSISTENCIES.
- 2.01 FIELD EXECUTION
- A. STRUCTURES HAVE BEEN DESIGNED FOR OPERATIONAL LOADS ON THE COMPLETED STRUCTURES. THE CONTRACTOR SHALL PROVIDE TEMPORARY BRACING, SHORING, GUYING AND OTHER MEANS TO AVOID EXCESSIVE STRESSES AND HOLD STRUCTURAL ELEMENTS IN PLACE DURING CONSTRUCTION
- B. CONTRACTOR SHALL EXERCISE EXTREME CARE TO AVOID DAMAGE TO EXISTING STRUCTURES. CONTRACTOR IS RESPONSIBLE FOR ALL MEANS AND METHODS REQUIRED TO FACILITATE CONSTRUCTION OF THE WORK AND FOR ENSURING THE SAFETY, STABILITY AND INTEGRITY OF ADJACENT STRUCTURES AND FACILITIES.
- C. WHEN ANCHORING, SHOOTING, DRILLING, CHIPPING OR CORING INTO CONCRETE, THE AREA SHALL BE SCANNED USING GROUND PENETRATING RADAR (GPR) PRIOR TO START OF WORK. DO NOT CUT OR NICK EXISTING REINFORCING UNLESS NOTED OTHEWISE
- D. EDGE OF DRILL HOLES AND OPENINGS SHALL BE NO LESS THAN 4" FROM EXISTING REINFORCEMENT.

STRUCTURAL DESIGN PARAMETERS

- 1.01 GENERAL
- A. CONSTRUCTION SHALL COMPLY WITH THE BUILDING CODE AND OTHER APPLICABLE CODES AND STANDARDS.
- B. BUILDING CODE: CALIFORNIA BUILDING CODE (CBC 2019) AS ADOPTED AND AMENDED BY CITY OF ANAHEIM.
- 2.01 DESIGN CRITERIA
- A. REFERENCE STANDARDS: MINIMUM DESIGN LOADS AND ASSOCIATED CRITERIA FOR BUILDINGS AND OTHER STRUCTURES, ASCE 7-16.
- B. DEAD LOADS
- 1. MATERIAL WEIGHT OF STRUCTURE AND EQUIPMENT
- C. WIND LOAD PARAMETERS
- 1. EXPOSURE CATEGORY = C
- 2. STRUCTURAL RISK CATEGORY = II 3. BASIC WIND SPEED = 95 MPH
- D. SEISMIC LOAD PARAMETERS
- 1. STRUCTURAL RISK CATEGORY = II
- 2. SITE CLASS D (DEFAULT)
- 3. SEISMIC DESIGN CATEGORY = (NOT AVAILABLE) 4. S(DS) = 1.273q
- 5. S(D1) = (NOT AVAILABLE)
- 6. S(1) = 0.561q7. S(s) = 1.591g
- 8. I(e)= 1.0
- 9. I(p) = 1.0

GROUT

- 1.01 NON-SHRINK GROUT
- A. USE PLASTIC OR STIFF (DRY PACK), NON-METALLIC NON-SHRINK GROUT WITH MINIMUM 7,000 PSI COMPRESSIVE STRENGTH AT 28 DAYS. CONFORM TO THE REQUIREMENTS OF CRD-C 621 CORPS OF ENGINEERS FOR NON-SHRINK GROUT.
- B. USE BASE CONSTRUCTION GROUT, EUCO DRY PACK GROUT, OR EQUAL.

CONCRETE

- 1.01 DESCRIPTION
 - A. THIS SECTION INCLUDES THE REQUIREMENTS FOR MATERIALS, PROPORTIONING, AND INSTALLATION OF CONCRETE (RE: ACI 301, ACI 318, ACI 350). PROVIDE NORMAL WEIGHT CONCRETE (144PCF WET).
- 1.02 QUALITY ASSURANCE
 - A. PRODUCE AND DELIVER CONCRETE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS IN ACI 301 AND TOLERANCES OF ACI 117. PLACE CONCRETE IN ACCORDANCE WITH ACI 304. CONDUCT HOT WEATHER AND COLD WEATHER CONCRETING IN ACCORDANCE WITH ACI 305 AND ACI 306 RESPECTIVELY.
- 2.01 MIX WATER
- A. USE POTABLE WATER FREE FROM MATERIALS THAT ARE DELETERIOUS TO CONCRETE OR STEEL (ASTM C1602).
- 2.02 CEMENTITIOUS MATERIALS
- A. PORTLAND CEMENT: CONFORM TO ASTM C 150, TYPE II
- B. FLY ASH: ACCEPTABLE FOR USE IN MIX DESIGN IF COMPLIANT WITH REQUIREMENTS OF CONTRACT DOCUMENTS AND THE MAX RATIO OF FLY ASH TO TOTAL CEMENT AND FLY ASH DOES NOT EXCEED 20 PERCENT BY WEIGHT. CONFORM TO ASTM C 618. TYPE F. DO NOT USE FLY ASH IN COLORED CONCRETE WITHOUT WRITTEN APPROVAL.
- 2.03 AGGREGATE
- A. PROVIDE A SINGLE SIZE OR A GRADATION OF AGGREGATE WITH THE MAXIMUM SIZE AS SHOWN ON THE MIX DESIGN PROPORTIONS BELOW. DO NOT USE AGGREGATES CONTAINING SOLUBLE SALTS OR OTHER SUBSTANCES SUCH AS IRON SULFIDES, PYRITE, MARCASITE, OCHRE OR OTHER MATERIALS THAT MAY CAUSE STAINS ON EXPOSED CONCRETE SURFACES.
- B. UNLESS NOTED OTHERWISE, AGGREGATE SHALL BE NORMAL WEIGHT CONFORMING TO ASTM C33.
- 2.04 SLUMP
- A. TOLERANCE FOR SPECIFIED SLUMP IS +/- 1 INCH BEFORE THE ADDITION OF SUPERPLASTICIZERS/WATER REDUCERS PER ACI 117. MAXIMUM SLUMP WITH SUPERPLASTICIZERS IS 8 INCHES. WATER MAY BE ADDED ON SITE FOR SLUMP ADJUSTMENT IF THE TOTAL AMOUNT ADDED IS WITHIN THE WATER/CEMENTITIOUS RATIO AND SLUMP LIMITS SPECIFIED. DO NOT ADD WATER IF SUPERPLASTICIZERS ARE
- 2.05 MIX DESIGN PROPORTIONS (NORMAL WT CONCRETE U.N.O.)
- A. PROVIDE COMPUTERIZED BATCH RECORDS WITH ALL LOAD LOCATION.

LOCATION	COM	28 DAY PRESSIVE ENGTH (PSI)	MAX W/CM RATIO	SLUMP (IN)	% AIR	MAX AGGREGATE SIZE (IN)
DRILLED PIER	RS	3000	0.58	6	4.5	1
FOOTINGS, GRADE BEAM	IS	4000	0.50	5	4.5	1

- 3.01 CONCRETE PLACING
- A. DO NOT PLACE CONCRETE IN CONTACT WITH ALUMINUM. B. DO NOT ADD WATER ON SITE OR AFTER SUPERPLASTICIZERS HAVE
- **BEEN ADDED**
- C. THE MAXIMUM FREE DROP OF CONCRETE IS 6'-0" WITHOUT A TREMIE PIPE TO PREVENT SEGREGATION. DEPOSIT CONCRETE AS NEAR AS POSSIBLE TO ITS FINAL POSITION. DO NOT EMPLOY ANY PRACTICES CAUSING SEGREGATION SUCH AS VIBRATING CONCRETE TO SPEED CONVEYANCE
- D. MECHANICALLY VIBRATE CONCRETE. REVIBRATE CAISSONS (DRILLED

MASONRY

- 1.01 DESCRIPTION
- A. THIS SECTION INCLUDES THE REQUIREMENTS FOR MATERIAL PROPORTIONING, AND REQUIREMENTS FOR INSTALLATION OF MASONRY CONSTRUCTION.
- 1.02 QUALITY ASSURANCE
- A. MINIMUM 28-DAY COMPRESSIVE STRENGTH OF EACH WYTHE OF CONCRETE MASONRY. F'm = 2000 PSI.
- 2.01 MATERIALS
- A. LOAD BEARING HOLLOW CONCRETE MASONRY UNITS: MEDIUM WEIGHT WITH COMPRESSIVE STRENGTH OF 1900 PSI ON THE NET AREA. UNITS SHALL CONFORM TO ASTM C-90.
- B. GROUT: 2000 PSI, MINIMUM 28 DAY COMPRESSIVE STRENGTH. GROUT SHALL CONFORM TO ASTM C 476 AND ACI-530 BUILDING CODE.
- C. MORTAR SHALL BE PORTLAND CEMENT-LIME TYPE S CONFORMING TO ASTM C 270, WITH A MINIMUM AVERAGE 28 DAY COMPRESSIVE STRENGTH OF 1800 PSI AND MAXIMUM AIR CONTENT OF 12%. DO NOT USE MASONRY CEMENT IN MORTAR. THE MIXTURE OF CEMENTITIOUS MATERIAL. AGGREGATE.AND WATER SHALL CONFORM TO THE FOLLOWING PROPORTIONS BY VOLUME
- 1. 1 PART PORTLAND CEMENT OR BLENDED CEMENT CONFORMING TO ASTM C 150 AND ASTM C515 RESPECTIVELY.
- 2. 1/4 TO 1/2 PARTS HYDRATED LIME OR LIME PUTTY CONFORMING TO **ASTM C 207.**
- 3. VOLUME OF AGGREGATE, MEASURED IN DAMP LOOSE CONDITION, EQUAL TO 2 1/4 TO 3 TIMES THE SUM OF THE VOLUMES OF THE ABOVE CEMENTITIOUS MATERIALS.

REINFORCING STEEL

- 1.01 DESCRIPTION
- A. THIS SECTION INCLUDES REQUIREMENTS FOR MATERIALS, DETAILING, AND INSTALLATION OF REINFORCING STEEL (RE: ACI 301-05, ACI 318-05, ACI 350-06).
- B. PLACE REINFORCEMENT IN CONFORMANCE WITH CONTRACT DRAWINGS AND ACI DETAILING MANUAL SP-66.
- 1.02 COORDINATION
- A. DO NOT DAMAGE OR DISRUPT REINFORCING BARS OR STEEL EMBEDS FROM THEIR PROPER LOCATION BY THE PLACEMENT OF EMBEDDED PIPING OR CONDUIT. PROVIDE REQUIRED CLEARANCE BETWEEN REINFORCEMENT AND EMBEDDED PIPING AND CONDUIT.
- 1.03 QUALITY ASSURANCE
- A. TOLERANCES FOR FABRICATION, PLACEMENT, BAR BENDS, STANDARD HOOKS AND LAP SPLICES FOR REINFORCEMENT SHALL CONFORM TO ACI 117, SECTION 2 AND CRSI STANDARDS.
- 2.01 REINFORCEMENT MATERIALS
- A. REINFORCING STEEL SHALL CONFORM TO THE FOLLOWING STANDARDS.
- 1. #3 BARS AND LARGER ASTM A 615, GRADE 60 2. WELDABLE REINFORCING STEEL - ASTM A 706
- 3.01 COVER
- A. CONCRETE COVER FOR REINFORCING BARS (TO FACE OF BAR INCLUDING PRIMARY REINFORCEMENT) UNLESS NOTED OTHERWISE ON DRAWINGS.
- B. CAST-IN-PLACE CONCRETE ACI 350 (NON-PRESTRESSED) 1. CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH • ALL BARS - 3"
- 3.02 WELDING
- A. WELD REINFORCING BARS IN CONFORMANCE WITH AWS D1.4 USING ELECTRODE E8018-X.
- B. SUBMIT WELDER CERTIFICATIONS AND WELDING PROCEDURES PER AWS D1.4.

FOUNDATIONS

- 1.01 GENERAL
 - A. PRESUMPTIVE BUILDING CODE MINIMUM VALUES FOR SOIL LOAD-BEARING CAPACITIES SHALL BE USED UNLESS GEOTECHNICAL ENGINEERING DATA TO SUBSTANTIATE HIGHER VALUES IS SUBMITTED AND APPROVED.
 - B. FOUNDATION DESIGN IS BASED ON THE FOLLOWING PRESUMPTIVE
- LOAD-BEARING VALUES PROVIDED BY THE BUILDING CODE 1. SOIL CLASSIFICATION = TYPE 5: CLAY, SANDY CLAY, SILTY CLAY,
- 2. VERTICAL (GRAVITY) NET BEARING PRESSURE = 1500 PSF
- 3. LATERAL PASSIVE PRESSURES = 100 PSF/FT 4. LATERAL SLIDING RESISTANCE = 130 PSF (IN NO CASE SHALL THE LATERAL SLIDING RESISTANCE EXCEED ONE-HALF THE DEAD
- LOAD). C. SEE OTHER SECTIONS OF THE GENERAL STRUCTURAL NOTES FOR
- ADDITIONAL INFORMATION ON DRILLED PIER FOUNDATIONS. D. FOR SHORING REQUIRED TO PROTECT EXISTING STRUCTURES. CONTRACTOR SHALL SUBMIT SHORING SHOP DRAWINGS AND CALCULATIONS TO THE ENGINEER FOR REVIEW. SHOP DRAWINGS AND CALCULATIONS SHALL BEAR THE SEAL OF A GEOTECHNICAL ENGINEER REGISTERED IN THE STATE IN WHICH CONSTRUCTION WILL BE DONE.
- 2.01 CONTROLLED LOW STRENGTH MATERIAL (CLSM)
- A. CLSM SHALL BE USED AS AN UNREINFORCED FILL MATERIAL TO REPLACE EXCAVATED SOIL UNDER STRUCTURE FOUNDATIONS AND AS SHOWN ON DRAWINGS.
- B. PROPORTIONS: CEMENT CONTENT = 94 LBS/CU YD (+/- 5%); SLUMP = 7 INCHES (+/- 1 INCH); COMPRESSIVE STRENGTH AT 28 DAYS= 150 PSI (+/-50 PSI).
- 3.01 PLACEMENT
- A. PLACE FOUNDATION CONCRETE ONLY ON CLEAN, FIRM BEARING MATERIAL. VERIFY THE SUITABILITY OF THE BEARING MATERIAL WITH THE GEOTECHNICAL ENGINEER BEFORE PLACING FOUNDATIONS.
- B. PLACE DOWELS AND ANCHORS BEFORE PLACING CONCRETE. USE TEMPLATES TO ENSURE PROPER PLACEMENT.



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B. SUBMIT SHOP DRAWINGS FOR ENGINEER'S REVIEW. FABRICATE ONLY FROM REVIEWED DRAWINGS.

1.02 QUALITY ASSURANCE

A. STEEL CONSTRUCTION SHALL CONFORM TO THE SPECIFICATIONS AND STANDARDS AS CONTAINED IN THE LATEST EDITION OF THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC) MANUAL. INCLUDING THE COMMENTARY AND SUPPLEMENTS.

B. ALL STEEL FABRICATION WORK SHALL BE PREFORMED BY A FABRICATOR APPROVED BY THE OWNER.

2.01 MATERIALS

/I <i>F</i>	CATEGORY	<u>ASTM</u>	GRADE, FY (KSI)
	OTHER ROLLED SECTIONS (ANGLES, CHANNELS, PLATES, ETC.)	A36	FY=36
	WHERE NOTED "50 KSI" ON DRAWINGS	A572	FY=50
	STEEL PIPE (TYPE E)	A53	GR B, FY=35
	STRUCTURAL ROUND (HSS)	A500	GR B, FY=42
	STRUCTURAL TUBES (HSS)	A500	GR C, FY=50
	STRUCTURAL BOLTS (U.N.O.) (TYPE N CONNECTION)	F3125	A325
	ANCHOR RODS/BOLTS	F1554	GR 36
	SHEET STEEL	A1011	GR 36
	WELDING RODS (LOW HYDROGEN)		E-70XX SERIES

2.02 ANCHOR RODS

A. PROVIDE HEADED OR THREADED AND NUTTED ANCHOR RODS. HOOKED ANCHOR RODS ARE NOT ACCEPTABLE.

B. DO NOT HEAT OR BEND ANCHOR RODS.

3.01 FIELD WELDING

A. PROVIDE HOT WORK PERMITS. HOT WORK IS ANY WORK INVOLVING WELDING, TORCH CUTTING, GRINDING, OPEN-FLAME SOLDERING, BRAZING OR SIMILAR OPERATIONS CAPABLE OF INITIATING FIRES OR EXPLOSIONS.

B. WELDING SHALL CONFORM TO THE FOLLOWING AMERICAN WELDING SOCIETY (AWS) STRUCTURAL WELDING CODES AS APPLICABLE.

AWS D1.1 STRUCTURAL WELDING CODE-STEEL

2. AWS D1.3 STRUCTURAL WELDING CODE-SHEET STEEL

3. AWS D1.4 STRUCTURAL WELDING CODE-REINF'G STEEL AWS D1.8 STRUCTURAL WELDING CODE SEISMIC SUPPLEMENT

C. WELDERS SHALL HOLD VALID CERTIFICATES ISSUED BY AN ACCEPTED TESTING AGENCY WITHIN THE LAST 12 MONTHS. IF ANY CERTIFICATE IS MORE THAN 12 MONTHS OLD, SUBMIT DETAILS OF COMPANY QUALITY CONTROL.

POST-INSTALLED ANCHORS AND DOWELS

1.01 DESCRIPTION

A. POST INSTALLED ANCHORS AND DOWELS SHALL ONLY BE USED WHERE SPECIFIED ON THE CONSTRUCTION DOCUMENTS.

1.02 QUALITY ASSURANCE

A. PROVIDE SPECIAL INSPECTION IN ACCORDANCE WITH THE APPLICABLE ICC-ES REPORT. THE BUILDING CODE. AND THE GENERAL STRUCTURAL NOTES.

B. INSTALL ALL ADHESIVE ANCHORS, DOWELS AND MECHANICAL ANCHORS PER ADHESIVE MANUFACTURER'S REQUIREMENTS. **SPECIAL INSPECTION**

1.01 GENERAL

A. THE OWNER OR THE REGISTERED DESIGN PROFESSIONAL ACTING AS THE OWNER'S AGENT SHALL EMPLOY ONE OR MORE SPECIAL STRUCTURAL INSPECTORS IN ACCORDANCE WITH THE APPLICABLE BUILDING CODE.

1.02 CONTRACTOR AND STRUCTURAL INSPECTOR RESPONSIBILITIES A. IT IS THE CONTRACTOR'S RESPONSIBILITY TO SELF-INSPECT THE STRUCTURAL WORK FOR CONFORMANCE WITH THE CONTRACT DOCUMENTS. PRIOR TO REQUESTING ANY SPECIAL INSPECTION, STRUCTURAL INSPECTION PROVIDED BY OTHERS DOES NOT RELIEVE THE CONTRACTOR OF THIS RESPONSIBILITY. STRUCTURAL DEVIATIONS FROM THE CONTRACT DOCUMENTS THAT ARE FOUND AT A LATER DATE AND ARE DECLARED TO BE SIGNIFICANT BY THE STRUCTURAL ENGINEER OF RECORD SHALL BE CORRECTED BY THE CONTRACTOR WITH ALL DISPATCH.

B. THE STRUCTURAL INSPECTOR IS NOT AUTHORIZED TO STOP OR DELAY THE WORK. IF THE CONTRACTOR ELECTS TO CONTINUE WITH CERTAIN WORK AFTER BEING NOTIFIED BY THE STRUCTURAL INSPECTOR THAT SUCH WORK IS UNACCEPTABLE, THE CONTRACTOR DOES SO AT THEIR OWN RESPONSIBILITY AND RISKS CORRECTING THE WORK AT A LESS OPPORTUNE TIME.

C. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING ADEQUATE FACILITIES FOR THE STRUCTURAL INSPECTOR TO INSPECT THE WORK SAFELY AND EFFICIENTLY. TWENTY-FOUR (24) HOUR NOTICE IS REQUIRED PRIOR TO INSPECTION.

D. WORK TO BE INSPECTED MUST BE COMPLETED PRIOR TO TIME OF INSPECTION. CONTRACTOR SHALL BEAR THE EXPENSE OF ADDITIONAL INSPECTIONS THAT MAY OCCUR BECAUSE OF INCOMPLETE OR INCORRECT WORK.

E. INSPECTION OF WORK PROVIDED BY THE CONTRACTOR SUCH AS TEMPORARY SHORING OR JACKING SYSTEMS SHALL BE PROVIDED BY THE CONTRACTOR'S DESIGN ENGINEER FOR THOSE SYSTEMS. THE CONTRACTOR/ENGINEER SHALL PROVIDE A LETTER/REPORT TO BOTH THE OWNER AND ENGINEER OF RECORD THAT THESE INSPECTIONS HAVE BEEN COMPLETED BEFORE EACH PHASE OF SUCH WORK CAN

F. THE STRUCTURAL INSPECTOR IS NOT RESPONSIBLE FOR OSHA COMPLIANCE OR FOR TEMPORARY CONSTRUCTION, SUCH AS

G. THE STRUCTURAL INSPECTOR IS NOT AUTHORIZED TO DIRECT OR APPROVE CHANGES FROM THE CONTRACT DOCUMENTS. IF THE CONTRACTOR WISHES TO QUESTION THE STRUCTURAL INSPECTOR'S INTERPRETATION OF THE CONTRACT DOCUMENTS, THEY MAY DO SO DIRECTLY WITH THE STRUCTURAL ENGINEER OF RECORD.

2.01 SHOP FABRICATIONS

A. SHOP FABRICATION WORK IS SUBJECT TO SPECIAL STRUCTURAL INSPECTION UNLESS THE FABRICATOR IS REGISTERED AND APPROVED BY THE BUILDING OFFICIAL TO PERFORM WORK WITHOUT SPECIAL INSPECTION.

B. FABRICATOR SHALL SUBMIT CERTIFICATE OF COMPLIANCE STATING WORK PERFORMED IS IN ACCORDANCE WITH APPROVED CONSTRUCTION DOCUMENTS.

3.01 NOTES APPLICABLE FOR SPECIAL INSPECTION TABLES BELOW A. "PERIODIC" SPECIAL INSPECTION: THE PART-TIME OR INTERMITTENT OBSERVATION OF WORK REQUIRING SPECIAL INSPECTION BY AN APPROVED SPECIAL INSPECTOR WHO IS PRESENT IN THE AREA WHERE THE WORK HAS BEEN OR IS BEING PERFORMED AND AT THE COMPLETION OF WORK. 2019 CBC CHAPTER 17.

B. "CONTINUOUS" SPECIAL INSPECTION: THE FULL-TIME OBSERVATION OF WORK REQUIRING SPECIAL INSPECTION BY AN APPROVED SPECIAL INSPECTOR WHO IS PRESENT IN THE AREA WHERE THE WORK IS BEING PERFORMED. 2019 CBC CHAPTER 17.

C. ITEMS NOT SHOWN MAY REQUIRE CONTINUOUS OR PERIODIC SPECIAL STRUCTURAL INSPECTION AT THE DISCRETION OF THE ENGINEER OF RECORD. ITEMS LISTED MAY REQUIRE ALTERNATE FREQUENCIES OF INSPECTION OTHER THAN SHOWN. UNDER THE DIRECTION OF THE ENGINEER OF RECORD.

D. "OBSERVED" IN STEEL CONSTRUCTION SPECIAL INSPECTION: THE INSPECTOR SHALL OBSERVE THESE ITEMS ON A RANDOM BASIS. OPERATIONS NEED NOT BE DELAYED PENDING THESE INSPECTIONS

E. "PERFORM" IN STEEL CONSTRUCTION SPECIAL INSPECTION: THESE TASKS SHALL BE PERFORMED FOR EACH BOLTED CONNECTION AND WELDED JOINT OR MEMBER.

3.02 REQUIRED VERIFICATION AND SPECIAL INSPECTIONS

INSPECTION OF CONCRETE CONSTRUCTION (RE: 2019 CBC 1705.3)

TYPE AND FREQUENCY OF INSPECTION

1. INSPECT REINFORCEMENT AND VERIFY PLACEMENT. CONTINUOUS ___ PERIODIC __\/_

2. INSPECT ANCHORS CAST IN CONCRETE. CONTINUOUS ___ PERIODIC _____

3. INSPECT ANCHORS POST-INSTALLED IN HARDENED CONCRETE

a. ADHESIVE ANCHORS INSTALLED IN HORIZONTALLY OR UPWARDLY INCLINED ORIENTATIONS TO RESIST SUSTAINED TENSION LOADS. CONTINUOUS ___ PERIODIC ___

b. MECHANICAL ANCHORS AND ADHESIVE ANCHORS NOT DEFINED IN CONTINUOUS ___ PERIODIC ______

4. VERIFY USE OF REQUIRED DESIGN MIX. CONTINUOUS ___ PERIODIC ______

5. PRIOR TO CONCRETE PLACEMENT, FABRICATE SPECIMENS FOR STRENGTH TESTS, PERFORM SLUMP AND AIR CONTENT TESTS, AND DETERMINE THE TEMPERATURE OF THE CONCRETE. CONTINUOUS ___ PERIODIC ____

6. INSPECT CONCRETE FOR PROPER APPLICATION TECHNIQUES. CONTINUOUS √ PERIODIC

7. VERIFY MAINTENANCE OF SPECIFIED CURING TEMPERATURE AND **TECHNIQUES** CONTINUOUS ___ PERIODIC _____

8. VERIFY IN SITU CONCRETE STRENGTH PRIOR TO REMOVAL OF SHORES AND FORMS FROM STRUCTURAL SLABS. CONTINUOUS ___ PERIODIC _\frac{\sqrt{}}{}__

9. INSPECT FORMWORK FOR SHAPE, LOCATION AND DIMENSIONS OF THE CONCRETE MEMBER BEING FORMED. CONTINUOUS ___ PERIODIC ______

REQUIRED SPECIAL INSPECTIONS AND TESTS OF CAST-IN-PLACE DEEP FOUNDATION ELEMENTS (2019 CBC, TABLE 1705.8)

TYPE AND FREQUENCY OF INSPECTION

1. INSPECT DRILLING OPERATIONS AND MAINTAIN COMPLETE AND ACCURATE RECORDS FOR EACH ELEMENT. CONTINUOUS <u>√</u> PERIODIC ___

2. VERIFY PLACEMENT LOCATIONS AND PLUMBNESS, CONFIRM ELEMENT DIAMETERS, LENGTHS, EMBEDMENT INTO BEDROCK (IF APPLICABLE), AND ADEQUATE END-BEARING STRATA CAPACITY. RECORD CONCRETE OR GROUT VOLUMES. CONTINUOUS _√_ PERIODIC ___

3. FOR CONCRETE ELEMENTS, PERFORM TESTS AND ADDITIONAL SPECIAL INSPECTIONS IN ACCORDANCE WITH SECTION 1705.3.

INSPECTION OF STEEL WELDING (RE: AISC360-16 TABLES N5.4-1, N5.4-2, & N5.4-3)

INSPECTION TASKS PRIOR TO WELDING

1. THE FOLLOWING TASK(S) SHALL BE **OBSERVED**.

A. WELDER QUALIFICATION RECORDS AND CONTINUITY RECORDS.

B. MATERIAL IDENTIFICATION (TYPE/GRADE).

C. WELDER IDENTIFICATION SYSTEM.

D. FIT-UP OF GROOVE WELDS (INCLUDING JOINT GEOMETRY, JOINT PREPARATIONS, DIMENSIONS, CLEANLINESS, TACKING, AND BACKING).

E. FIT-UP OF CJP GROOVE WELDS AT HSS T-, Y- AND K- JOINTS WITHOUT BACKING (INCLUDING JOINT GEOMETRY, JOINT PREPARATIONS, DIMENSIONS, CLEANLINESS, AND TACKING),

F. CONFIGURATION AND FINISH OF ACCESS HOLES

G. FIT-UP OF FILLET WELDS (INCLUDING DIMENSIONS, CLEANLINESS, AND TACKING).

2. THE FOLLOWING TASKS SHALL BE **PERFORMED** A. WPS AVAILABLE

B. MANUFACTURER CERTIFICATIONS FOR WELDING CONSUMABLES **AVAILABLE**

INSPECTION TASKS DURING WELDING

 THE FOLLOWING TASK(S) SHALL BE OBSERVED. A. CONTROL AND HANDLING OF WELDING CONSUMABLES (INCLUDING

PACKAGING AND EXPOSURE CONTROL)

B. NO WELDING OVER CRACKED TACK WELDS.

C. ENVIRONMENTAL CONDITIONS (INCLUDING WIND SPEED WITHIN LIMITS, PRECIPITATION, AND TEMPERATURE).

D. WPS FOLLOWED (INCLUDING SETTINGS ON WELDING EQUIPMENT TRAVEL SPEED. SELECTED WELDING MATERIALS. SHIELDING GAS TYPE/FLOW RATE, PREHEAT APPLIED, INTERPASS TEMPERATURE MAINTAINED (MIN/MAX), AND PROPER POSITION (F, V, H, OH)).

E. WELDER IDENTIFICATION SYSTEM (INCLUDING INTERPASS AND FINAL CLEANING, EACH PASS WITHIN PROFILE LIMITATIONS, AND EACH PASS MEETS QUALITY REQUIREMENTS).

A. PLACEMENT AND INSTALLATION OF STEEL HEADED STUD ANCHORS.

INSPECTION TASKS AFTER WELDING

1. THE FOLLOWING TASK(S) SHALL BE **OBSERVED**.

2. THE FOLLOWING TASK(S) SHALL BE **PERFORMED**.

A. WELDS CLEANED.

B. NO PROHIBITED WELDS HAVE BEEN ADDED WITHOUT THE APPROVAL OF THE EOR.

2. THE FOLLOWING TASK(S) SHALL BE **PERFORMED**

A. SIZE. LENGTH, AND LOCATION OF WELDS. B. WELDS MEET VISUAL ACCEPTANCE CRITERIA (INCLUDING CRACK PROHIBITION, WELD/BASE-METAL FUSION, CRATER CROSS SECTION CRACK PROHIBITION, WELD PROFILES, WELD SIZE, UNDERCUT, AND

POROSITY). C. ARC STRIKES.

D. K-AREA.

E. WELD ACCESS HOLES IN ROLLED HEAVY SHAPES AND BUILT-UP **HEAVY SHAPES.**

F. BACKING REMOVED AND WELD TABS REMOVED (IF REQUIRED). G. REPAIR ACTIVITIES.

H. DOCUMENT ACCEPTANCE OR REJECTION OF WELDED JOINT OR MEMBER.

INSPECTION OF POST-INSTALLED ANCHORS AND DOWELS (RE: PRODUCT ICC-ES EVALUATION REPORT)

INSPECTION ITEM AND FREQUENCY OF INSPECTION

1. ADHESIVE ANCHORS AND REINFORCEMENT DOWELS

• THE FOLLOWING TASKS SHALL BE PERFORMED CONTINUOUSLY. A. VERIFY DRILL BIT TYPE AND SIZE.

B. HOLE DEPTH AND CLEANING PROCEDURE

C. PRODUCT DESCRIPTION INCLUDING NAME, ROD TYPE, DIAMETER, AND LENGTH.

D. ADHESIVE EXPIRATION DATE.

E. PROPER INSTALLATION TECHNIQUE FOR ADHESIVE ANCHORS.

2. MECHANICAL ANCHORS

THE FOLLOWING TASKS SHALL BE PERFORMED CONTINUOUSLY.

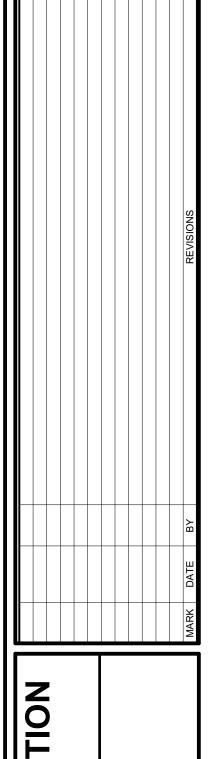
A. VERIFY DRILL BIT TYPE AND SIZE.

B. HOLE DEPTH AND CLEANING PROCEDURE

C. PRODUCT DESCRIPTION INCLUDING NAME, ANCHOR TYPE, DIAMETER, AND LENGTH.

D. PROPER INSTALLATION TECHNIQUE FOR MECHANICAL ANCHORS AND TIGHTENING TORQUE.

> **GANNETT** G.F. # 067909-02 601 SOUTH FIGUEROA ST. SUITE 3800 LOS ANGELES, CA 90017 T: 213 624 0347 www.gannettfleming.com



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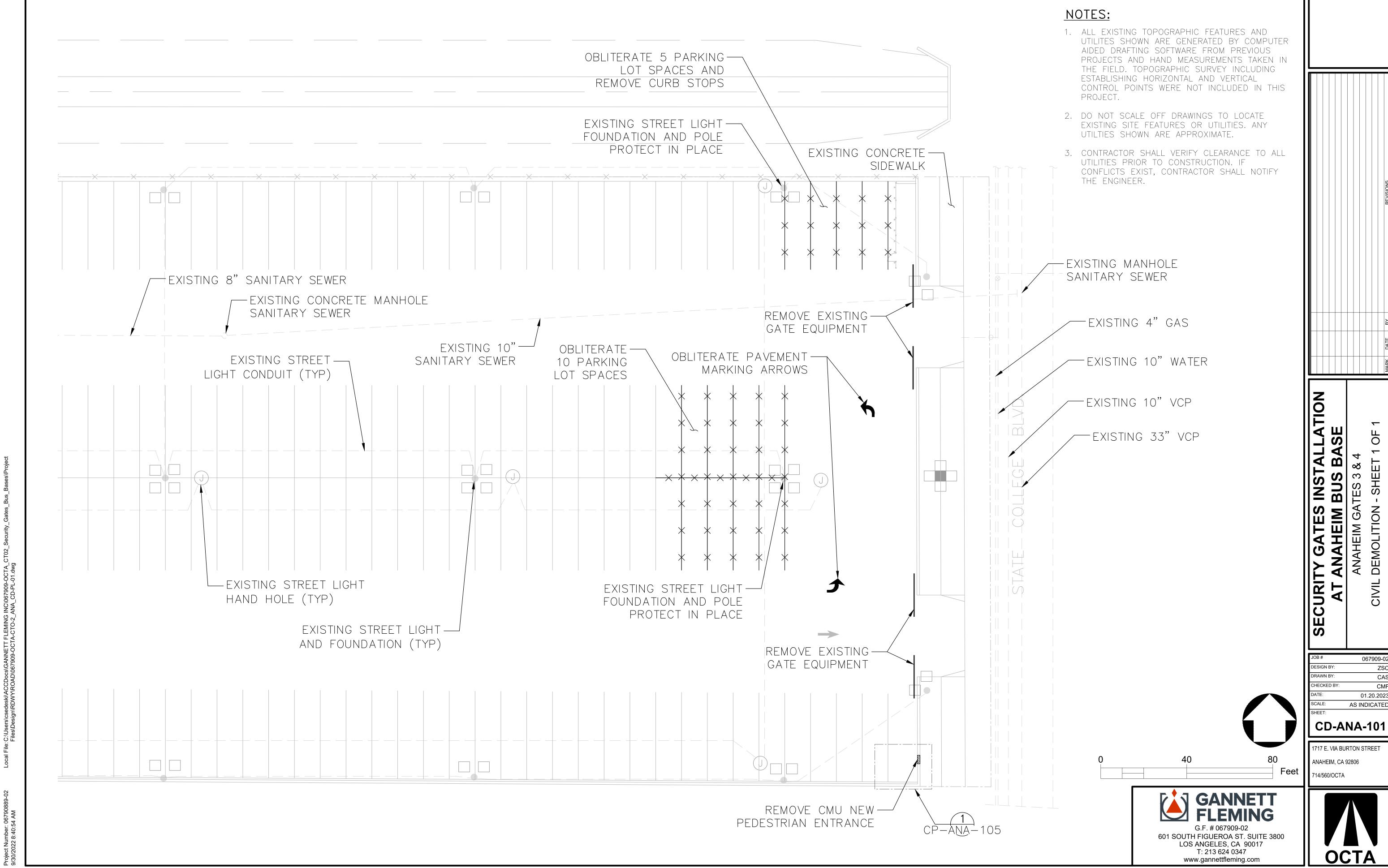
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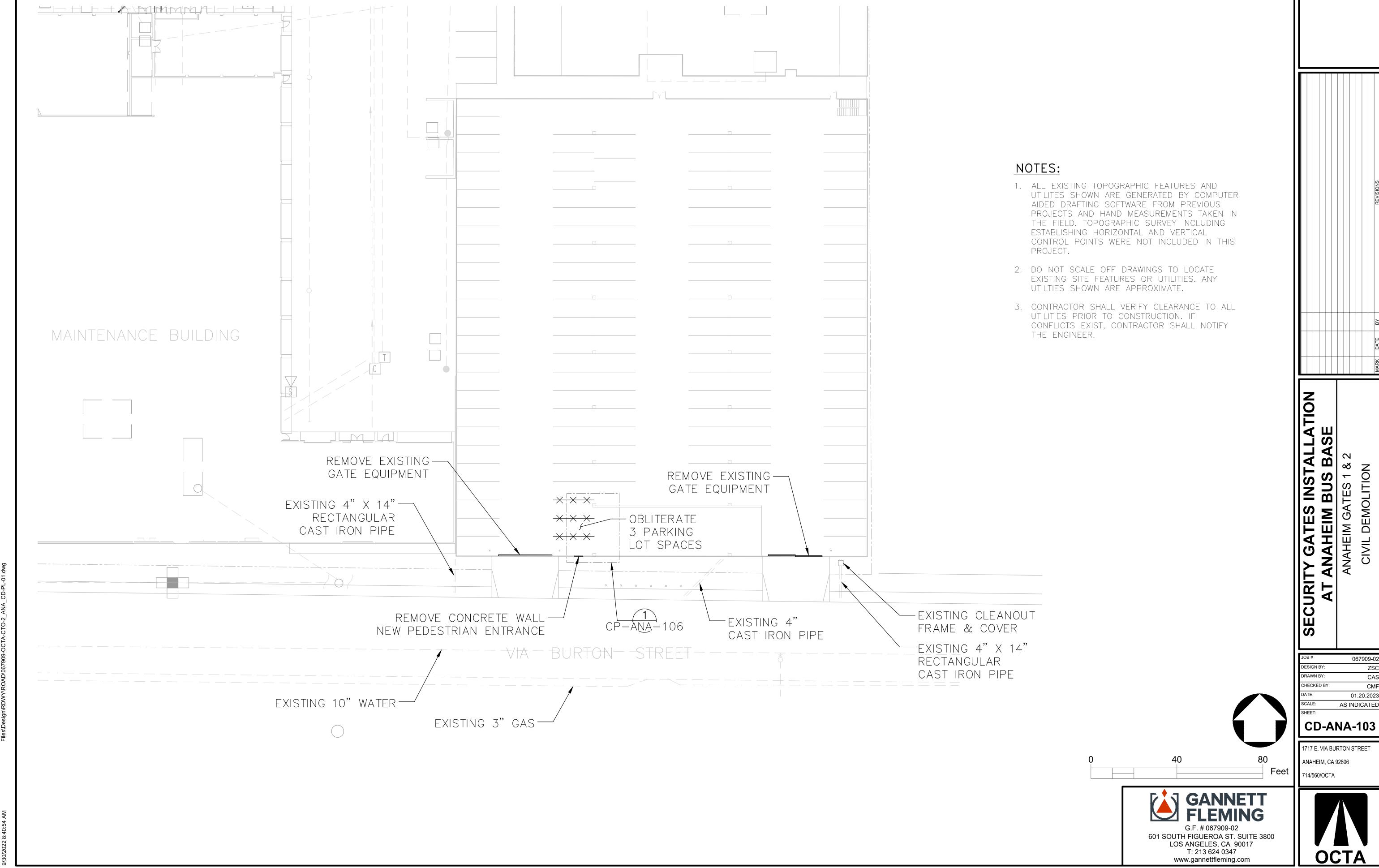
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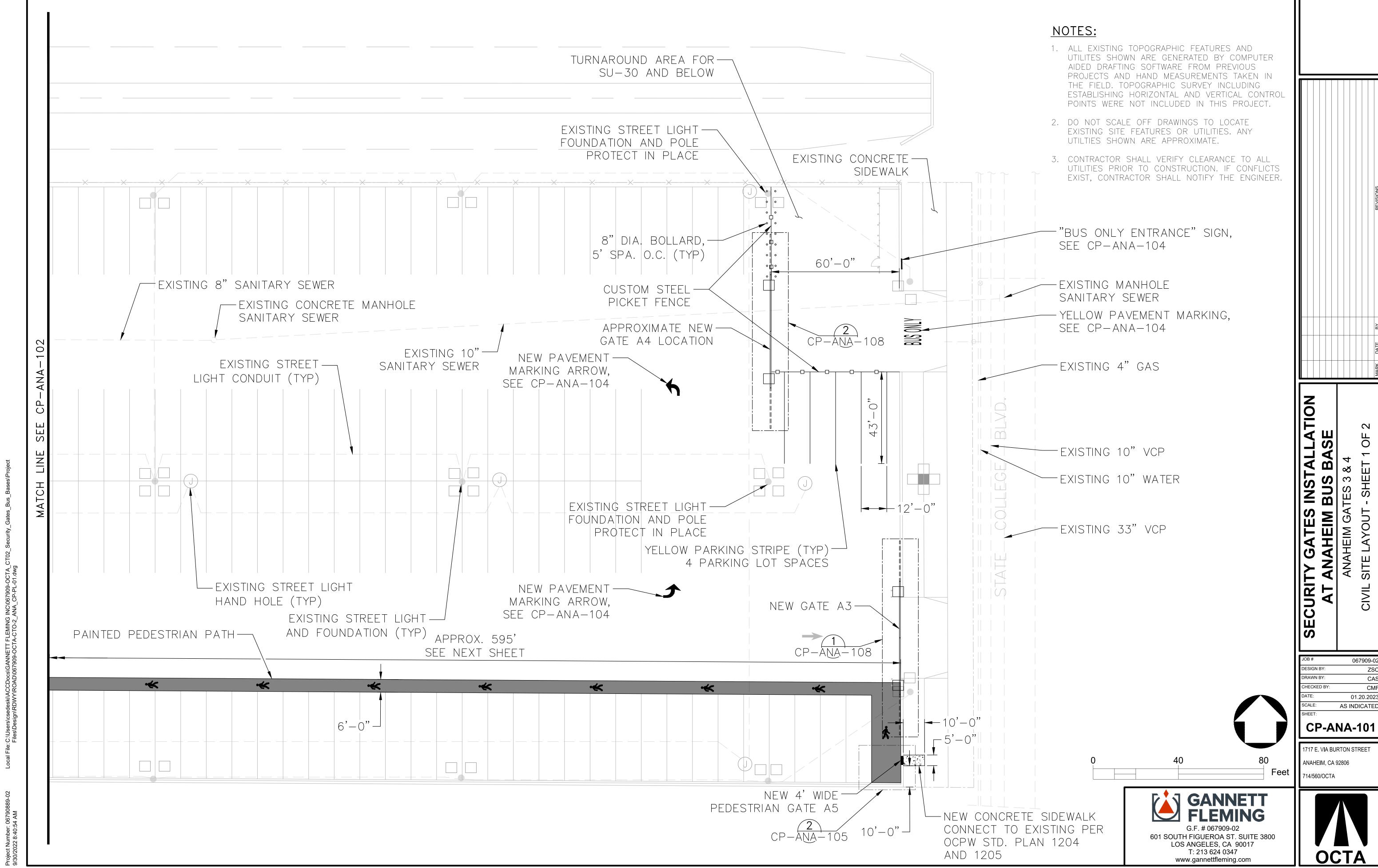


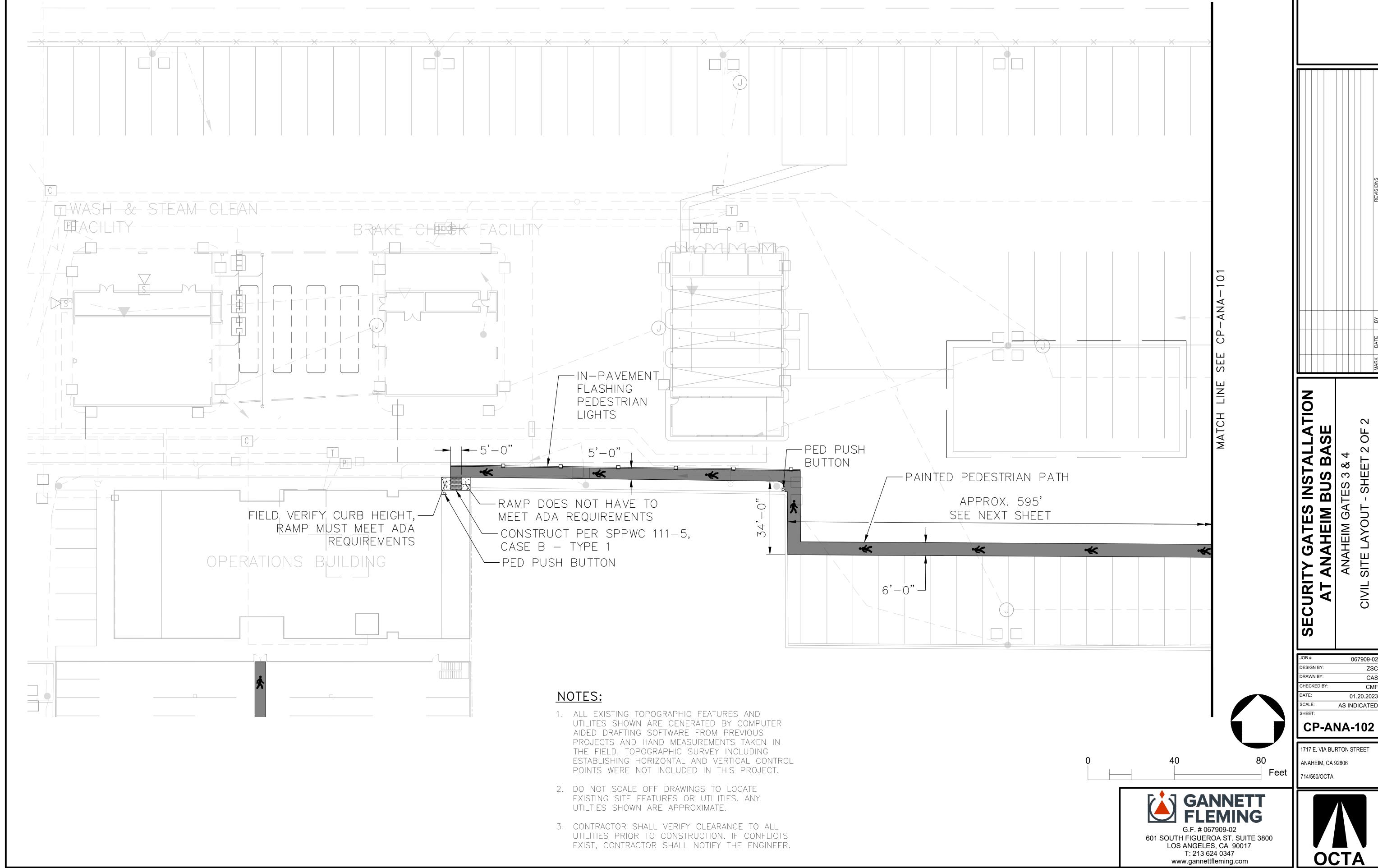


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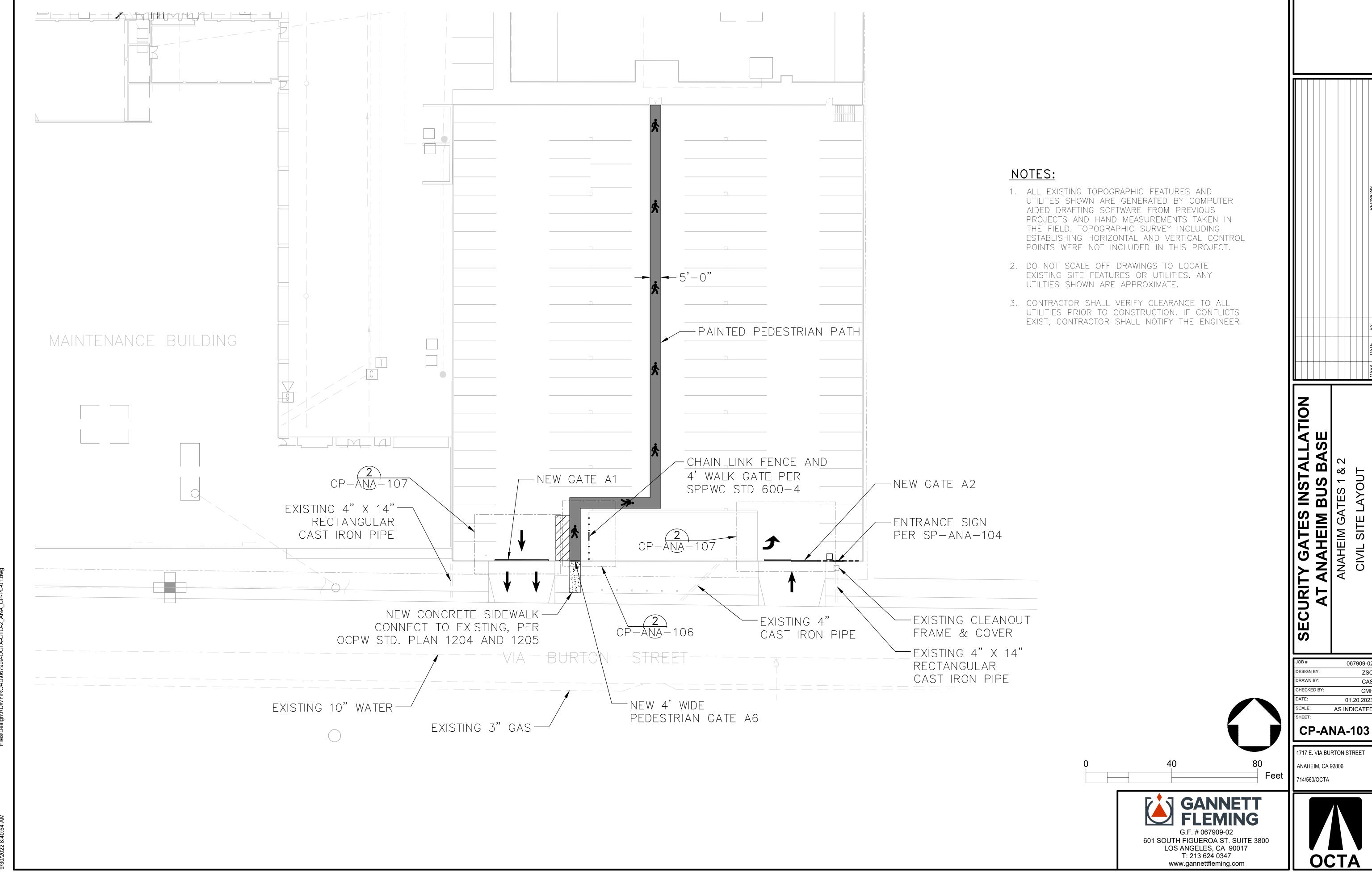
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EXIST, CONTRACTOR SHALL NOTIFY THE ENGINEER.

OCTA



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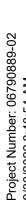
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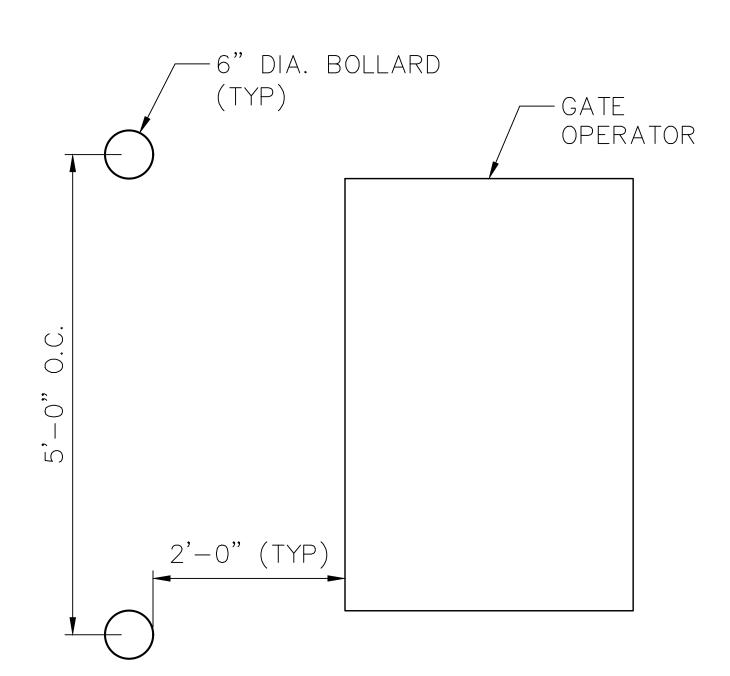
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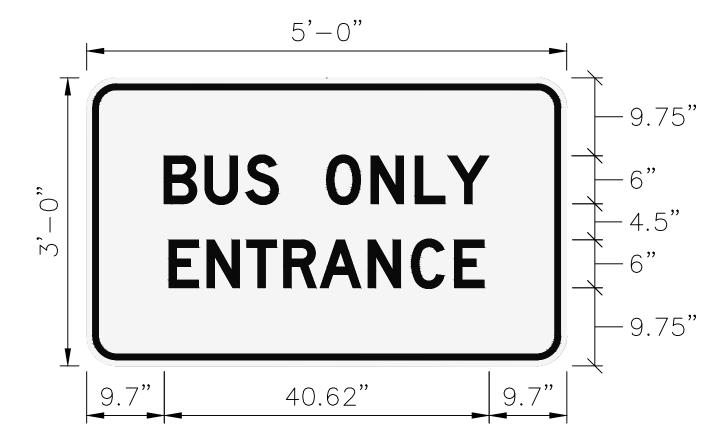
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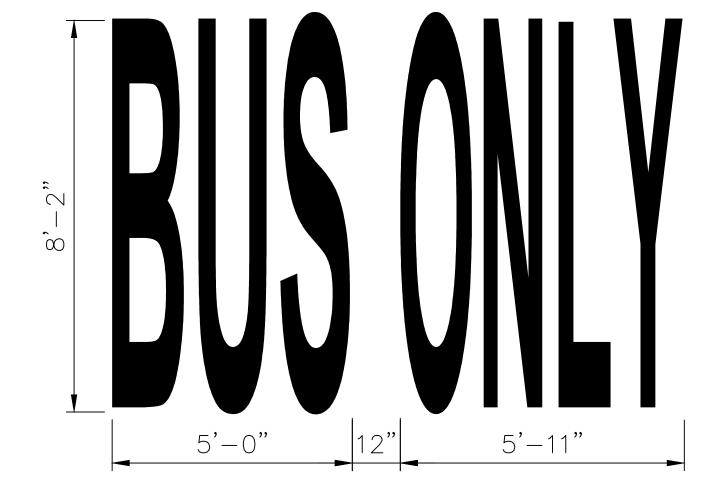


GATE OPERATOR PROTECTION DETAIL

SCALE: 1" = 1'



"BUS ONLY ENTRANCE" SIGN DETAIL SCALE: 1" = 1'



"BUS ONLY" STRIPING DETAIL SCALE: 1" = 2'

RIGHT OF WAY "BUSES HAVE RIGHT OF WAY" **SIGN DETAIL**

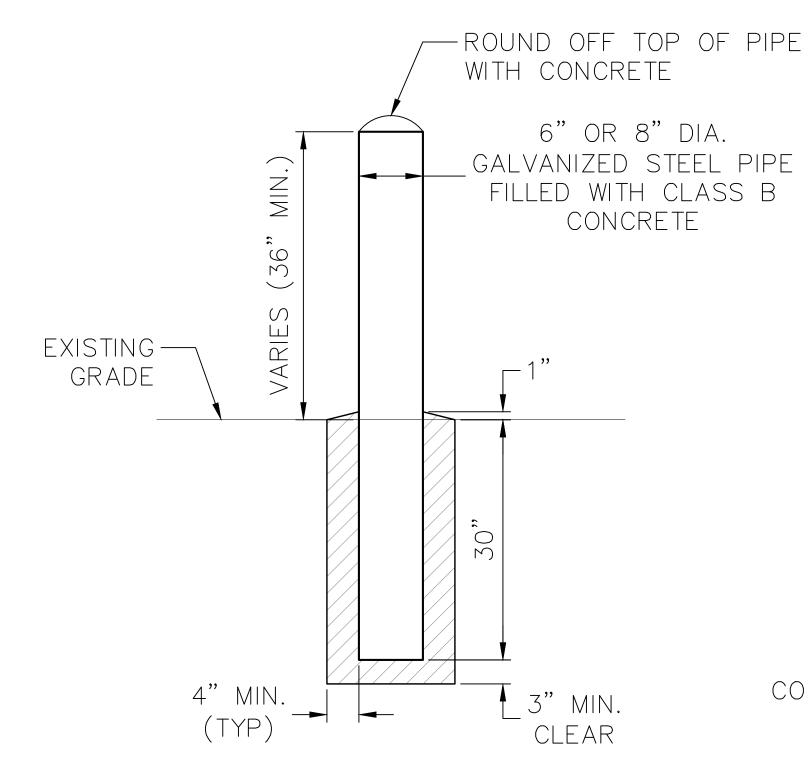
SCALE: 1" = 6"

24"

BUSES HAVE

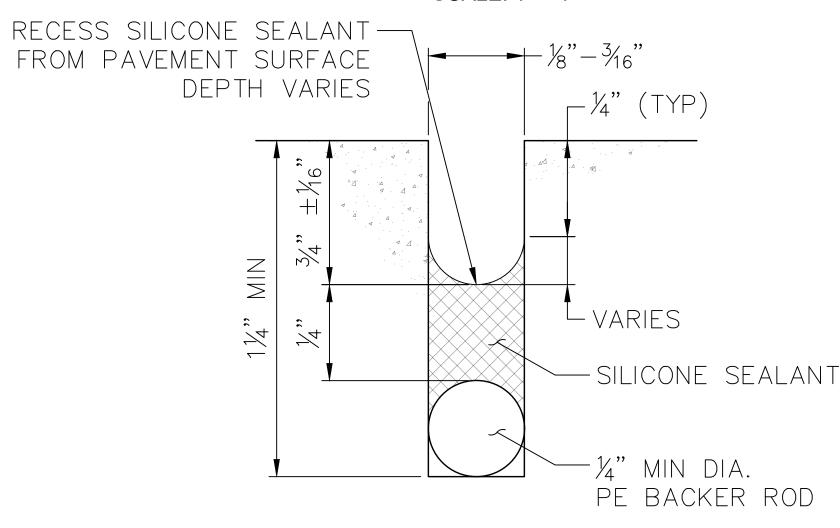


"AUTHORIZED PERSONNEL ONLY" **SIGN DETAIL** SCALE: 1" = 3"



BOLLARD DETAIL

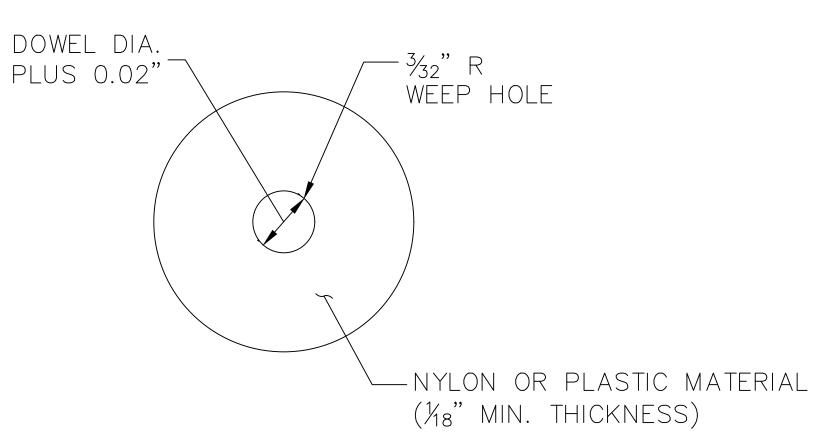
SCALE: 1" = 1'



CONSTRUCTION JOINT SAW AND SEAL DETAIL

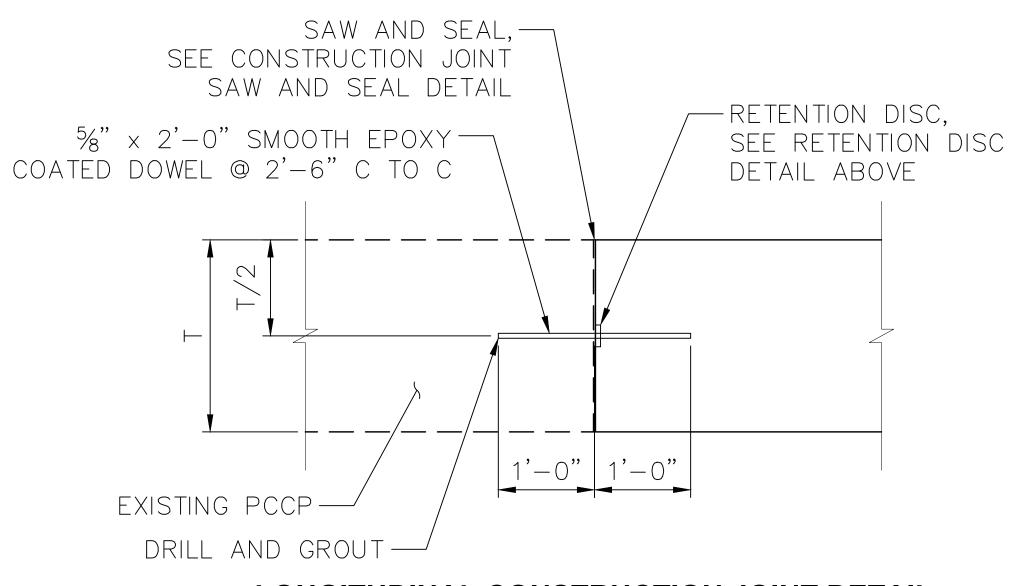
SCALE: N.T.S.





RETENTION DISC DETAIL

SCALE: 1" = 1"



LONGITUDINAL CONSTRUCTION JOINT DETAIL

SCALE: 1" = 1'

PCCP REPAIR DETAIL

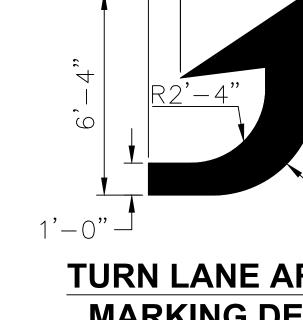
NOTES:

- CONTRACTOR SHALL REMOVE **EXISTING PCCP TO NEAREST EXISTING PAVEMENT JOINT.**
- THICKNESS "T" SHALL MATCH **EXISTING CONDITIONS.**

ENTRANCE

"ENTRANCE" SIGN DETAIL

SCALE: 1" = 6"



TURN LANE ARROW MARKING DETAIL

SCALE: 1" = 3'







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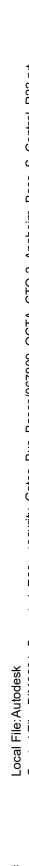
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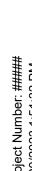
GATES INSTALL
AHEIM BUS BASE
CIVIL DETAILS

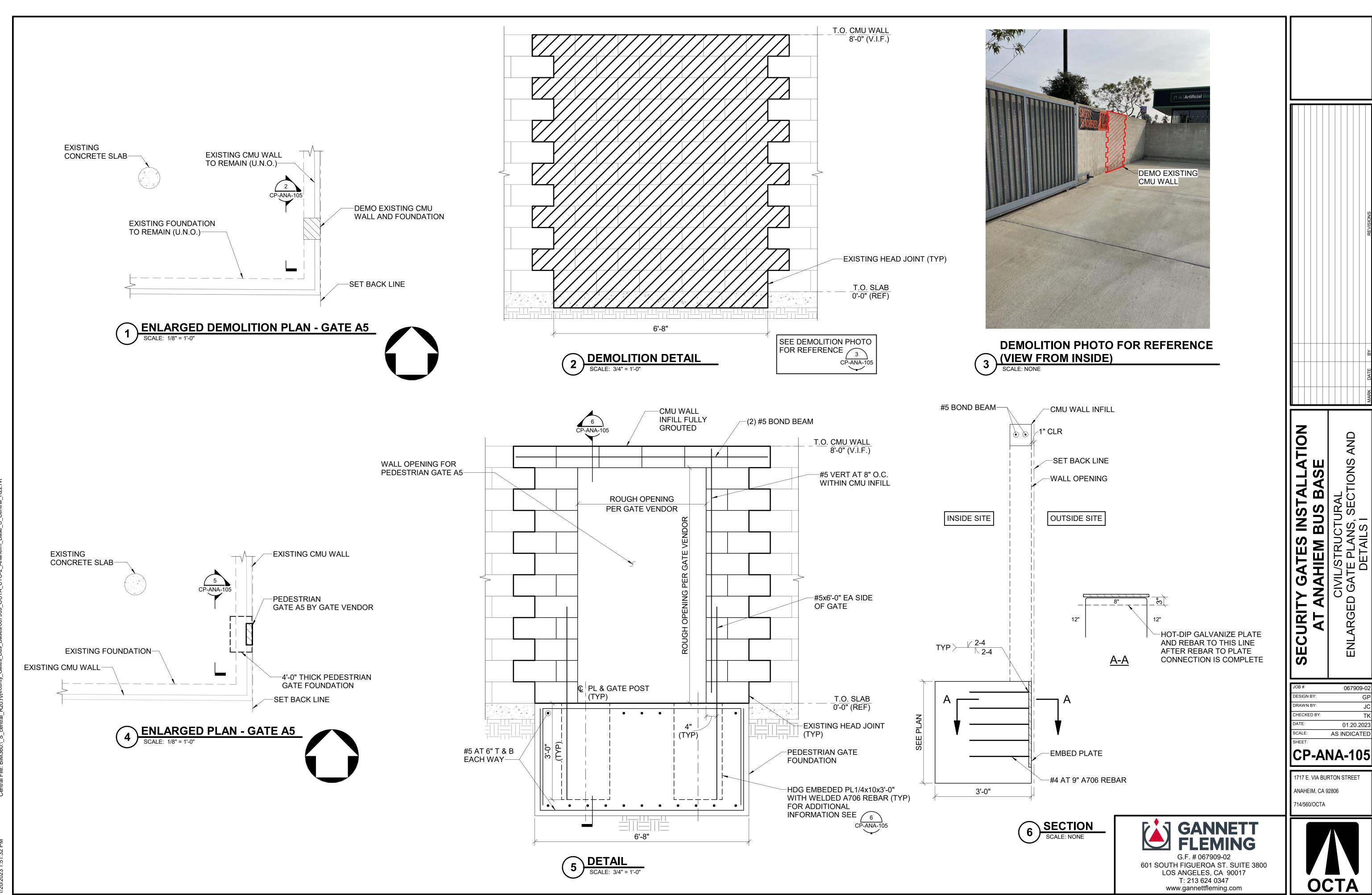
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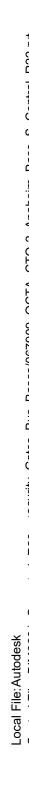


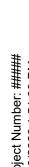
CIVIL/STRUCT ENLARGED GATE PLANS DETAILS

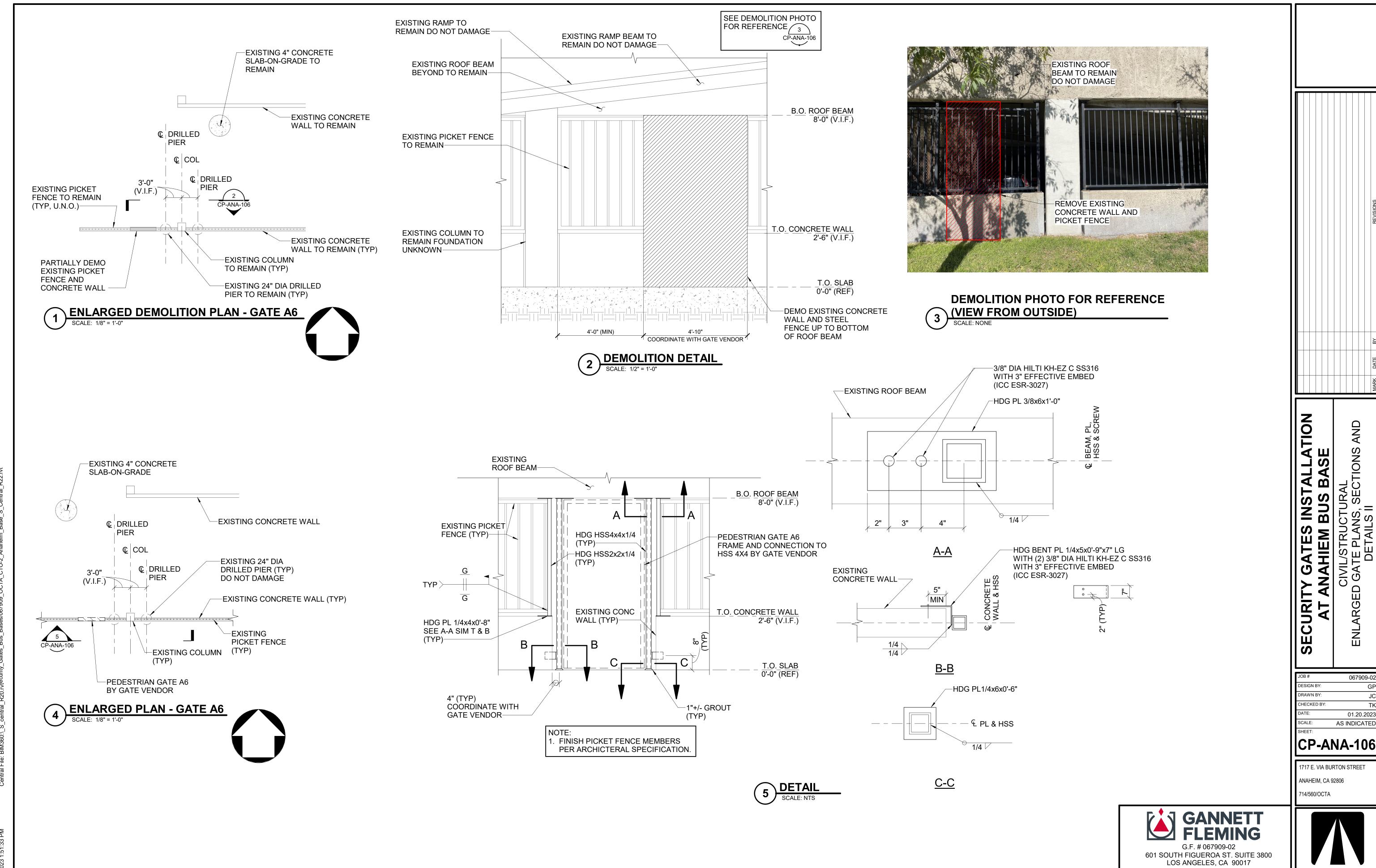
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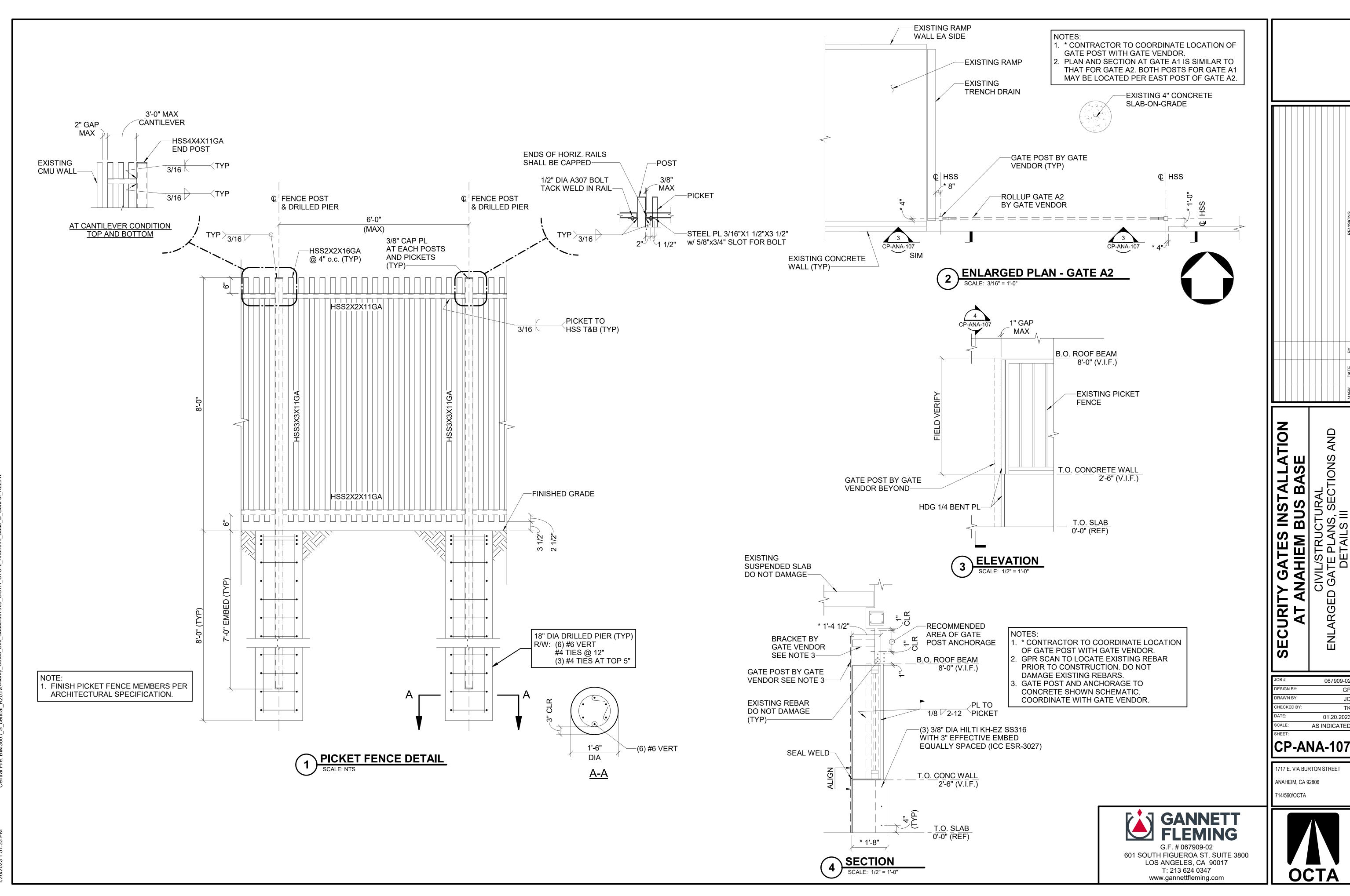






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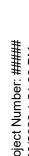
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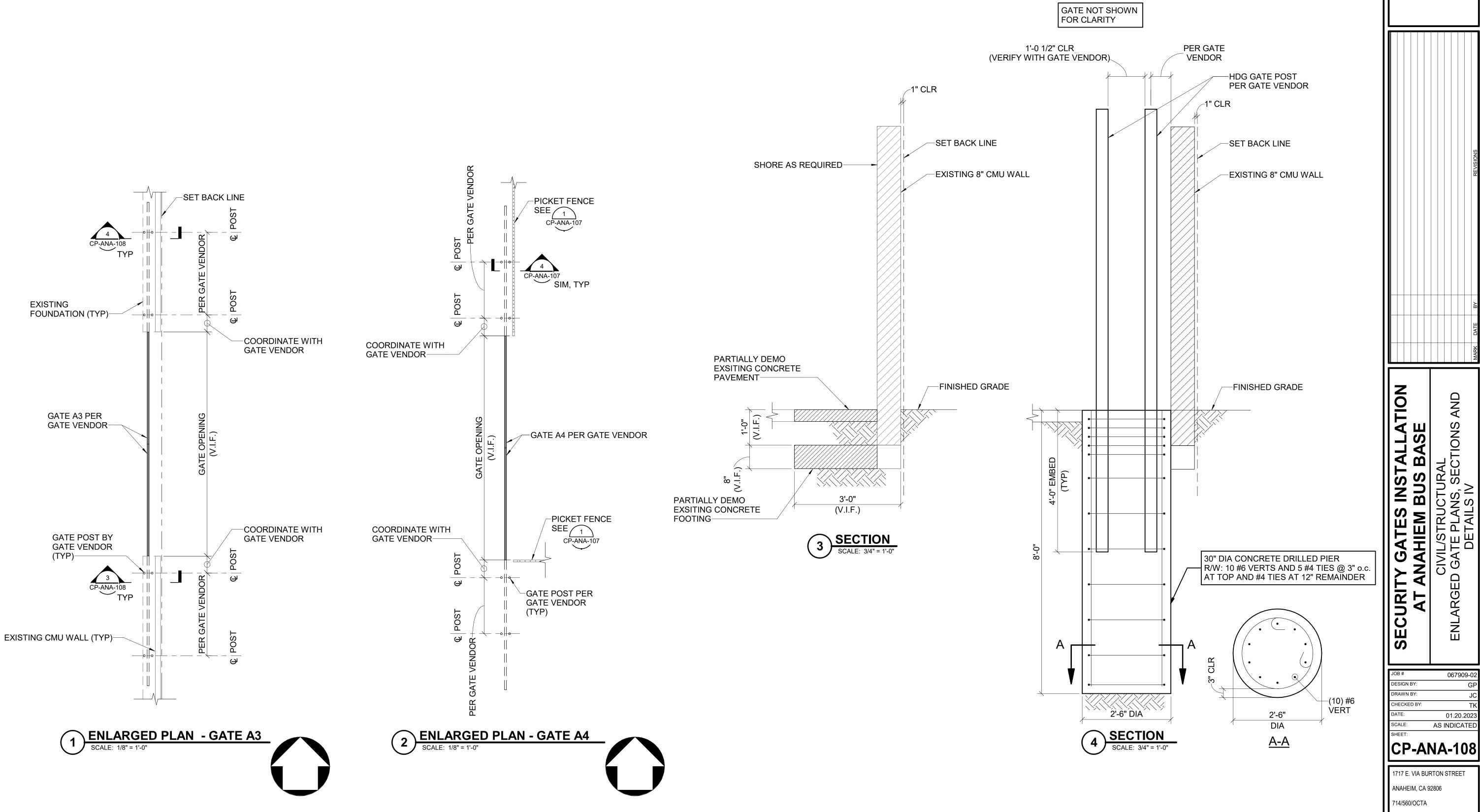
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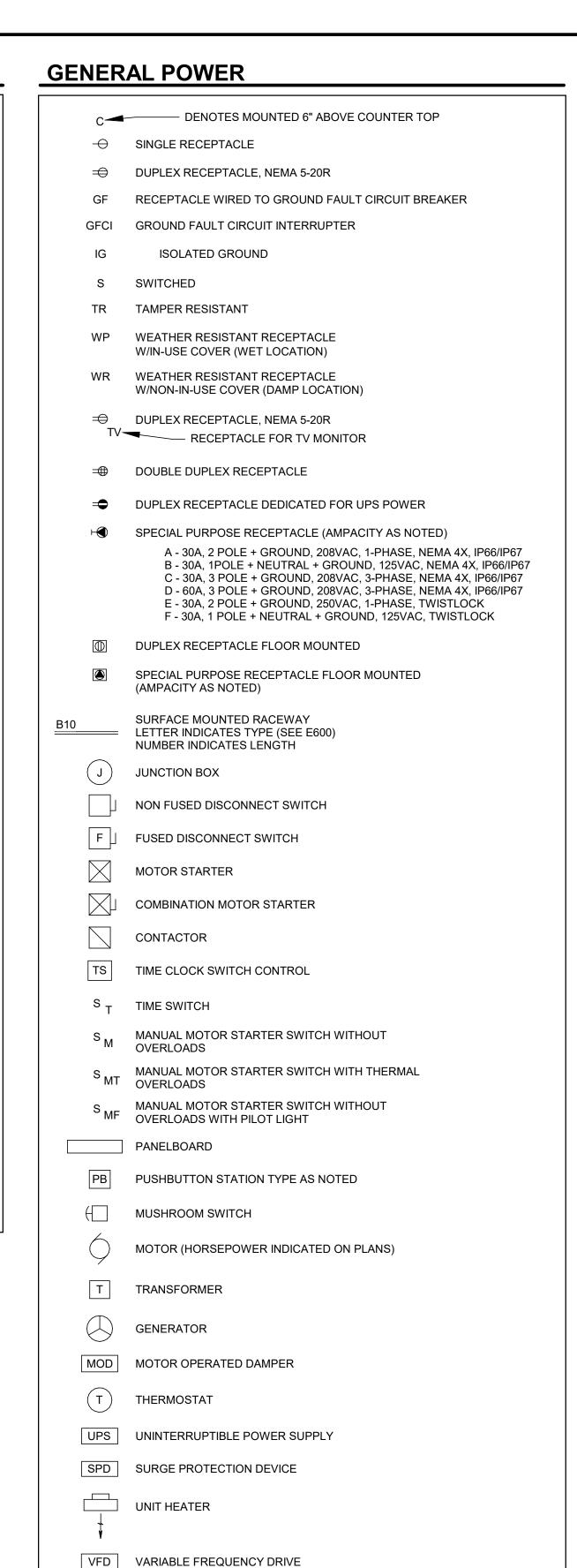
CIVIL/STRUCT ENLARGED GATE PLANS DETAILS I

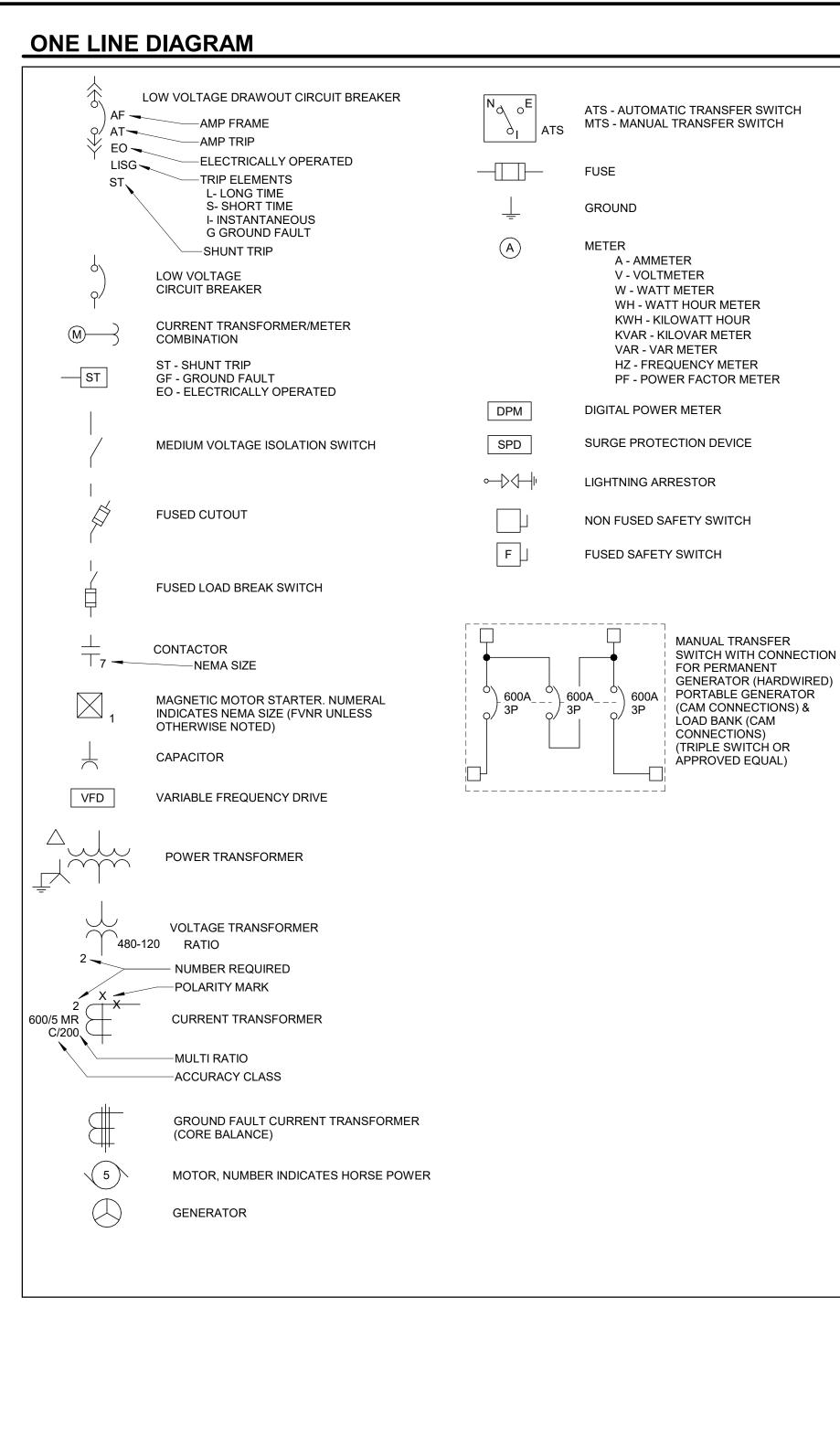
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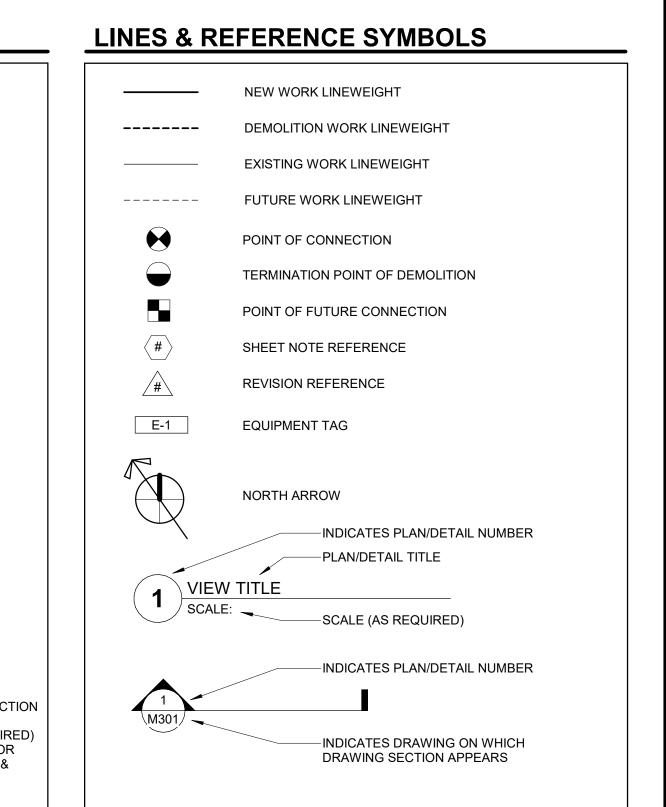
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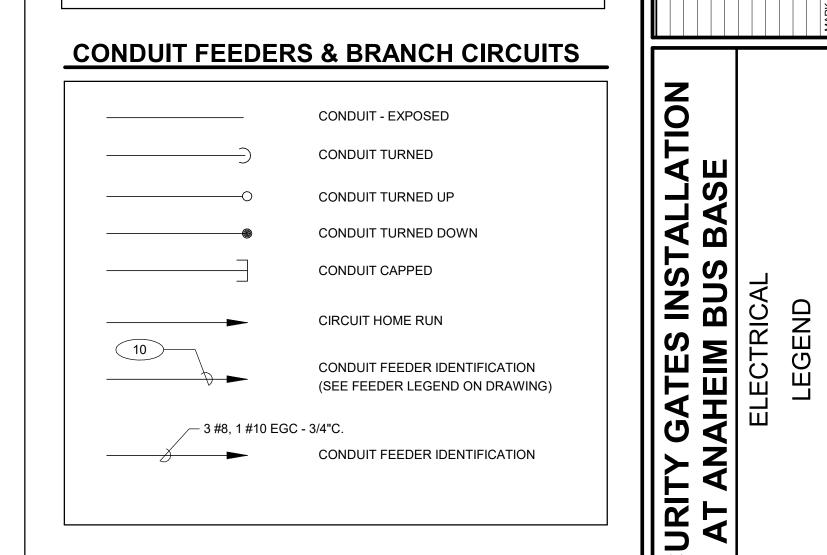
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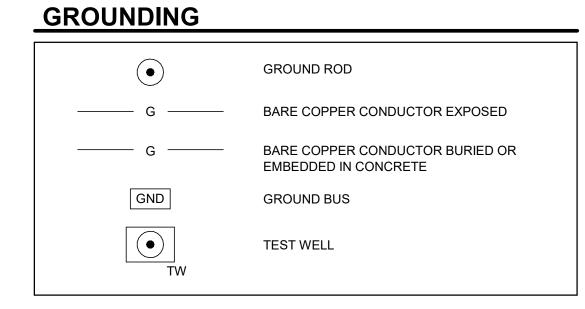














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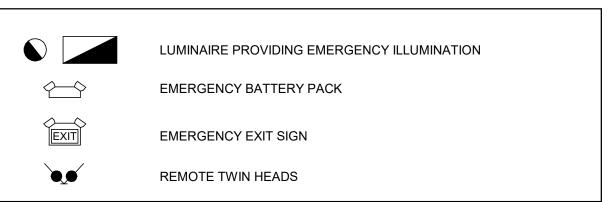
DESIGN BY:

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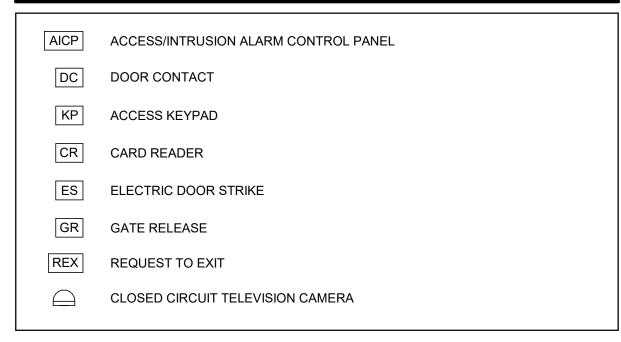




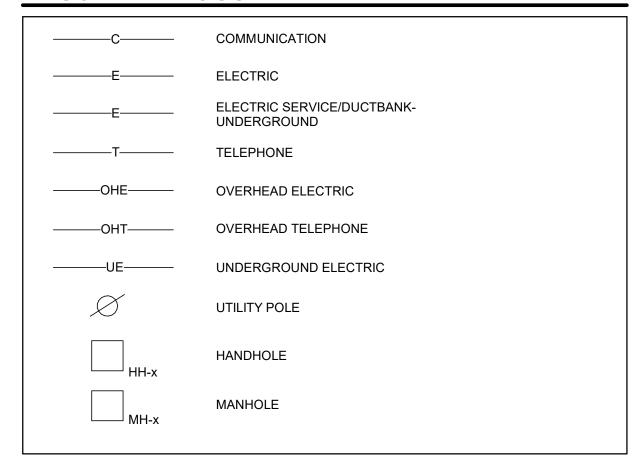
EMERGENCY LIGHTING



ACCESS CONTROL/INTRUSION ALARM



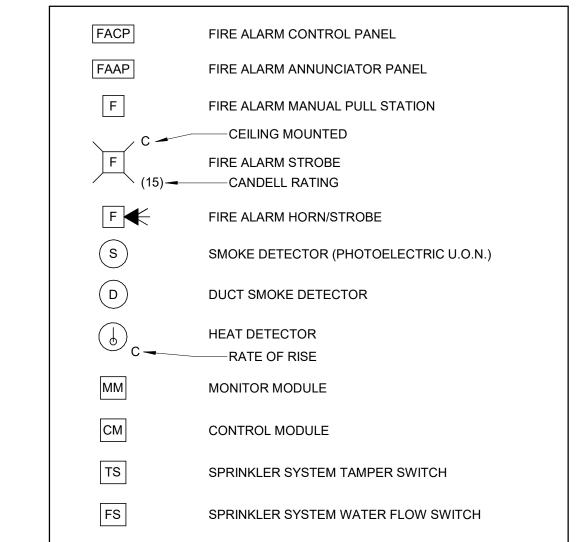
MISCELLANEOUS



COMMUNICATION

S	CEILING SPEAKER
S	WALL MOUNTED SPEAKER
SS	WALL MOUNTED DOUBLE SPEAKER
• \$	POLE MOUNTED SPEAKER
SOS	POLE MOUNTED DOUBLE SPEAKER
\triangleright	DATA OUTLET
	TELEPHONE OUTLET
P	PAY TELEPHONE OUTLET
\triangleright	TELEPHONE / DATA OUTLET
	USB RECEPTACLE
TTC	TELEPHONE TERMINAL CABINET
D	DESKTOP HAND SET
	WALL MOUNTED HAND SET
TV	TV OUTLET

FIRE ALARM SYSTEM



ANAHEIM BUS BASE ELECTRICAL

JOB#	067909-02
DESIGN BY:	
	AS
DRAWN BY:	AH
CHECKED BY:	MM
DATE:	01.20.2023
SCALE:	NONE
SHEET:	

E-ANA-002

1717 E. VIA BURTON STREET
ANAHEIM, CA 92806
714/560/OCTA





SCOPE OF WORK

- 1. PROVIDE POWER REQUIREMENT TO SERVE PROPOSED GATES AT ANAHEIM BUS BASE.
- a. THIS INCLUDES DEMOLISHING EXISTING FEEDERS, CONDUITS, CIRCUIT BREAKERS AS SHOWN ON PLANS.
- b. PROPOSED DESIGN WILL PROVIDE A DISCONNECT SWITCHES AS SHOWN ON THE RENOVATION PLANS ON SHEET E-ANA-101 AND E-PROVIDE NEW FEEDERS IN NEW CONDUITS FROM EXISTING PANELS 'MELA' AND 'MPZ-A' TO SERVE THE PROPOSED GATES ASSEMBLY THROUGH A DISCONNECTING MEANS.
- 2. PROVIDE POWER REQUIREMENT TO SERVE PROPOSED SECURITY CAMERAS, GUARD BOOTH STATION.
- a. PROPOSED DESIGN INCLUDES PROVIDING NEW FEEDERS, CONDUITS, CIRCUIT BREAKERS AS SHOWN ON THE RENOVATION PLANS ON SHEET E-ANA-101 AND E-ANA-102 AND ON EQUIPMENT/FEEDER SCHEDULE ON SHEET E-SA-601. PROVIDE NEW FEEDERS IN NEW CONDUITS FROM EXISTING PANELS 'MELA' AND 'MPZ-A' TO SERVE THE PROPOSED SECURITY CAMERAS.
- 3. PROVIDE NEW 80A, 120/240V, 1P, 3W MINI-POWER CENTER. PROVIDE NEW FEEDERS IN NEW CONDUITS FROM EXISTING SWITCHBOARD 'HPF'.
- 4. PROVIDE POWER REQUIREMENTS FOR PROPOSED IN-GROUND WARNING LIGHT FIXTURE AS SHOWN ON THE PLANS.

GENERAL NOTES

- THE SEISMIC BRACING AND ANCHORAGE OF ELECTRICAL CONDUITS, BUS DUCT WIREWAY, AND CABLE TRAY SHALL BE IN ACCORDANCE WITH CBC 2019, FOR 1.0 IMPORTANCE FACTOR. RESTRAINT SYSTEM SHALL BE DESIGN AND BUILD BY THE CONTRACTOR PER SPECIFICATION SECTION 260549.
- ALL ELECTRICAL MATERIALS AND EQUIPMENT SHALL BE NEW AND SHALL BE LISTED BY UNDERWRITER'S LABORATORIES (UL) AND BEAR THEIR LABEL, OR LISTED AND CERTIFIED BY A NATIONALLY RECOGNIZED TESTING AUTHORITY WHERE UL DOES NOT HAVE A LISTING. CUSTOM MADE EQUIPMENT SHALL HAVE COMPLETE TEST DATA SUBMITTED BY THE MANUFACTURER ATTESTING TO ITS SAFETY. IN ADDITION, THE MATERIALS, EQUIPMENT, AND INSTALLATION SHALL COMPLY WITH THE REQUIREMENTS OF THE FOLLOWING:
- ELECTRICAL EQUIPMENT AND INSTALLATION SHALL COMPLY WITH ALL APPLICABLE REQUIREMENTS OF THE FOLLOWING CODES AND STANDARDS:
 - A. AMERICAN SOCIETY OF TESTING MATERIALS (ASTM)
 - B. INSULATED POWER CABLE ENGINEERS ASSOCIATION (IPCEA)
 - NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA) D. AMERICAN STANDARD ASSOCIATION (ASA)
 - E. NATIONAL FIRE PROTECTION AGENCY (NFPA)
 - F. AMERICAN NATIONAL STANDARD INSTITUTE (ANSI) G. CALIFORNIA ELECTRICAL CODE (CEC) - LATEST EDITION
 - H. CALIFORNIA CODE OF REGULATIONS TITLE 24 (CCR)
 - INSTITUTE OF ELECTRICAL AND ELECTRONIC ENGINEERS (IEEE) ALL LOCAL CODES HAVING JURISDICTION.

HIS WORK.

- K. WHERE THE CODES HAVE DIFFERENT LEVELS OF REQUIREMENTS, L. THE MOST STRINGENT RULE SHALL APPLY.
- THE CONTRACTOR SHALL VISIT THE SITE INCLUDING ALL AREAS INDICATED ON THE DRAWINGS, WITH A FULL KNOWLEDGE THAT SOME OF THE AREAS REQUIRE SPECIAL SECURITY ARRANGEMENT TO GAIN ACCESS, IN SUCH CASE, IT SHALL BE THE CONTRACTOR'S SOLE RESPONSIBILITY TO MAKE ALL ARRANGEMENT TO VISIT THESE AREAS. HE SHALL THOROUGHLY FAMILIARIZE HIMSELF WITH THE EXISTING CONDITIONS AND ACCEPT SUCH CONDITIONS UNDER WHICH HE SHALL BE REQUIRED TO PERFORM
- IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO OBTAIN A COMPLETE SET OF CONTRACT DOCUMENTS, ADDENDA, DRAWINGS AND SPECIFICATIONS. HE SHALL CHECK THE DRAWINGS OF THE OTHER TRADES AND SHALL CAREFULLY READ THE ENTIRE SPECIFICATIONS AND DETERMINE HIS RESPONSIBILITIES. FAILURE TO DO SO SHALL NOT RELEASE THE CONTRACTOR FROM DOING THE WORK IN COMPLETE ACCORDANCE WITH THE DRAWINGS AND SPECIFICATIONS.
- THE CONTRACTOR SHALL SECURE AND PAY FOR ALL PERMITS, FEES, CHARGES, AND INCIDENTAL COSTS NECESSARY FOR EXECUTION AND COMPLETION OF ELECTRICAL FIRE ALARM SYSTEM WORK, INCLUDING ALL CHARGES BY STATE, COUNTY AND LOCAL GOVERNMENTAL AGENCIES.
- THE CONTRACTOR SHALL COORDINATE HIS WORK WITH OTHER TRADES AT THE SITE ANY DISCREPANCIES, AMBIGUITIES OR CONFLICTS SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT DURING BID TIME FOR CLARIFICATION. ANY SUCH CONFLICTS NOT CLARIFIED PRIOR TO BID SHALL BE SUBJECT TO THE INTERPRETATION OF THE ARCHITECT.
- THE CONTRACTOR SHALL PROVIDE AND KEEP UP-TO-DATE A COMPLETE RECORD SET OF DRAWINGS. THESE PRINTS SHALL BE CORRECTED DAILY AND SHOW EVERY CHANGE FROM THE ORIGINAL DRAWINGS. THIS SET OF DRAWINGS SHALL BE KEPT ON THE JOB SITE AND SHALL BE USED ONLY AS A RECORD SET. THIS SHALL NOT BE CONSTRUED AS AUTHORIZATION FOR THE CONTRACTOR TO MAKE CHANGES IN THE LAYOUT WITHOUT DEFINITE INSTRUCTION IN EACH CASE. UPON COMPLETION OF THE WORK, A SET OF REPRODUCIBLE CONTRACT DRAWINGS SHALL BE OBTAINED FROM THE ARCHITECT, AND ALL CHANGES AS NOTED ON THE RECORD SET OF DRAWINGS SHALL BE INCORPORATED THEREON WITH BLACK INK IN A NEAT, LEGIBLE, UNDERSTANDABLE AND PROFESSIONAL
- IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE TEMPORARY POWER FACILITIES AND CONNECTIONS FOR ALL FEEDERS OR SYSTEMS BEING DISCONNECTED IN ORDER TO MAINTAIN SYSTEMS IN OPERATION OR WHERE SAID FEEDERS OR SYSTEMS REQUIRE EMERGENCY STANDBY POWER.
- AFTER ALL REQUIREMENTS OF THE SPECIFICATIONS AND/OR THE DRAWINGS HAVE BEEN FULLY COMPLETED, REPRESENTATIVES OF THE UNIVERSITY REPRESENTATIVE WILL INSPECT THE WORK. THE CONTRACTOR SHALL PROVIDE COMPETENT PERSONNEL TO DEMONSTRATE THE OPERATION OF ANY ITEM OR SYSTEM TO THE FULL SATISFACTION OF EACH REPRESENTATIVE. FINAL ACCEPTANCE OF THE WORK WILL BE MADE BY THE UNIVERSITY REPRESENTATIVE AFTER RECEIPT OF APPROVAL AND RECOMMENDATION OF ACCEPTANCE FROM EACH REPRESENTATIVE.
- I. THE CONTRACTOR SHALL FURNISH A MINIMUM OF ONE YEAR WRITTEN GUARANTEE OF MATERIALS AND WORKMANSHIP FROM THE DATE OF SUBSTANTIAL COMPLETION.
- 12. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO REVIEW AND TO COORDINATE WITH THE MECHANICAL, FIRE PROTECTION AND PLUMBING DRAWINGS FOR DUCTS, LINES AND EQUIPMENT.
- 13. ALL FINAL CONNECTIONS TO. AND INSTALLATION OF UNIVERSITY REPRESENTATIVE

FURNISHED EQUIPMENT SHALL BE MADE BY THE CONTRACTOR.

- 4. COORDINATE WITH OTHER TRADES AS TO THE EXACT LOCATION OF THEIR RESPECTIVE EQUIPMENT. SUPPLY POWER AND MAKE CONNECTION TO MOTORS AND EQUIPMENT REQUIRING ELECTRICAL CONNECTIONS AS INDICATED ON THE SINGLE LINE DIAGRAM, ELECTRICAL DRAWINGS, AND DRAWINGS OF OTHER TRADES. REVIEW THE DRAWINGS OF OTHER TRADES FOR CONTROL DIAGRAMS, SIZE AND LOCATION OF EQUIPMENT. DISCONNECT SWITCHES, STARTERS, WIRING, CONTROLS, AND CONDUIT FOR ELEVATOR ESCALATOR MECHANICAL, PLUMBING AND FOUNTAIN OPERATION SHALL BE PROVIDED. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING PROVIDE MANUFACTURER'S SHOP DRAWINGS PRIOR TO ROUGHING IN ALL CONDUIT TO THIS EQUIPMENT.
- 5. EXACT METHOD AND LOCATION OF CONDUIT PENETRATION AND OPENINGS IN CONCRETE WALLS OR FLOORS OR STRUCTURAL STEEL MEMBERS SHALL BE AS DIRECTED BY THE STRUCTURAL ENGINEER. PERFORM CORING, SAWCUTTING, PATCHING, AND REFINISHING OF EXISTING WALLS AND SURFACES WHEREVER IT IS NECESSARY TO PENETRATE. OPENINGS SHALL BE SEALED IN AN APPROVED METHOD TO MEET THE FIRE RATING OF THE PARTICULAR WALL, FLOOR OR CEILING. EXACT METHOD AND LOCATIONS OF CONDUIT PENETRATIONS AND OPENINGS IN CONCRETE WALLS OR FLOORS SHALL BE UL APPROVED.
- 6. ROUTE EXPOSED CONDUIT AND CONDUIT ABOVE ACCESSIBLE CEILING SPACES PARALLEL AND PERPENDICULAR TO WALLS AND ADJACENT PIPING. ARRANGE CONDUIT TO MAINTAIN HEADROOM AND TO PRESENT A NEAT APPEARANCE CONDUIT SHALL NOT BE INSTALLED IN ANY FLOOR SLAB. CONDUIT SHALL BE INSTALLED CONCEALED IN THE CEILING SPACE, CONCEALED IN WALLS, OR BELOW SLAB ON GRADE UNLESS NOTED OTHERWISE.
- . ROUTE EXPOSED CONDUIT AND CONDUIT ABOVE ACCESSIBLE CEILING SPACES PARALLEL AND PERPENDICULAR TO WALLS AND ADJACENT PIPING. ARRANGE CONDUIT TO MAINTAIN HEADROOM AND TO PRESENT A NEAT APPEARANCE.
- 18. CONDUIT SHALL NOT BE INSTALLED IN ANY FLOOR SLAB. CONDUIT SHALL BE INSTALLED CONCEALED IN THE CEILING SPACE, CONCEALED IN WALLS, OR BELOW SLAB ON GRADE UNLESS NOTED OTHERWISE.
- 9. ATTENTION IS CALLED TO THE FACT THAT THE CEILING SYSTEMS FOR THE MOST PART ARE CONSIDERED TO BE INACCESSIBLE. THE CONTRACTOR SHALL STRATEGICALLY LOCATE BOXES, ETC., IN AN ACCESSIBLE CEILING SPACE. IT IS STRONGLY RECOMMEND THAT THE CONTRACTOR SHALL CONDUCT A SURVEY OF THE CEILING TYPE IN ALL WORK AREAS TO QUANTIFY ACCESSIBLE LOCATIONS FOR PULLBOXES AND JUNCTION BOXES REQUIRED ABOVE EXISTING CEILING.

- 20. WHENEVER A DISCREPANCY IN QUANTITY OR SIZE OF CONDUIT, WIRE, EQUIPMENT DEVICES, CIRCUIT BREAKERS, GROUND FAULT PROTECTION SYSTEMS, ETC. (ALL MATERIALS), ARISES ON THE DRAWINGS OR SPECIFICATIONS, THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING AND INSTALLING ALL MATERIAL AND SERVICES REQUIRED BY THE STRICTEST CONDITIONS NOTED ON THE DRAWINGS OR IN THE SPECIFICATIONS TO ENSURE COMPLETE AND OPERABLE SYSTEMS AS REQUIRED BY THE UNIVERSITY REPRESENTATIVE AND ARCHITECT/ENGINEER.
- UTILITY AND ELECTRICAL OUTLETS OR BOXES SHALL BE SECURELY FASTENED TO THE STUD OF FRAMING OF THE WALL, PARTITION OR CEILING ASSEMBLY. THE OPENING IN THE GYPSUM BOARD FACING SHALL BE CUT SO THAT THE CLEARANCE BETWEEN THE BOX AND THE GYPSUM BOARD DOES NOT EXCEED 1/8 INCH. IN SMOKE WALLS OR PARTITIONS, THE 1/8 INCH CLEARANCE SHALL BE FILLED WITH AN APPROVED FIRE-RATED SEALANT.
- 22. REFER TO SINGLE LINE DIAGRAM AND FEEDER SCHEDULES FOR CONDUIT AND CONDUCTOR SIZE TO PANELS, TRANSFORMERS, MECHANICAL AND PLUMBING EQUIPMENT, ETC. CONDUIT RUNS MAY NOT BE SHOWN ON DRAWINGS, BUT ARE PART OF THIS CONTRACT.
- 23. STRAIGHT FEEDER, BRANCH CIRCUIT, AND CONDUIT RUNS SHALL BE PROVIDED WITH SUFFICIENT PULL BOXES OR JUNCTION BOXES TO LIMIT THE MAXIMUM LENGTH OF ANY SINGLE CABLE PULL TO 100 FEET. PULL BOXES SHALL BE SIZED PER CODE OR AS INDICATED ON DRAWINGS. LOCATIONS SHALL BE DETERMINED IN THE FIELD OR AS INDICATED ON THE DRAWINGS.
- $^{24}\cdot$ MAXIMUM NUMBER OF CONDUCTORS IN OUTLET OR JUNCTION BOXES SHALL CONFORM TO THE CALIFORNIA ELECTRICAL CODE, ARTICLE 3214-6, BUT IN NO CASE SHALL CONTAIN MORE THAN THE FOLLOWING NUMBER OF #12 AWG CONDUCTORS FOR THE SIZE OF BOX INDICATED. THE MINIMUM SIZE OUTLET OR JUNCTION BOX PERMITTED IN A WALL IS FOR INCHES SQUARE BY 1 1/2 INCHES DEEP.
 - a. 4" SQ. BY 1-1/2" D BOX: 9 CONDUCTORS b. 4" SQ. BY 2-1/8" D BOX: 13 CONDUCTORS
 - c. 4" SQ. BY 1-1/2" D BOX: 11 CONDUCTORS d. 4" SQ. BY 2-1/8" D BOX: 18 CONDUCTORS
- A. ALL OUTLET BOXES CONTAINING MORE THAN ONE DEVICE SHALL BE GANGED. TWO DEVICES DOUBLE GANGED, MINIMUM.
- 25. WHERE MULTI-HOMERUNS ARE INDICATED ON DRAWINGS INDICATING THE SAME PANELBOARD CIRCUIT NUMBER, PROVIDE JUNCTION BOX ABOVE ACCESSIBLE CEILING AND ROUTE ONE SET OF WIRES TO CIRCUIT BREAKERS.
- 26. RECESSED PANELS AND CABINETS SHALL HAVE FIVE SPARE 3/4 INCH CONDUITS STUBBED UP INTO AN ACCESSIBLE CEILING SPACE AND CAPPED UNLESS OTHERWISE NOTED.
- 27. IDENTIFICATION NAMEPLATES SHALL BE MICARTA 1/8 INCH THICK AND OF APPROVED SIZE WITH BEVELED EDGES AND ENGRAVED WHITE LETTERS A MINIMUM OF 1/4 INCH HIGH ON BLACK BACKGROUND. NAMEPLATES SHALL BE PROVIDED FOR ALL CIRCUITS IN THE SERVICE DISTRIBUTION AND POWER DISTRIBUTION SWITCHBOARDS OR PANELBOARDS, MOTOR CONTROL CENTERS, LIGHTING DISTRIBUTION PANELBOARDS, SEPARATELY MOUNTED STARTING SWITCHES, DISCONNECTING SWITCHES, MOTOR CONTROL PUSHBUTTON STATIONS, SELECTOR SWITCHES, TRANSFORMERS, TERMINAL CABINETS, TELEPHONE CABINETS ETC. ALL NAMEPLATES SHALL BE ATTACHED WITH SCREWS. PULL BOXES, JUNCTION BOXES, AND DEVICE BOXES SHALL BE MARKED WITH A PERMANENT
- 28. THE EXACT LOCATION OF ALL ELECTRICAL DEVICES AND EQUIPMENT SHALL BE COORDINATED WITH THE ARCHITECTURAL ELEVATIONS, DETAILS, OR SECTIONS PRIOR TO INSTALLATION. ALL ELECTRICAL DEVICES AND EQUIPMENT SHALL BE RECESSED IN WALLS UNLESS OTHERWISE NOTED. OUTLETS NOT INDICATED ON ARCHITECTURAL ELEVATIONS SHALL BE COORDINATED WITH THE ARCHITECT PRIOR TO ROUGH-IN. UNLESS OTHERWISE NOTED, MOUNT ELECTRICAL DEVICES AT THE FOLLOWING HEIGHTS
- +4'-0" SET VERTICALLY B. CONVENIENCE RECEPTACLE +1'-6" SET VERTICALLY OR AS NOTED OTHERWISE.

ALL CASEWORK. FINISH FLUSH WITH FACE OF SPLASH, CABINET, ETC.

- C. TELEPHONE/DATA OUTLETS D. OUTLETS AT COUNTERS
- 29. REVIEW ARCHITECTURAL ELEVATIONS OF CASEWORK. OUTLETS MOUNTED ABOVE OR BELOW, OR ADJACENT TO CASEWORK SHALL BE COORDINATED WITH THE ARCHITECTURAL DRAWINGS, PRIOR TO FINAL ROUGH-IN. ELECTRICAL DRAWINGS SHALL GOVERN NUMBER AND TYPE OF OUTLETS. HOWEVER, LOCATIONS SHALL BE AS INDICATED ON ARCHITECTURAL ELEVATIONS. PROVIDE CONDUIT, WIRES, AND OUTLETS FOR WORK REQUIRED IN CASEWORK INSTALLATIONS. REFERENCE ARCHITECTURAL DETAILS FOR METHOD OF ROUTING CONDUIT WITHIN CASEWORK CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CUT-OUTS IN TILE OR COUNTER SPLASHES WHERE RECEPTACLES, OUTLETS, ETC., OCCUR. PROVIDE BOX EXTENSIONS THROUGH

+1'-6" SET VERTICALLY

+6" ABOVE COUNTERS HORIZONTALLY

- 30. MOUNTING HEIGHTS OF ALL DEVICES AND EQUIPMENT ARE FROM FINISHED FLOOR TO CENTER OF DEVICES AND EQUIPMENT UNLESS OTHERWISE NOTED. BOXES INSTALLED IN LOCATIONS NOT APPROVED BY THE ARCHITECT SHALL BE RELOCATED AS DIRECTED BY THE ARCHITECT AT NO ADDITIONAL COST TO THE UNIVERSITY REPRESENTATIVE.
- 31. THE EQUIPMENT GROUNDING CONDUCTOR SHOWN ON CONDUIT RUNS SHALL RUN CONTINUOUS FROM PANEL TO LAST OUTLET. THIS WIRE SHALL BE PIGTAILED IN EACH OUTLET FOR CONNECTION TO BOX AND DEVICE SO THAT IF DEVICE IS REMOVED, GROUND WILL NOT BE INTERRUPTED. ALL EQUIPMENT GROUNDING CONDUCTORS SHALL BE INSULATED GREEN CONDUCTORS - ALTERNATE METHODS OF IDENTIFICATION SHALL NOT BE USED. CONTRACTOR SHALL NOTIFY ELECTRICAL ENGINEER TO EXAMINE CONDUCTOR INSTALLATION PRIOR TO INSTALLATION OF DEVICES.
- . FOR SMALL AC MOTORS NOT HAVING BUILT-IN THERMAL OVERLOAD PROTECTION, PROVIDE MANUAL MOTOR STARTERS WITH OVERLOAD HEATER ELEMENTS SIZED TO THE NAMEPLATE CURRENT RATING OF THE MOTOR. SMALL AC MOTORS WITH BUILT-IN THERMAL OVERLOAD PROTECTION, PROVIDE A HORSE- POWER RATED TOGGLE TYPE
- 33. ALL BRANCH CIRCUITS MULTIPLE HOME RUN WIRING SHALL BE 12 NOS. MINIMUM AND SIZED TO COMPLY WITH NEC DERATING TABLE 310-15(a)2(a) & CONDUIT FILL. NO SHARED NEUTRAL TO BE USED.
- 34. REFER TO ARCHITECTURAL DRAWINGS FOR OCCUPANCY AND OCCUPANT LOAD INFORMATION FOR EACH PROJECT AREA.
- 35. SWITCHES, CIRCUIT BREAKERS, ETC., SHALL BE READILY ACCESSIBLE. FUSES SHALL BE INSTALLED NOT MORE THAN 6'-6" AFF.

- 36. NO PIPING, DUCTS OR EQUIPMENT FOREIGN TO ELECTRICAL EQUIPMENT SHALL BE PERMITTED TO BE LOCATED WITHIN THE DEDICATED SPACE ABOVE THE ELECTRICAL
- 37. ELECTRICAL EQUIPMENT TESTING SHALL BE LISTED BY OCTA RECOGNIZED ELECTRICAL TESTING LABORATORY OR APPROVED BY OCTA.
- 38. PROTECTION DEVICES TYPES, DESIGNATION, SETTINGS AND AIC RATINGS SHALL BE DETERMINED FROM THE SHORT CIRCUIT ANALYSIS AND PROTECTIVE DEVICES COORDINATION STUDY AS PREPARED BY THE CONTRACTOR.
- 39. MINIMUM CONDUIT SIZE INDICATED SHALL SUPERCEDE MINIMUM CONDUIT SIZE CALL OUTS IN PLAN DRAWINGS. MINIMUM SIZE OF POWER AND LIGHTING CONDUITS FOR NON-FIRE/LIFE SAFETY SYSTEM SHALL BE 3/4 INCHES WHERE ALLOWED BY CODE REQUIREMENTS. MINIMUM SIZE OF POWER AND LIGHTING CONDUITS FOR FIRE/LIFE SAFETY SYSTEM SHALL BE 3/4 INCHES.
- 40. BRANCH CIRCUIT CABLE SIZE SHALL BE ADJUSTED BASED ON THE VALUES INDICATED
- A. A. 120/208V CABLING FROM PANEL TO ELECTRICAL LOAD SHALL BE AS FOLLOWS UNLESS OTHERWISE INDICATED:
 - a. 0'-100' 12 AWG MINIMUM
 - b. 101'-200' 10 AWG MINIMUM c. 201'-250' 8 AWG MINIMUM
- B. B. 277/480V CABLING FROM PANEL TO ELECTRICAL LOAD SHALL LOAD SHALL BE AS FOLLOWS UNLESS OTHERWISE:
- a. 0'-150' 12 AWG MINIMUM
- b. 151'-250' 10 AWG MINIMUM
- c. 251'-300' 8 AWG MINIMUM
- C. CONDUCTORS 12 AWG AND SMALLER SHALL BE SOLID. CONDUCTORS 10 AWG AND LARGER SHALL BE STRANDED. CONDUCTORS SHALL BE COPPER, OF THE SIZES NOTED, WITH TYPE THHN OR THWN 600V, INSULATION.
- D. ALL ABANDONED AND NEW PENETRATIONS IN WALLS, FLOORS OR CEILINGS SHALL BE SUITABLE CLOSED UP AND SEALED WITH HILTI CAULK. REFER TO STRUCTURAL DRAWINGS AND SPECIFICATIONS FOR PATCHING METHOD AND REQUIREMENT.
- 41. ELECTRICAL POWER & CONTROL FEEDER REQUIREMENT FOR ALL MECHANICAL & PLUMBING EQUIPMENT SHALL COMPLY WITH MECHANICAL/PLUMBING EQUIPMENT
- 42. ALL BRACH CIRCUITS REQUIRING ISOLATED GROUND BUS SHALL HAVE ISOLATED GROUND BUS SIZED PER NEC IN THE SOURCE PANELBOARD. MAIN ISOLATED GROUND WIRE SIZED PER NEC SHALL BE RUN FROM THE UPSTREAM SOURCE TRANSFORMER SECONDARY TO THE PANELBOARD.
- 43. WHEN INSTALLING DRILLED-IN ANCHORS IN EXISTING NON-PRESTRESSED/ PRESTRESSED REINFORCED CONCRETE, USE CARE AND CAUTION TO AVOID CUTTING OR DAMAGING THE EXISTING REINFORCING BARS. CONTRACTOR TO LOCATE EXISTING SLAB REBAR VIA PACHOMETER/FERROSCAN AT EQUIPMENT ANCHORS.
- 44. KEY NOTES, GENERAL NOTES AND DETAILS ARE APPLICABLE FOR ALL PHASES OF CONSTRUCTION.
- 45. A FINAL REPORT FOR THE TESTING AND ADJUSTING OF ALL NEW SYSTEM SHALL BE COMPLETED AND PROVIDED TO THE FIELD INSPECTOR PRIOR TO FINAL APPROVAL. THIS REPORT SHALL BE SIGNED BY THE INDIVIDUAL RESPONSIBLE FOR PERFORMING
- 46. AN OPERATION & SYSTEMS MANUAL, SHALL BE PROVIDED TO THE FIELD INSPECTOR AT THE TIME OF FINAL INSPECTION.
- 47. SUPPORT CONDUCTORS IN VERTICAL RACEWAYS BASED ON NEC 300.19.
- 48. GENERAL CONTRACTOR TO PROVIDED NECESSARY COLUMN WRAP FINISHES IN EXISTING COLUMNS BEING USED FOR NEW CONDUIT ROUTING.

WIRING METHOD

- UNDERGROUND
- A. UNLESS OTHERWISE NOTED ON THE DRAWINGS, CONCRETE ENCASED AND DIRECT BURIED CONDUIT SHALL BE SCHEDULE 40 PVC. WHERE CONDUITS PASS THROUGH GRADE, THROUGH CONCRETE PADS, THROUGH BUILDING FOUNDATION WALLS OR FLOOR SLABS, CONDUIT SHALL BE PVC COATED.
- OUTDOORS

INDOORS

A. UNLESS OTHERWISE NOTED ON THE DRAWINGS, CONDUIT INSTALLED OUTDOORS SHALL BE GALVANIZED RIGID STEEL AND FLEXIBLE CONNECTIONS SHALL BE LIQUIDTIGHT FLEXIBLE METAL CONDUIT.

A. IN FINISHED AREAS ALL RACEWAY AND WIRING SHALL BE CONCEALED AND BOXES

GALVANIZED RIGID STEEL. WIRING INSTALLED IN STUD WALL CAVITIES OR ABOVE HUNG CEILINGS MAY BE TYPE EMT. B. IN UNFINISHED AREAS SUCH AS MECHANICAL AND ELECTRICAL ROOMS WIRING

RECESSED. WIRING INSTALLED IN MASONRY WALLS SHALL BE EMT OR

SHALL BE INSTALLED IN RIGID STEEL CONDUIT. C. WIRING IN THE CRAWLSPACE SHALL BE INSTALLED IN RIGID METAL CONDUIT.

> ANAHEIM, CA 92806 714/560/OCTA

|| **(**)

DESIGN BY:

CHECKED BY



| E-ANA-003

1717 E. VIA BURTON STREET

067909-02

01.20.2023



Specifications

Depth (D1):

Depth (D2):

Width:

WDGE2 LED Architectural Wall Sconce Visual Comfort Optic

DIC ISTED 20 BAA

11.5"

DGE LE	D Family O	verview									
Luminaire	Optics	Standard EM, 0°C	Cold EM, -20°C	Sensor			Approxima	ate Lumens (40	000K, 80CRI)		
Luminaire		Standard EW, V C									
WDGE1 LED	Visual Comfort	4W			750	1,200	2,000				
WDGE2 LED	Visual Comfort	10W	18W	Standalone / nLight		1,200	2,000	3,000	4,500	6,000	
WDGE2 LED	Precision Refractive	10W	18W	Standalone / nLight	700	1,200	2,000	3,200	4,200		
WDGE3 LED	Precision Refractive	15W	18W	Standalone / nLight		7,500	8,500	10,000	12,000		
WDGE4 LED	Precision Refractive			Standalone / nLight		12,000	16,000	18,000	20,000	22,000	25,000

Orderin	g Information			EXAMPL	E: WDC	GE2 LED P3 40K 80C	RI VF MVOLT SRM DDBXD
		Color Temperature			Voltage	Mounting	
/DGE2 LED	P1 P1SW P2 P2SW P3 P3SW P4 Door with small window (SW) is	27K 2700K 30K 3000K 35K 3500K 40K 4000K	90CRI	VF Visual comfort forward throw VW Visual comfort wide	MVOLT 347 ³ 480 ³	Shipped included SRM Surface mounting bracket ICW Indirect Canopy/Ceiling Washer bracket (dry/damp	Shipped separately AWS 3/8inch Architectural wall spacer PBBW Surface-mounted back box (top, left, right conduit entry). Use when there

programmed for dusk to dawn operation.

	P51	See page 2 for more details.	50K ²	5000K					locations only,
E4WH		ery backup, Certified in CA Title 20	MAEDBS	Stan	dalone Ser	nsors/Controls (only available with P1SW,	PZSW & P3SW)	
E10WH	(4W, 0°C min)	ry backup, Certified in CA Title 20 N	ALENDS	PIR) motion sensor for 8- vith external dusk to d		eights. Intended for use on
LIUWII	(10W, 5°C min)	ry backup, cerunieu iii Or nue zon	MEDDS	PIRH				-	heights. Intended for use on
E20WC	Emergency batter	ry backup, Certified in CA Title 20 N	NAEDBS	11141			vith external dusk to d		

PIR1FC3V Bi-level (100/35%) motion sensor for 8-15' mounting heights with photocell pre-PE4 Photocell, Button Type DS 5 Dual switching (comes with 2 drivers and 2 light engines; see page 3 for details)

PIRH1FC3V Bi-level (100/35%) motion sensor for 15-30' mounting heights with photocell preexternal control, ordered separately) NLTAIR2 PIR nLightAIR Wireless enabled bi-level motion/ambient sensor for 8-15' mounting heights. BCE Bottom conduit entry for back box (PBBW). Total of 4 entry points. BAA Buy America(n) Act Compliant

NLTAIR2 PIRH nLightAIR Wireless enabled bi-level motion/ambient sensor for 15-30' mounting heights.

COMMERCIAL OUTDOOR

One Lithonia Way • Conyers, Georgia 30012 • Phone: 1-800-705-SERV (7378) • www.lithonia.com
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WDGEAWS DDBXD WDGE 3/8inch Architectural Wall Spacer (specify finish) WDGE2PBBW DDBXD U WDGE2 surface-mounted back box (specify finish)

The WDGE LED family is designed to meet

and code compliance.

specifier's every wall-mounted lighting need in a widely accepted shape that blends with any

architecture. The clean rectilinear design comes in our sizes with lumen packages ranging from 1,200

to 25,000 lumens, providing a true site-wide solution. Embedded with nLight® AIR wireless controls, the

WDGE family provides additional energy savings

WDGE2 delivers up to 6,000 lumens with a soft,

non-pixelated light source, creating a visually comfortable environment. When combined with

multiple integrated emergency battery backup options, including an 18W cold temperature option, the WDGE2 becomes the ideal wall-mounted

lighting solution for pedestrian scale applications in

P1-P5 not available with sensors/controls. Sensors/controls only available with P1SW, P2SW and P3SW.
 50K not available in 90CRI

3 347V and 480V not available with E4WH, E10WH, E20WC or DS.

 PE not available in 480V or with sensors/controls
 DS option not available with E4WH, E10WH, E20WC or sensors/controls
 DMG option not available with sensors/controls 7 Not qualified for DLC. Not available with emergency battery backup or

Power Packages: P1, P2, P3, P4, P5

Small Window (SW) configuration Power Packages: P1SW, P2SW, P3SW

ower Packages: P1SW, P2SW, P3SW

Lumen Output
Lumen values are from photometric tests performed in accordance with IESNA LM-79-08. Data is considered to be representative of the configurati
within the tolerances allowed by Lighting Facts. Contact factory for performance data on any configurations not shown here.

Performance	System	Diet Tues	27	K (2700K	, 80 C	RI)		30	K (3000K	, 80 C	RI)		35	K (3500K	, 80 C	RI)		40	K (4000K	, 80 C	RI)		50	K (5000k	, 80 C	RI)	
Package	Watts	Dist. Type	Lumens			U												Lumens			U						G
D4 / D4CW	10W	VF	1,166	119	0	0	0	1,209	123	0	0	0	1,251	128	0	0	0	1,256	128	0	0	0	1,254	128	0	0	0
P1 / P1SW	1000	VW	1,197	122	0	0	0	1,241	126	0	0	0	1,284	131	0	0	0	1,289	131	0	0	0	1,286	131	0	0	0
D2 / D2CW	15W	VF	1,878	129	1	0	0	1,947	134	1	0	0	2,015	139	1	0	0	2,023	139	1	0	0	2,019	139	1	0	0
P2 / P2SW	IDW	VW	1,927	133	1	0	0	1,997	137	1	0	0	2,067	142	1	0	0	2,075	143	1	0	0	2,071	143	1	0	0
P3 / P3SW	23W	VF	2,908	129	1	0	0	3,015	134	1	0	0	3,119	138	1	0	0	3,132	139	1	0	0	3,126	139	1	0	0
F3 / F33W	25W	VW	2,983	132	1	0	0	3,093	137	1	0	0	3,200	142	1	0	0	3,213	143	1	0	0	3,206	142	1	0	0
P4	35W	VF	4,096	117	1	0	1	4,247	121	1	0	1	4,394	126	1	0	1	4,412	126	1	0	1	4,403	126	1	0	1
P4	35W	VW	4,202	120	1	0	0	4,357	125	1	0	1	4,508	129	1	0	1	4,526	129	1	0	1	4,517	129	1	0	1
P5	48W	VF	5,567	115	1	0	1	5,772	119	1	0	1	5,972	123	1	0	1	5,996	124	1	0	1	5,984	124	1	0	1
rs	4617	VW	5,711	118	1	0	1	5,921	122	1	0	1	6,127	126	1	0	1	6,151	127	1	0	1	6,139	127	1	0	1

lectrical Lo	orformanco								lier for 90CRI	Lumen Output in Emergency Mode (4000K, 80 CRI)							
					rent (A)			CCT	Multiplier								
				240V	277V	347V		27K	0.845	Option	Dist. Type	Lumens					
	10W	0.082	0.049	0.043	0.038			30K	0.867	E4WH	VF	646					
P1 / P1SW	13W					0.046	0.033	35K	0.845		VW	647					
	15W	0.132	0.081	0.072	0.064			40K	0.885	E10WH	VF	1,658					
P2 / P2SW	18W					0.056	0.041	50K	0.898	Elowh	VW	1,701					
	23W	0.195	0.114	0.100	0.088	0.050	0.041	3011	0.070	Francis	VF	2,840					
P3 / P3SW							_			E20WC	vw	2,913					
	26W					0.079	0.058										
P4	35W	0.302	0.175	0.152	0.134												
P4	38W					0.115	0.086										
	48W	0.434	0.241	0.211	0.184												
P5	52W					0.157	0.119										

	13W					0.046	0.033
D2 (D2CW)	15W	0.132	0.081	0.072	0.064		
P2 / P2SW	18W					0.056	0.041
D2 / D2CW/	23W	0.195	0.114	0.100	0.088		
P3 / P3SW	26W					0.079	0.058
P4	35W	0.302	0.175	0.152	0.134		
F4	38W					0.115	0.086
P5	48W	0.434	0.241	0.211	0.184		
ro	52W				-	0.157	0.119

		Mode (400	OK, 80 CR	1)
CCT	Multiplier			
27K	0.845	Option	Dist. Type	Lume
30K	0.867	E4WH	VF	646
35K	0.845		VW	647
40K	0.885		VF	1,65
		E10WH	vw	1,70
50K	0.898		VF	2,84
		E20WC	VF	2,04
			VW	2,91

Projected LED Lumen N	/laintena	nce		
Data references the extrapolated per ambient, based on 10,000 hours of LE IESNA TM-21-11). To calculate LLF, use the lumen maint operating hours below. For other lum	D testing (tes	ted per IESNA L that correspond	M-80-08 and pro to the desired	ojecte
Operating Hours	0	25,000	50,000	10
Lumen Maintenance Factor	1.0	>0.96	>0.95	-



0°C 32°F

25°C 77°F

50°F

68°F

86°F

104°F

1.02

1.01

1.00

0.99

COMMERCIAL OUTDOOR

One Lithonia Way • Conyers, Georgia 30012 • Phone: 1-800-705-SERV (7378) • www.lithonia.com
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Rev. 11/21/22

Product data sheet



Mini Power Zone unit substation, plug on branch, 1 phase, 15kVA, 480V primary, 120/240V secondary, Type 3R

MPU15S40F

Product availability: Stock - Normally stocked in distribution

Main	
Product	Sealed Transformer
Certifications	UL Listed
Туре	Mini Power-Zone
Enclosure Code	В
Insulation Temperature	365 °F (185 °C)
Phase	1 phase
Primary Voltage	480 V
Secondary Voltage	120/240 V
Full Capacity Taps	2 5 % FCBN
Power Rating	15 kVA
Temperature Rise	115 °C
Winding Material	Copper
Interrupt Rating	18 kA
Circuit Breaker Type	Primary main breaker Secondary main breaker Feeder breaker
Interior Type	QO Load Center interior
Number of Spaces Available	10
Number of Circuits	10
Enclosure Type	NEMA 3R hot-rolled steel
Complementary	
Height	43.20 in (1097.28 mm)

21.00 in (533.40 mm) 13.50 in (342.90 mm)

350.01 lb(US) (158.76 kg)

Ordering and shipping details 16275-MPZ PLUG ON BRANCH CB Category **Discount Schedule** PE2 785901699187 Returnability Packing Units Unit Type of Package 1 PCE Number of Units in Package 1 Package 1 Height 20.98 in (53.3 cm) Package 1 Width Package 1 Length 13.50 in (34.3 cm) 365.00 lb(US) (165.561 kg) Package 1 Weight Offer Sustainability California proposition 65 WARNING: This product can expose you to chemicals including: Nickel (Metallic), which is known to the State of California to cause cancer, and Bisphenol A (BPA), which is known to the State of California to cause birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov

EU RoHS Directive

Contractual warranty

Recommended replacement(s)

Model **PG**

High Performance GRILLES

DSSXD Sandstone

DDBTXD Textured dark bronze

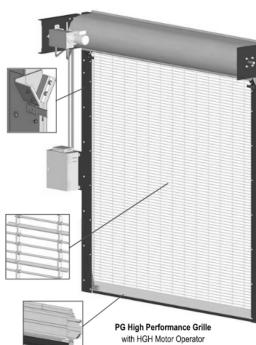
DNATXD Textured natural aluminum

DBLBXD Textured black

DWHGXD Textured white

DSSTXD Textured sandstone

The Lawrence Model PG is an industry first! A truly high performance rolling grille designed for 500,000 cycles usage, with an average operating speed of approximately 24 inches per second to open, 12 inches per second to close. PG High Performance Grilles are the ideal solution in very high usage or higher speed applications for openings up to 30 ft. wide and 16 ft. high.



Standard Grille Features

- HL9 heavy-link inline grille curtain pattern with 3/16" thick, 3/4" wide, 2-hole vertical aluminum links on 9" centers, interconnected with 5/16" solid aluminum horizontal rods on 1 1/2" centers
- Stainless steel spacer tubes between curtain end links on every rod and aluminum spacer tubes between all other links on every 4th rod Stainless steel links and tube spacers on every rod optional
- Tubular bottom bar fabricated from aluminum extrusions Guides fabricated from 1/4" steel shapes with replaceable UHMW wearstrips – inner and outer guides are separately removable to
- provide easy access to curtain for inspection and service Springless barrel design – minimum 8 5/8" diameter pipe and 1 1/2"
- Standard Safety Features Wireless monitored sensing edge to stop and reverse a closing grille upon contact with an obstruction – rubber dual-chamber profile
- design with integral isolated conductive elastomer switches Secondary monitored light curtain to stop and reverse a closing grille, and photo eye to stop an opening grille, upon sensing an
- obstruction in the opening. If a sensing system fault is detected, grille will stay in or return to open position and revert to constant pressure close function for partial operability until fault is corrected

Standard Operator Features

High efficiency UL Listed inline gear drive motor operator

- 2 HP minimum continuous duty motor operates on 208/230v-3ph or 460v-3ph power source (2 HP available as 230v-1ph)
- Auxiliary hoist for emergency hand chain operation in the event of a power failure
- Integral speed governor to prevent curtain free-fall in the event of operator component failure
- Variable speed controller with adjustable soft start/stop feature Average operating speed of approximately 24" per second to open, 12" per second to close – slowing substantially prior to full open and full close positions
- Solenoid actuated brake, adjustable limit switches, non-resettable cycle counter, adjustable reclose timer, delay on reverse
- Auxiliary transformer is included to support supplemental sensors and ancillary control devices • Wall mount control panel - connected to the motor operator via pre-assembled wiring harnesses

Standard Clearances Head clearance – 25" to 10 ft. high, 27" over 10 ft. to 12 ft. high, 29" over 12 ft. to 14 ft. high, 32" over 14 ft. to 16 ft.

(Reduced head clearance may be available on grilles to 8'-6" high – consult factory for information) Side clearance – 8" each side

Also available as a Model PD High Performance Door with standard flat slats or insulated slats PG Grilles are warranted against defects in workmanship and materials for 2 years from date of shipment provided designed cycle life is not exceeded. Additional warranty conditions apply. 4525 Littlejohn Street • Baldwin Park, CA 91706 (626) 869-0837 • Toll Free (866) 939-3399 • Fax (626) 869-0837 • Toll Free (866) 939-3399 • Fax (626) 869-0841 www.lawrencedoors.com

awrence Roll-Up Doors, Inc. reserves the right to change specifications without notice. Refer to Standard Specifications sheets (available upon request) for complete product information.

Ultra reliable • 5,000 lb (2,268 kg) gates • Fast • Crash compatible • Low maintenance

ıltra durable polyeste

owder coat over zinc

maintenance and

CONTROLLER provides

■ Moves up to 5,000 lb (2,268 kg) gates with ease Longest life and lowest

maintenance. SlideDriver 50VF2/3

reliably secures sites worldwide and lasts decades ■ Fast, smooth travel, 2.2 ft/s (70 cm/s) or 3 ft/s (91 cm/s)

■ Emergency Fast Close

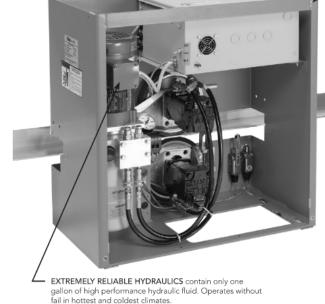
■ Two 8 inch (20 cm)

life and increased reliability ■ Seamless synchronization with all HySecurity operators for dual gate, sally port or sequenced gate integration

AdvanceDrive wheels for longer



















High Security

Product Weight

HySecurity operators secure the world's critical infrastructure and key assets where ultimate reliability is vital. SlideDriver delivers uncompromising

quality to industrial customers worldwide, where ease of use, consistent operation, low maintenance, long life and high reliability is expected.





50VF2/3

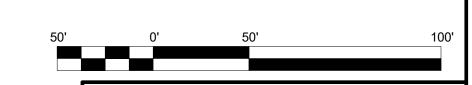
31 SlideDriver™ Models

		FAST		FAST			
	1,500 lb (680 kg) gates 1 ft/s (30 cm/s)	3,000 lb (1,361 kg) gates 1.7 ft/s (50 cm/s)	4,000 lb (1,814 kg) gates 1 ft/s (30 cm/s)	5,000 lb (2,268 kg) gates 2.2 ft/s (70 cm/s) or 3 ft/s (91 cm/s)	8,000 lb (3,629 kg) gates 1 ft/s (30 cm/s)	20,000 lb (9,072 kg) gates 1 ft/s (30 cm/s)	
Model	SlideDriver 15	SlideDriver 30F	SlideDriver 40	SlideDriver 50VF2/3	SlideDriver 80	SlideDriver 200	
Part #	222 SS ST	222 EX 1.7 ST	222 E ST	222 X3 ST	222 X1 ST	444 XS ST	
Duty Cycle				Continuous			
Horsepower	1 hp	2 hp	1 hp	2 hp	2 hp	5 hp	
Drive				Hydraulic			
Drive Wheels	rive Wheels Two 6" (15 cm) AdvanceDrive wheels		Two 6" (15 cm) AdvanceDrive wheels	Two 8" (20 cm) AdvanceDrive wheels	One 8" (20 cm) AdvanceDrive wheel, One 8" XtremeDrive wheel and 27 ft (8 m) of rack	Two 8" (20 cm) AdvanceDrive wheels, Two 8" XtremeDrive wheels and 52 ft (16 m) of rack	
Gate Weight Max.	1,500 lb (680 kg)	3,000 lb (1,361 kg)	4,000 lb (1,814 kg)	5,000 lb (2,268 kg)	8,000 lb (3,629 kg)	20,000 lb (9,072 kg)	
Gate Length Max.			Limi	ited only by weight			
Drawbar Pull	300 lb (136 kg)	300 lb (136 kg)	300 lb (136 kg)	300 lb (136 kg)	600 lb (272 kg)	1,200 lb (544 kg)	
Rate of Travel	1 ft/s (30 cm/s)	1.7 ft/s (50 cm/s)	1 ft/s (30 cm/s)	(30 cm/s) Field adjustable, 2.2 ft/s (70 cm/s) or 3 ft/s (91 cm/s) 1 ft/s (30 cm/s) Emergency Fast Close 3 ft/s (91 cm/s)		1 ft/s (30 cm/s)	
Temperature Rating			-40° F to 158° F (-40	^o C to 70° C) No heater necessa	ry		
1 Phase Power	115/208/230V 60 Hz 110/220V 50 Hz	208/230V 60 Hz 220V 50 Hz	115/208/230V 60 Hz 110/220V 50 Hz	208/230V 60 Hz 208/230V 60 Hz 220V 50 Hz 220V 50 Hz		230V 60 Hz	
3 Phase Power	208/2	30/460/575V 60 Hz , 220/38	OV 50 Hz	208/230/460V 60 Hz 220/380V 50 Hz	208/230/460/575V 6	0 Hz , 220/380V 50 Hz	
Communication			RS-232, RS-485, Ethernet/fiber	using optional HyNet™ Gatew	ay accessory		
User Controls		Smart Touch Controller	with 70+ configurable settings	s. Smart Touch keypad and displ	lay or a PC using S.T.A.R.T. softwa	are.	
Relays		Three configurable use	er relays: one 30VDC, 3A solid s	state and two 250VAC, 10A elect	tromechanical; Optional Hy8Rela	утм	
Listed to UL325	Usage Class I, II, III, IV	Usage Class III, IV	Usage Class I, II, III, IV	Usage Class III, IV	Usage Class III, IV	Usage Class III, IV	
Warranty				5 year			
UPS Backup Power O	options and Additional Me	odels					
DC Power Supply*	SlideDriver 15 UPS	SlideDriver 15 UPS SlideDriver 30F UPS SlideDriver 40 UPS –		SlideDriver 80 UPS	SlideDriver 200 UPS**		
AC Power Supply with Hylnverter*	SlideDriver 15 with Hylnverter	-	SlideDriver 40 with Hylnverter	SlideDriver 50VF2/3 with Hylnverter	-	-	
	-	SlideDriver 30F-C	SlideDriver 40-C	SlideDriver 50VF2/3-C	SlideDriver 80-C	SlideDriver 200-C	
Correctional Facility					SlideDriver 80-M	SlideDriver 200-M	

SYSTEM DESIGN SUPPORT: Contact HySecurity for CAD drawings, tech manuals, help with custom site requirements or other specifications support.

nload operator specifications online at www.hysecurity.com or call to speak with a HySecurity representative today. Contact HySecurity for an operator/parts distributor near you. phone 800-321-9947 | 253-867-3700 fax 888-321-9946 Simple. Reliable. Secure. www.hysecurity.com • info@hysecurity.com





G.F. # 067909-02 601 SOUTH FIGUEROA ST. SUITE 3800 LOS ANGELES, CA 90017 T: 213 624 0347

www.gannettfleming.com



E-ANA-004

1717 E. VIA BURTON STREET

ANAHEIM, CA 92806

067909-02

Designe

Checke

01.20.2023

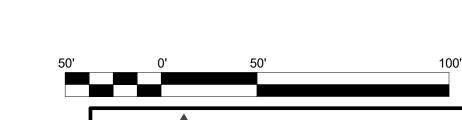
1/2" = 1'-0

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714/560/OCTA **GANNETT FLEMING**

Amber Warning

Amber Warning Lights & White Pedestrian

Typical Mounting to Baseplate

Most effective traffic calming measure

High-intensity flashing amber LEDs

SMPL™ white pedestrian luminaire

MUTCD Ch. 4, Sec. N compliant

12 VDC operation

LightStar™ Plus with SMPL™

Part Number: LGS-M11A-SMPL

Description: IRWL - In Roadway Warning Light fixture in a black fiberglass reinforced thermo-plastic housing with flashing amber LED & non-flashing white Surface Mount Pedestrian Luminaire (SMPL™) LED

Application Notes:

LightStar™ Plus is the next-generation in-roadway light with a moisture-resistant design, surface mount pedestrian luminaire (SMPL™), and black exterior.

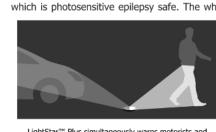
The amber LEDs flash towards the motorist at the highly visible enhanced Enlighten1™ rate, which is photosensitive epilepsy safe. The white LEDs illuminate towards the pedestrian and energize simultaneously with the amber LEDs

in a continuous non-flashing solid white for

the cross-time duration. Once activated, the

amber LED portion of the light fixture flashes,

warning motorists up to 1,000 feet in



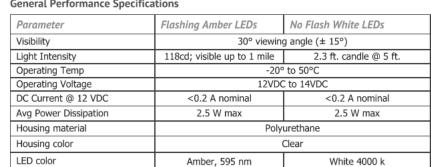
advance. The white LED SMPL™ portion of the light fixture also simultaneously energizes via ime selectable activation at nighttime. The light fixture contains custom-engineered LightStar™ Plus simultaneously warns motorists and optics for precise focused light output using high-intensity LEDs. The fixture fits tightly

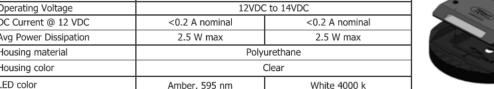
button head 1/4"-20 screws with thread locks and factory applied anti-seize compound. IRWLs alert motorists of pedestrians inside, or about to enter the crosswalks, and used at midblock and other uncontrolled public, school zone, campuses, trails and facilities. Activation methods are push button, passive detection bollard, or motion activated sensor.

into protective base plate models LGS-SD10-C and LGS-CHS-14 & fastens using stainless steel

Pursuant to MUTCD Sec. 4N.05 & .06, IRWLs should be installed in the center of each traffic lane, at the center line of the roadway, at each edge of the roadway or parking lanes, or at other suitable locations away from observed tire track paths. Placement within lanes should be based on engineering best judgement. Refer to our published installation layouts.







Usage Notes and Limitations: The LGS IRWL designed to operate in a pulsed manner for compliance with MUTCD Chapter 4N. MUTCD states that steadily illuminated lights installed in the roadway surface are considered to be Internally Illuminated Raised Pavement Markers (IIRPM). When any LGS IRWL are used as IIRPM instead of IRWL, the manufacturer's warranty will not apply. Additionally, if customers operate any LGS IRWL as IIRPM, the drive voltage should be controlled/reduced so as to limit the current/power consumed (with commensurate reduced brightness) to mitigate the risk of higher thermally induced failure rates.

> 2292 Airport Blvd., Santa Rosa, CA 95403 | P: (707) 542-4547 | F: (707) 525-6333 | www.lightguardsystems.com SMPL™ is U.S. patent pending. ©2020 LightGuard Systems, Inc. All Rights Reserved.

LIGHTGUARD

Ruggedized polyurethane exterior moisture-resistant design Visible up to 1,000 feet Smart Crosswalk[™] Universal Controller Easily mounts to in-roadway baseplate

Application Notes:

LightGuard Systems Part Number: LGS-UC-AC Description: Universal Controller AC

Lightning surge protection Internal & external branch circuit protection

4 Solid State outputs support multiple configurations,

120 VAC single phase supply Nominal 12VDC output Lockable NEMA 3R Aluminum cabinet with welded

Features/Benefits:

flange brackets

6 solid state inputs

The Universal Controller AC is intended for use at uncontrolled intersections. It accepts call signal inputs from a manual pedestrian push button device (standard or APS) and automatic pedestrian activated detectors (bollards). Solid State outputs (typically flashing light sequence) are activated which visually alert motorists to the presence of pedestrians inside, or about to enter, the crosswalk. The flashing sequence is a factory preset duration (field adjustable) to allow pedestrians adequate street crossing time.

The programmable logic controller user interface consists of keypad + LCD. LightGuard Systems' proprietary software provides effective, reliable operation allowing the user to make adjustments to the system parameters. All outputs are software controlled, and configured by the factory.

The Universal Controller operates LGS DuraFlash™ Plus (IRWL + SMPL), Illuminated Signs, RRFBs, alternating beacons, etc. It is also compatible with most LGS upgrade kits (motion sensor, loop detector, wireless activation, radar, audible notification, etc.).

General Performance Specifications

Value	-
1 Watt (standby mode)	١
-20C to 50C	
100-240 VAC, 50-60 Hz	
5A Fast acting (2 pole circuit breaker)	
13 kA	
13.5 VDC to 15VDC (class 2 power supply)	
5 Amps	
NEMA 3R, vented, Aluminum w/padlock latch	
Unpainted	
(H) 20.625" x (W) 17.5" x (D) 12"	
	1 Watt (standby mode) -20C to 50C 100-240 VAC, 50-60 Hz 5A Fast acting (2 pole circuit breaker) 13 kA 13.5 VDC to 15VDC (class 2 power supply) 5 Amps NEMA 3R, vented, Aluminum w/padlock latch Unpainted (H) 20.625" x (W) 17.5" x



Smart Crosswalk™ Manual LED Activation Mechanisms

 ADA compliant Easy electrical connections

Features/Benefits

Easily mounts to existing poles Available with multiple placards

12 VDC operation (down to 9 VDC) Sold in pairs for both sides of crosswalk

Part Number: LGS-PBA Description: Push Button Assembly with Four LEDs

Application Notes:

Button Size

The LightGuard System® push button assembly comes with a large touch sensitive button with either a left or right facing figure. The push button activation device comes in pairs and are placed at each end of the crosswalk. Once the button is pushed, the system is activated; four LED lights on the face plate begin flashing simultaneously with the IRWL and/or sign system to alert the pedestrian that the system has been activated.

General Specifications	
Parameter	Value
Maximum separation distance	Length of crosswalk
Power consumption	1 watt (only when flashing)
Operating temperature	-20° to 80°C
Operating Voltage	9 VDC to 15 VDC (only when flashing)
Color	Green AL housing (standard)
Flashing Light Color	Amber

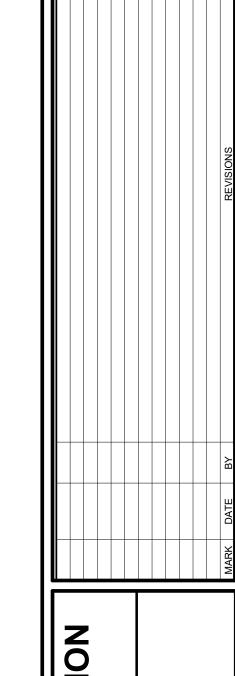
2" silver mushroom vandal proof PB



SPEC Sheet #3100

Installation Details	
Mounting	Wiring Diagram
2x .250 20 MOUNTING BOLTS 2x ADJUSTABLE ADAPTOR BARS	LED PLACARD
LED WIRE FEED THRU SWITCH WIRE FEED THRU 3.250	S+ GND PAPB WIRING DIAGRAM

2292 Airport Blvd., Santa Rosa, CA 95403 | P (707) 542-4547 | F(707) 525-6333 Copyright© 2018 All Rights Reserved. | www.lightguardsystems.com 8/8/18



B#	067909-02
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AWN BY:	AH
ECKED BY:	MM
TE:	01.20.2023
ALE:	NONE

E-ANA-005

1717 E. VIA BURTON STREET

714/560/OCTA

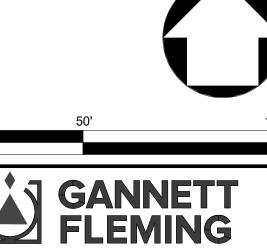


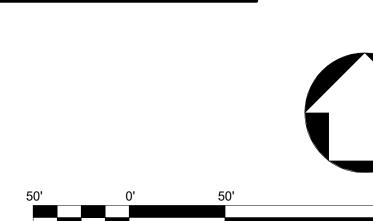
GANNETT FLEMING

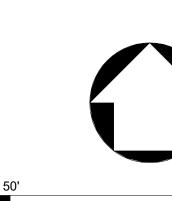
OVERALL SITE PLAN - DEMOLITION

SCALE: 1" = 50'-0"









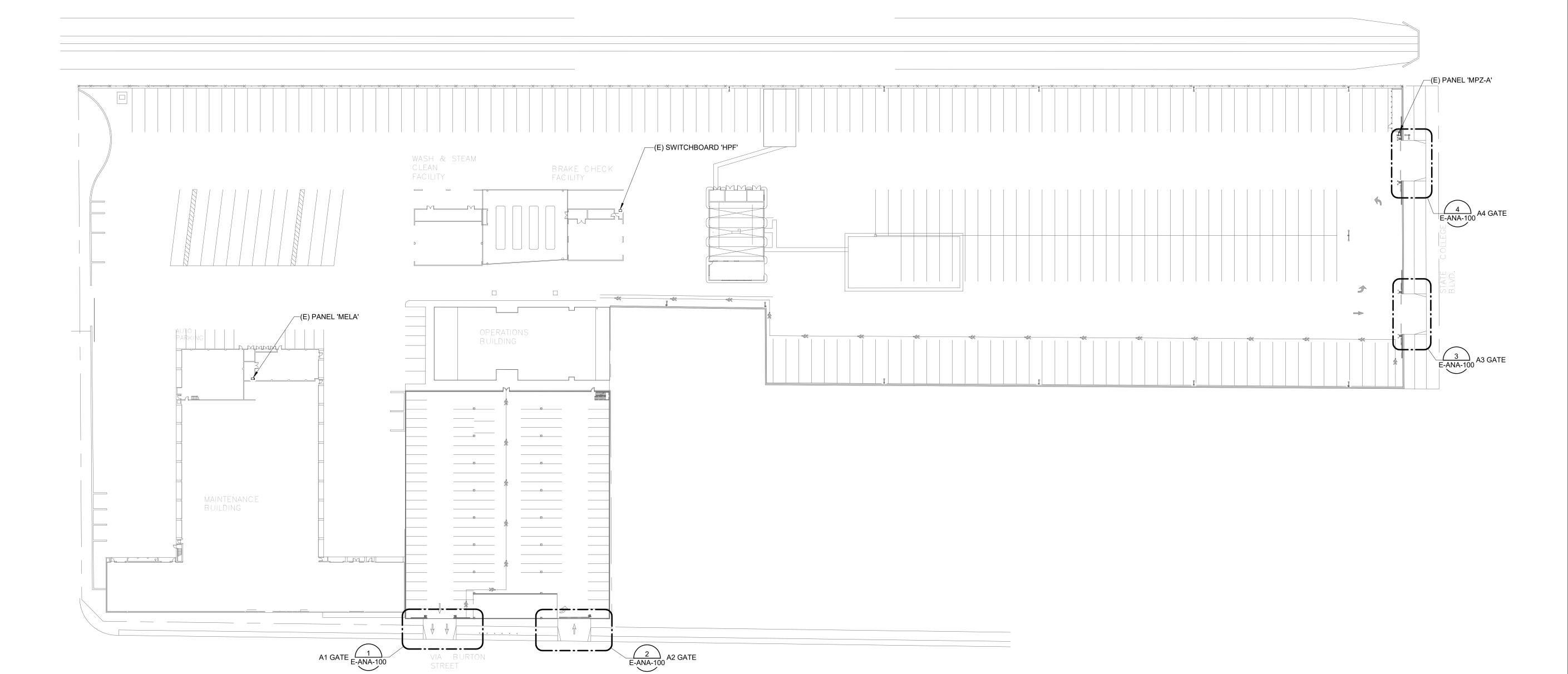
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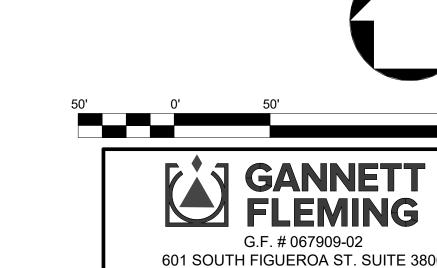
ANAHEIM, CA 92806

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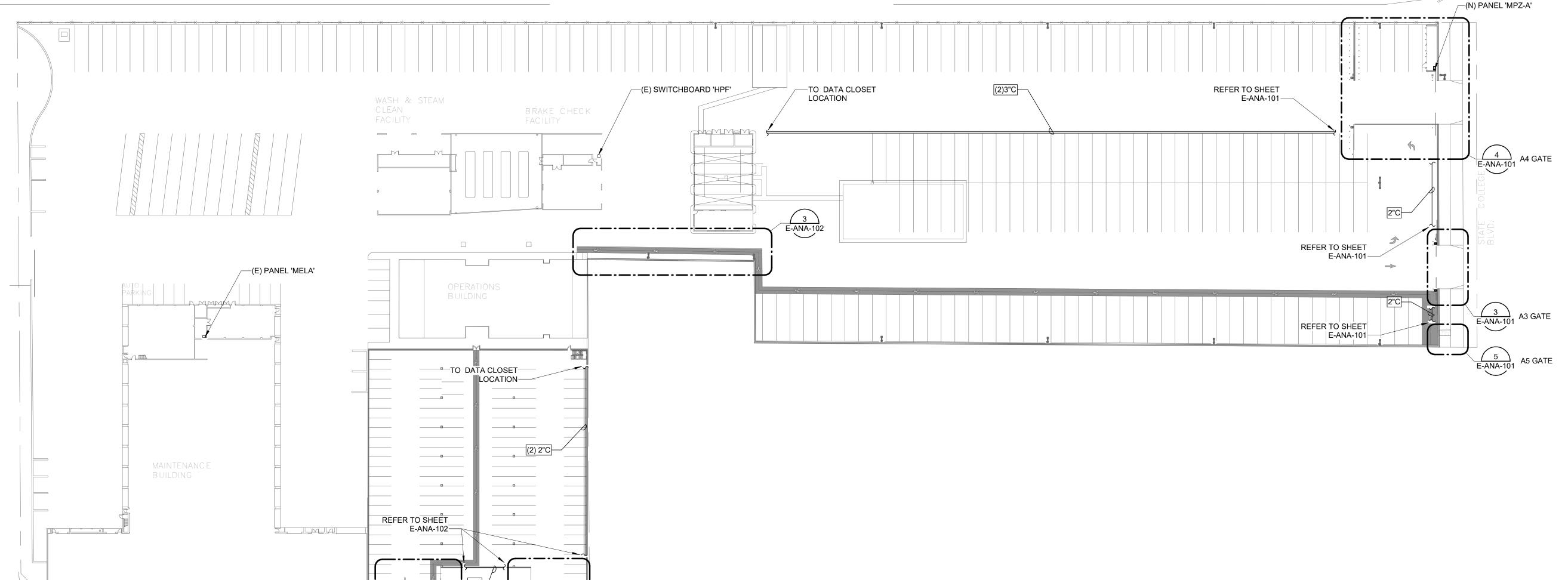








E-ANA-101 A3 GATE REFER TO SHEET E-ANA-101

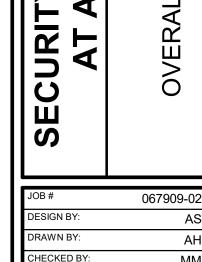


E-ANA-102 A2 GATE

OVERALL SITE PLAN - RENOVATION

SCALE: 1" = 50'-0"

A1 GATE & A6 GATE E-ANA-102



RENOVATION

E-ANA	-011
SHEET:	
SCALE:	1" = 50'
DATE:	01.20.20
ONEONED BY:	IV.

714/560/OCTA



(E) PANEL 'MPZ-A'—

(E) CAMARE POLE—

(E) BOLLARS (TYP.)-

—(E) LIGHT POLE

−(E) MOTOR GATE A4-1

4 ENLARGED DEMOLITION PLAN - GATE A4

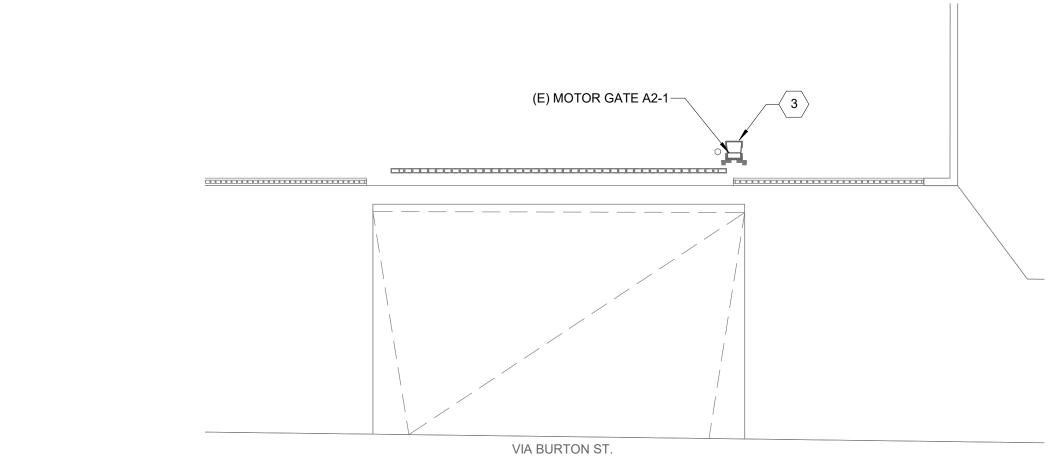
(E) MOTOR GATE A4-2

GENERAL NOTES

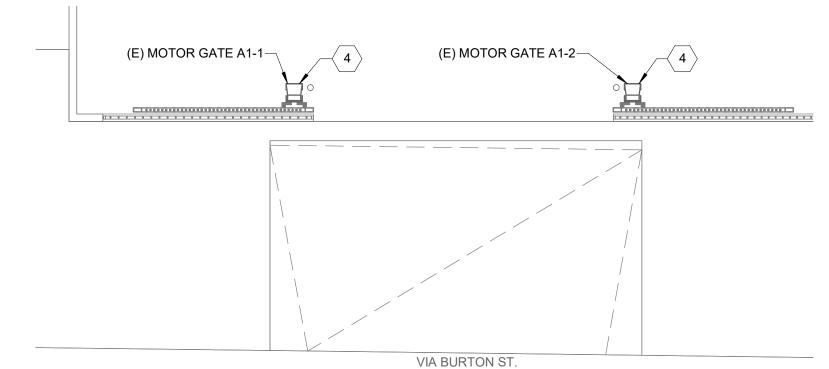
- 1. DE-ENERGIZE, MAKE SAFE AND REMOVE BACK TO SOURCE EXISTING EQUIPMENT AS SHOWN. EXISTING MOTOR GATE CONTROLS TO BE DEMOLISHED ALONG WITH ALL OTHER ASSOCIATED ACCESSORIES SHOWN.
- 2. CONTRACTOR SHALL REMOVE EXISTING BREAKER AT EXISTING PANELS "MELA" AND "MPZ-A", CLEAN AND RETURN TO CLIENT.
- 3. EXISTING EQUIPMENT TO REMAIN IN PLACE UNLESS OTHERWISE



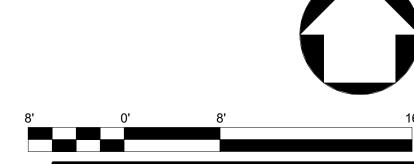
- 1. CONTRACTOR SHALL DISCONNECT AND DEMOLISH EXISTING MOTOR GATE CONTROLS A4-1 AND A4-2 SERVING GATE A4 WITH ALL OTHER ASSOCIATED ACCESSORIES. EXISTING CONDUIT AND CONDUCTORS TO BE DEMOLISHED ALONG WITH ALL OTHER ASSOCIATED ACCESSORIES BACK TO THE SOURCE PANEL.
- 2. CONTRACTOR SHALL DISCONNECT AND DEMOLISH EXISTING MOTOR GATE CONTROLS A3-1 AND A3-2 SERVING GATE A3 WITH ALL OTHER ASSOCIATED ACCESSORIES. EXISTING CONDUIT AND CONDUCTORS TO BE DEMOLISHED ALONG WITH ALL OTHER ASSOCIATED ACCESSORIES BACK TO THE SOURCE PANEL.
- 3. CONTRACTOR SHALL DISCONNECT AND DEMOLISH EXISTING MOTOR GATE CONTROLS A2-1 SERVING GATE A2 WITH ALL OTHER ASSOCIATED ACCESSORIES. EXISTING CONDUIT AND CONDUCTORS TO BE DEMOLISHED ALONG WITH ALL OTHER ASSOCIATED ACCESSORIES BACK TO THE SOURCE PANEL.
- 4. CONTRACTOR SHALL DISCONNECT AND DEMOLISH EXISTING MOTOR GATE CONTROLS A1-1 AND A1-2 SERVING GATE A1 WITH ALL OTHER ASSOCIATED ACCESSORIES. EXISTING CONDUIT AND CONDUCTORS TO BE DEMOLISHED ALONG WITH ALL OTHER ASSOCIATED ACCESSORIES BACK TO THE SOURCE PANEL.
- 5. EXISTING 'MPZ-A' TO BE DEMOLISHED ALONG WITH ALL OTHER ASSOCIATED ACCESSORIES SHOWN, UTILIZE EXISTING ENCLOSURE TO INTERCEPT EXISTING FEEDERS AND EXTEND TO NEW LOCATION OF PANEL 'MPZ-A'. MATCH EXISTING FEEDERS AND CONDUITS FOR EXTENDED CIRCUITS. REFER TO SINGLE LINE DIAGRAM E-ANA-702 FOR ADDITIONAL INFORMATION.



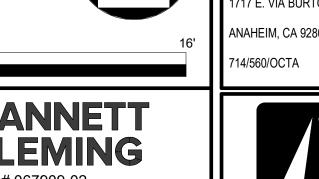
2 ENLARGED DEMOLITION PLAN - GATE A2 PARKING STRUCTURE ENTRANCE
SCALE: 1/8" = 1'-0"



ENLARGED DEMOLITION PLAN - GATE A1 PARKING STRUCTURE EXIT



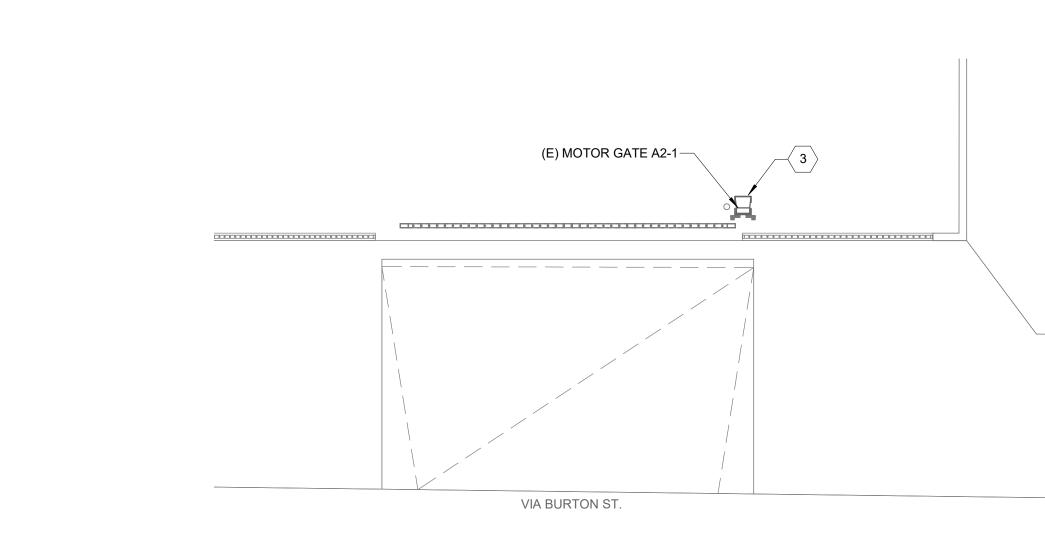






E-ANA-100

AS INDICATED



−(E) MOTOR GATE A3-1

(E) MOTOR GATE A3-2

3 ENLARGED DEMOLITION PLAN - GATE A3

SCAL F: 1/8" = 1'-0"

REFER TO SHEET

E-ANA-011

(E) LIGHT POLE

—(N) TYP. BOLLARDS

-(N) DISCONNECT

TO PULLBOX

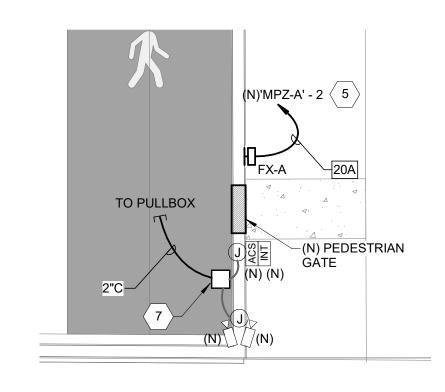
–(N) PULLBOX \langle $_{6}$ angle

-(N) MOTOR GATE A4-2

ENLARGED RENOVATION PLAN - GATE A4 BUS YARD ENTRANCE

−(N) MOTOR GATE A4-1

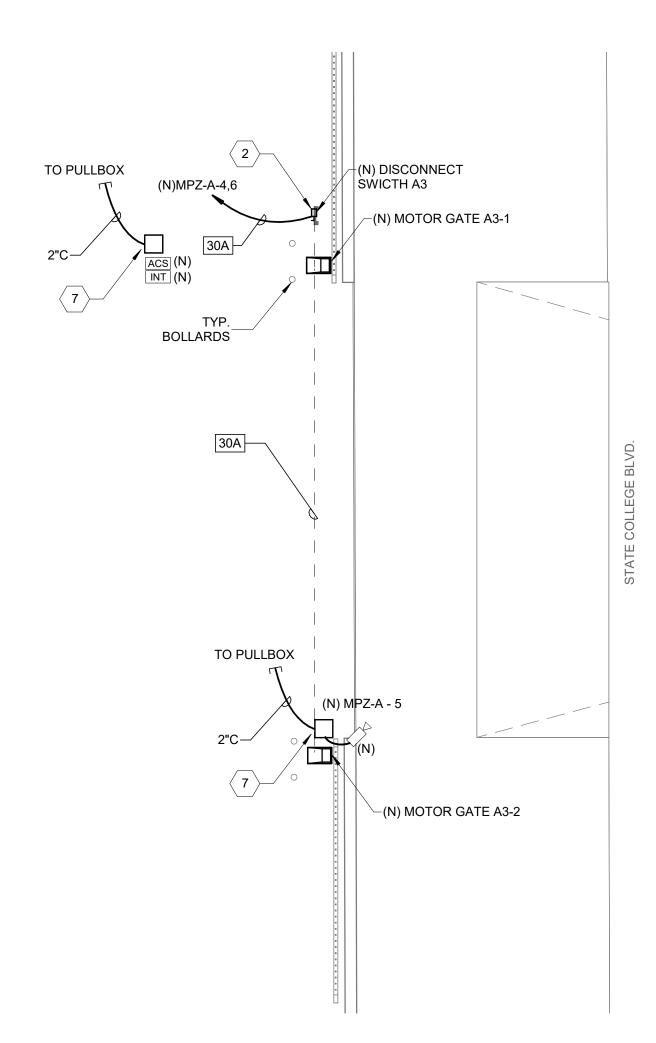
SWITCH A4



-(N) PANEL "MPZ-A" \langle 4 angle

(E) LIGHT POLE

5 ENLARGED RENOVATION PLAN - GATE A5



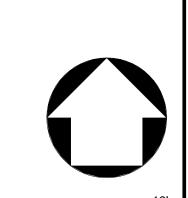
3 ENLARGED RENOVATION PLAN - GATE A3 BUS YARD EXIT

GENERAL NOTES

- 1. PRIOR TO DE-ENERGIZE ANY CIRCUIT, CONTRACTOR SHALL FIELD VERIFY, TRACE, IDENTIFY, LOCKOUT/TAGOUT ALL LOAD CALCULATIONS OF ANY CIRCUIT TO BE USED IN NEW WORK.
- 2. THE CONTRACT DRAWINGS ARE DIAGRAMMATIC IN NATURE AND NOT EVERY DETAIL OR EXACT LOCATION OF EQUIPMENT AND/OR CONDUIT IS SHOWN. EXISTING CONDITIONS SHALL BE VERIFIED IN THE FIELD COMMENCING ANY FABRICATION, ORDERING ANY MATERIAL, OR PERFORMING ANY WORK.
- 3. ALL FIELD DIMENSIONS ARE APPROXIMATE, CONTRACTOR TO FIELD VERIFIED ALL DIMENSIONS.

SHEET NOTES

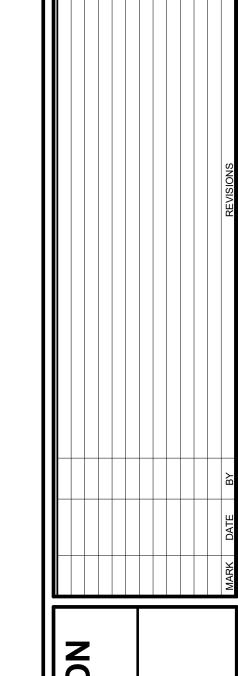
- 1. CONTRACTOR SHALL INSTALL NEW DISCONNECT SWITCH A4 TO SERVE PROPOSED MOTOR GATE CONTROLS A4-1 AND A4-2 SERVING GATE A4 WITH ALL OTHER ASSOCIATED ACCESSORIES. REFER TO FEEDER SIZE AND QUANTITY AND FEEDER SCHEDULE ON SHEET E-ANA-601. PROVIDE NEW CONDUIT FROM NEW PANEL 'MPZ-A' TO SERVE PROPOSED GATE A4. REFER TO PANEL SCHEDULE ON SHEET E-ANA-601 FOR CIRCUIT BREAKER.
- 2. CONTRACTOR SHALL INSTALL NEW DISCONNECT SWITCH A3 TO SERVE PROPOSED MOTOR GATE CONTROLS A3-1 AND A3-2 SERVING GATE A3 WITH ALL OTHER ASSOCIATED ACCESSORIES. REFER TO FEEDER SIZE AND QUANTITY AND FEEDER SCHEDULE ON SHEET E601. PROVIDE NEW CONDUIT FROM NEW PANEL 'MPZ-A' TO SERVE PROPOSED GATE A3. REFER TO PANEL SCHEDULE ON SHEET E-ANA-601 FOR CIRCUIT BREAKER.
- 3. UTILIZE EXISTING ENCLOSURE 'MPZ-A' TO INTERCEPT EXISTING FEEDERS AND CONDUITS. REFER TO SINGLE LINE E-ANA-702 FOR ADDITIONAL INFORMATION.
- 4. PROPOSED LOCATION FOR NEW PANELBOARD 'MPZ-A' 60A,120/240,1-PH, 3W IN NEMA-3R ENCLOSURE. REFER TO SHEET E-ANA-601 ELECTRICAL SCHEDULE FOR FEEDER SIZES AND QUANTITY.
- 5. PROVIDE NEW FEEDER & CONDUIT FROM NEW 'MPZ-A' PANEL TO SERVE LIGHTING FIXTURE AS SHOWN. COORDINATE THE EXACT LOCATION OF THE LIGHTING FIXTURE PRIOR TO INSTALLATION.
- 6. CONTRACTOR SHALL PROVIDE A 24"x24"x24" PULLBOX AS SHOWN. CONTRACTOR TO VERIFY WITH OCTA SECURITY MANAGEMENT THE LOCATION OF THE DATA CLOSET IN THE BUILDING PRIOR TO INSTALL PROPOSED CAMERAS. FIBER CONDUITS ROUTING TO BE VERIFIED IN THE FIELD.
- 7. PROVIDE A 18"x18"x18" PULLBOX AS SHOWN.





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AS INDICATED

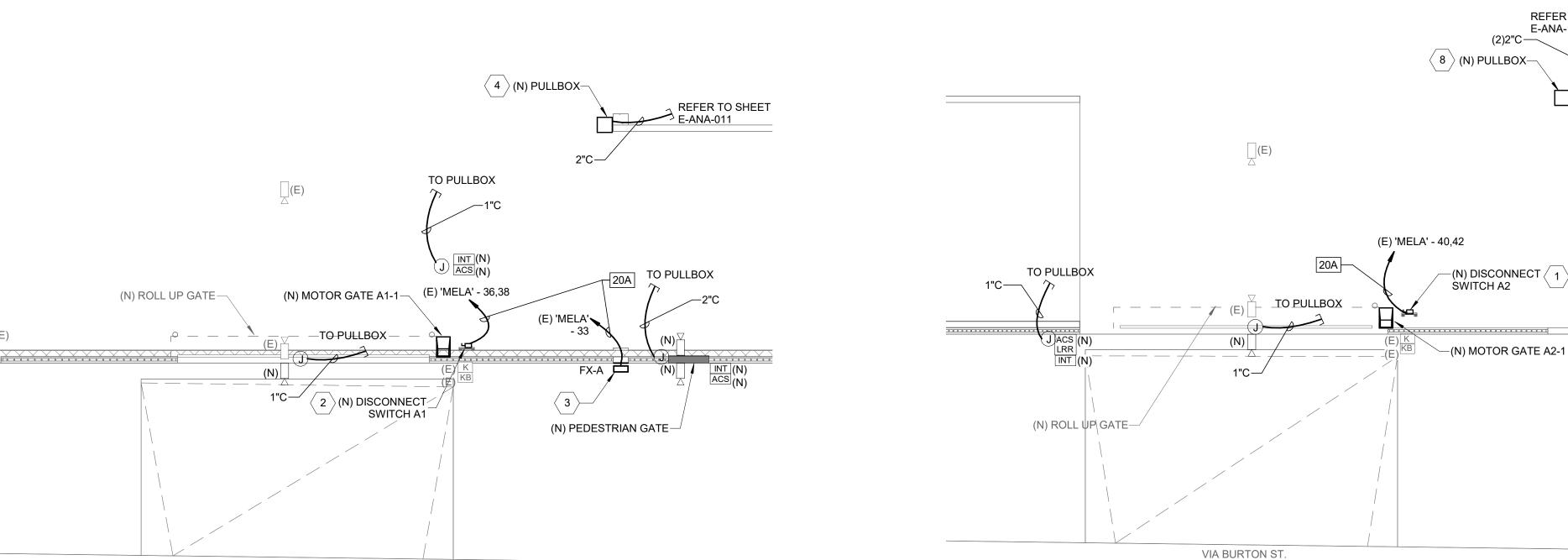
ANAHEIM, CA 92806

714/560/OCTA

VIA BURTON ST ENLARGED RENOVATION PLAN - GATE A1 & A6 PARKING STRUCTURE EXIT

(E)'OLA' - 32

(7)(N) POLE—



IN-ROADWAY WARNING-

3 ENLARGED RENOVATION PLAN - IN-PAVIMENT FLASHING PEDESTRIAN LIGHTS
SCALE: 3/32" = 1'-0"

LIGHTS

ENLARGED RENOVATION PLAN - GATE A2 PARKING STRUCTURE ENTRANCE

(N) POWER

CONTROL UNIT-

(E) PANEL 'OLA' - 32

6 (E) POLE

GENERAL NOTES

- 1. PRIOR TO DE-ENERGIZE ANY CIRCUIT, CONTRACTOR SHALL FIELD VERIFY, TRACE, IDENTIFY, LOCKOUT/TAGOUT ALL LOAD CALCULATIONS OF ANY CIRCUIT TO BE USED IN NEW WORK.
- 2. THE CONTRACT DRAWINGS ARE DIAGRAMMATIC IN NATURE AND NOT EVERY DETAIL OR EXACT LOCATION OF EQUIPMENT AND/OR CONDUIT IS SHOWN. EXISTING CONDITIONS SHALL BE VERIFIED IN THE FIELD COMMENCING ANY FABRICATION, ORDERING ANY MATERIAL, OR PERFORMING ANY WORK.
- 3. ALL FIELD DIMENSIONS ARE APPROXIMATE, CONTRACTOR TO FIELD VERIFIED ALL DIMENSIONS.

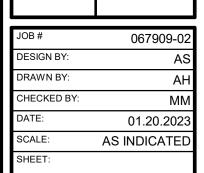
SHEET NOTES

- 1. CONTRACTOR SHALL INSTALL NEW DISCONNECT SWITCH A2 TO SERVE PROPOSED MOTOR CONTROL A2-1 SERVING ROLL-UP DOOR A2 WITH ALL OTHER ASSOCIATED ACCESSORIES. REFER TO FEEDER SIZE AND QUANTITY AND FEEDER SCHEDULE ON SHEET E601. PROVIDE NEW CONDUIT FROM EXISTING PANEL 'MELA' TO SERVE PROPOSED ROLL-UP DOOR A2. REFER TO PANEL SCHEDULE ON SHEET E-ANA-601 FOR CIRCUIT BREAKER.
- 2. CONTRACTOR SHALL INSTALL NEW DISCONNECT SWITCH A1 TO SERVE PROPOSED MOTOR CONTROL A1-1 SERVING GATE A1 WITH ALL OTHER ASSOCIATED ACCESSORIES. REFER TO FEEDER SIZE AND QUANTITY AND FEEDER SCHEDULE ON SHEET E601. PROVIDE NEW CONDUIT FROM EXISTING PANEL 'MELA' TO SERVE PROPOSED ROLL-UP DOOR A1. REFER TO PANEL SCHEDULE ON SHEET E-ANA-601 FOR CIRCUIT BREAKER.
- 3. PROVIDE NEW FEEDER & CONDUIT FROM EXISTING 'MELA' PANEL TO SERVE LIGHTING FIXTURE AS SHOWN. COORDINATE THE EXACT LOCATION OF THE LIGHTING FIXTURE PRIOR TO INSTALLATION.
- 4. CONTRACTOR SHALL PROVIDE A 18"x18"x18" PULLBOX AS SHOWN. CONTRACTOR TO VERIFY WITH OCTA SECURITY MANAGEMENT THE LOCATION OF THE DATA CLOSET IN THE BUILDING PRIOR TO INSTALL PROPOSED CAMERAS. FIBER CONDUITS ROUTING TO BE VERIFIED IN THE FIELD.
- 5. CONTRACTOR SHALL PROVIDE A 120V, SINGLE PHASE, 20A CONNECTION TO SERVE 120VAC-12VAC POWER CONTROL UNIT (PCU) LOCATED AT THE POLE TO SERVE PROPOSED IN-ROAD WARNING LIGHTS AS SHOWN. VERIFY EXACT LOCATION IN THE FIELD PRIOR TO INSTALLATION. SEE SHEET E-SA-601 ELECTRICAL FEEDER SCHEDULE FOR FEEDER SIZE AND QUANTITY. REFER TO E-SA-005 CUT SHEETS FOR ADDITIONAL INFORMATION.
- 6. CONTRACTOR SHALL INSTALL PROPOSE PUSH BUTTON AT THE EXISTING POLE. REFER TO E-SA-005 CUT SHEETS FOR ADDITIONAL INFORMATION.
- 7. CONTRACTOR SHALL INSTALL PROPOSE PUSH BUTTON AT THE PROPOSE 9' POLE. REFER TO E-SA-005 CUT SHEETS FOR ADDITIONAL INFORMATION.
- 8. PROVIDE 18"x18"x18" PULLBOX AS SHOWN.

REFER TO SHEET

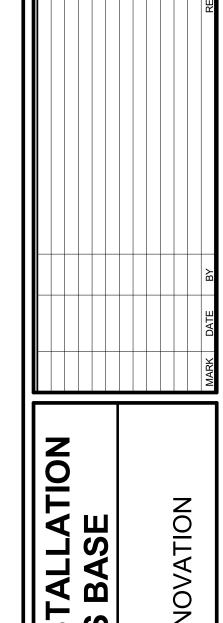
E-ANA-101





ANAHEIM, CA 92806 714/560/OCTA





Project Number: 06790889-02

PANEL L1A 120/208V, 3PH, 4W FED FROM T1A 10KAIC, 1-20-2011

CABLE COLOR CODE: PHASE A: BLACK PHASE B: RED PHASE C: BLUE NEUTRAL: WHITE GROUND: GREEN

SWITCHBOARD, DISTRIBUTION PANEL AND PANELBOARD EXAMPLE.

120/208V, 3PH, 4W FED FROM T1A FEEDS PANEL L1A

SAFETY SWITCH OR ENCLOSED CIRCUIT BREAKER EXAMPLE.

LABELING DETAIL NOTES:

- LABEL SHALL BE BLACK OR WHITE LAMINATED ACRYLIC OR MELAMINE WITH ENGRAVED LETTERING AND SELF-ADHESIVE BACK.
- 2. LETTERING SHALL BE WHITE ON BLACK OR BLACK ON WHITE BACKGROUND AND 3/8-INCH HIGH MINIMUM.
- 3. PROVIDE THE FOLLOWING INFORMATION ON SWITCHBOARD LABELS: SWITCHBOARD TAG
 SYSTEM VOLTAGE, PHASE, WIRE
 SHORT CIRCUIT RATING, DATE
 CONDUCTOR COLORS
- 4. PROVIDE THE FOLLOWING INFORMATION ON DISTRIBUTION PANELBOARD AND PANELBOARD

DISTRIBUTION PANELBOARD OR PANELBOARD TAG SYSTEM VOLTAGE, PHASE, WIRE FED FROM SHORT CIRCUIT RATING, DATE CONDUCTOR COLORS

5. PROVIDE THE FOLLOWING INFORMATION ON SWITCHBOARD AND DISTRIBUTION PANELBOARD BRANCH SWITCHES:

BRANCH SWITCH TAG (LOAD BEING SERVED)

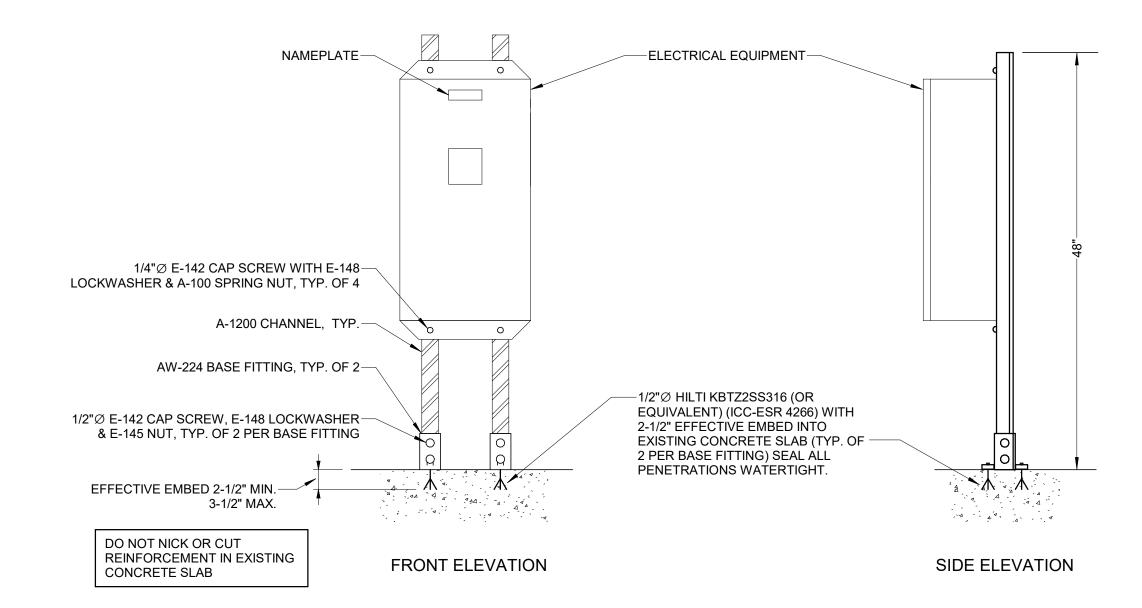
6. PROVIDE THE FOLLOWING INFORMATION ON TRANSFORMER LABELS: TRANSFORMER TAG SYSTEM PRIMARY AND SECONDARY VOLTAGE, WYE, DELTA, OR SINGLE PHASE FED FROM

7. PROVIDE THE FOLLOWING INFORMATION ON SAFETY SWITCH OR CIRCUIT BREAKER ENCLOSURE LABELS:

SYSTEM VOLTAGE, PHASE, WIRE FED FROM FEEDS (LOAD BEING SERVED)

8. CONDUCTOR COLORS SHALL ALSO FOLLOW REQUIREMENTS LISTED IN SPECIFICATIONS SECTION 260553.

2 EQUIPMENT LABELING
SCALE: NONE



NOTES:

PART NUMBERS INDICATED ARE UNISTRUT OR EQUAL MANUFACTURER IS THOMAS & BETTS "SUPERSTRUT". CHANNELS, BASE FITTING AND FASTENERS SHALL BE STAINLESS STEEL.

1 ELECTRICAL EQUIPMENT UNISTRUT MOUNTING





067909-02

01.20.2023

E-ANA-501

1717 E. VIA BURTON STREET

ANAHEIM, CA 92806

714/560/OCTA

CHECKED BY:

PANEL D	ESIGNA	ITION:			TYPE	:		NEMA 3	₹	VOLTA	AGE:		120/240V		
/	D7	۸			NUME	BER OF P	OLES:	12		PANEL	MOUNTIN	IG:	SURFACE		
(N)M	PZ- /	4			MAIN	BUS RA	TINGS:	80.0		PANEL	ENCLOS	JRE:	NEMA 3R		
LOCATIO	N: ENT	RANCE OF GATE "A4"			MAIN	S RATING	3:	80		PANEL	MIN. A.I.C	. RATING:	14,000		
		FRIBUTION BOARD "HPF"													
						LOAD K	VA	LO	DAD KVA						
CIR. No.	CIR. BKR.	DESCRIPTION	COND.	GRND.	WIRE SIZE	AØ	ВØ	AØ	BØ	WIRE SIZE	GRND.	COND.	DESCRIPTION	CIR. BKR.	CIR. No
1	20	(NI) MOTOR CATE A4.4 AND A4.2	2/4"	4#40	2440	2.76		0.07		2#12	1#12	3/4"	(N) EXTERIOR LIGHT - PED	20	2
3	30	(N) MOTOR GATE A4-1 AND A4-2	3/4"	1#10	2#10		2.76		2.76	2#10	1#10	3/4"	(N) MOTOR GATE A3-1 AND A3-2	30	4
5	20	(E) CAMERA POLE		-	-	0.50		2.76		2#10	1#10	3/4	<u> ` '</u>		6
7	20	SPARE					0.00		0.00				SPARE	20	8
9		SPACE											SPACE		10
11		SPACE											SPACE		12
CONNEC AØ BØ CØ	6.09 5.52 0.00	AD - KVA - - - - - KVA TOTAL							ENT GRO AL/EXTE POWER IROUGH	OUND BUS RNAL SURGE METER	PROTECT	ION			

No. BK 1 2 2 3 2 2 5 7 2 2 9 2 1 1 2 1 1 3 2 1 1 5 2 1 1 5 2 1 1 5 2 1 5 1 5 2 1 1 5 2 1 5 1 5	20 20 20 20 20 20 20	DESCRIPTION PHONE PLUG LNG CAB. CCTV SOUTH WEST MAINT. DOOR LIGHT	COND.	GRND.	WIRE SIZE		OAD KV	Ά	L	OAD KV	Δ	1					
No. BK 1 2 2 3 2 2 5 7 2 2 9 2 1 1 2 1 1 3 2 1 1 5 2 1 1 5 2 1 1 5 2 1 5 1 5 2 1 1 5 2 1 5 1 5	KR. 20 20 20 20 20 20 20 20 20 20 20 20 20	PHONE PLUG LNG CAB. CCTV			WIRE SIZE	Δα						ļ					
3 2 5 2 1 7 2 1 9 2 1 1 1 2 1 1 3 2 1 1 5 2 1	20 20 20 20 20 20 20	LNG CAB. CCTV		1		~~	ВØ	сø	AØ	ВØ	СØ	WIRE SIZE	GRND.	COND.	DESCRIPTION	CIR. BKR.	CIR No
5 20 7 20 9 20 11 20 13 20 15 20	20 20 20 20 20 20	CCTV				0.50			0.50						PLUGS RM 103-107	20	2
7 20 9 20 11 20 13 20 15 20	20 20 20 20						0.50			0.50					PLUGS RM 104-105	20	4
9 2 1 1 2 1 1 3 2 1 1 5 2 1	20 20 20	SOUTH WEST MAINT. DOOR LIGHT						0.50			0.50				COMP. PLUGS	20	6
11 20 13 20 15 20	20 20					0.50			0.50						COMP. PARTS DEP.	20	8
13 2 15 2	20	IN USE					0.50			0.50					PLUGS RM 212	20	10
15 2		A/C IN DATA CLOSET				0.50		0.50	0.50		0.50				PLUGS RM 669	20	12
	^^	PLUGS IN DATA CLOSET		-		0.50	0.50		0.50	0.50					PLUGS RM 668	20	14
		CCTV					0.50	0.50		0.50	0.50				PLUGS RM 678	20	16
		LNG CAB CCTV				0.50		0.50	0.50		0.50				FIBER LINE 1 FIBER LINE 2	20 20	18
		CCTV				0.50	0.50		0.50	0.50					FIBER LINE 3	20	20
		CCTV					0.50	0.50		0.50	0.50				IN USE	20	24
		IN USE				0.50		0.50	0.50		0.30	 			IN USE	20	26
		IN USE			 	0.50	0.50		0.30	0.50		 			LNG CAB	20	28
		BREAK ROOM COUNTER PLUGS					0.50	0.50		0.50	0.50				IN USE	20	30
		BREAK ROOM COUNTER PLUGS				0.50		0.00	0.50		0.00				IN USE	20	32
		EXTERIOR LIGHT - PED. ENTRANCE	3/4"	1#12	2#12	0.00	0.07		0.00	0.50		l l			IN USE	20	34
		IN USE					0.0.	0.50		0.00	0.78						36
		IN USE				0.50			0.78			2#12	1#12	3/4"	(N) MOTOR GATE A1-1	20	38
		IN USE					0.50		3	0.78		0"40	4 !! 4 0	0/40	40 40707 0477 44 0		40
		IN USE						0.50			0.78	2#12	1#12	3/4"	(N) MOTOR GATE A1-2	20	42
	ED LO	OAD - KVA							_	NEUTRA MENT GF		DUG					
									_					DEV#0E			
	.85							X	_			SURGE PRO	IECTION	DEVICE			
CØ 7.5	.56								DIGITA	L POWE	R METE	R					
21.	1.69	KVA TOTAL							_	HROUG	H LUGS	;					
21	1 60	TOTAL ESTIMATED DEMAND							SHUNT	TRIP							
	1.09	TOTAL ESTIMATED DEMAND															
OTES:	D TO	LOAD OURANADY FOR OVERALL EVECT	NO DE 111	N DEMA:	IOLIED AND	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	0450										
KEFER	K IO	LOAD SUMMARY FOR OVERALL EXIST	NG DEMAI	N, DEMOL	ISHED AND A	ADDED [LOADS.										

VOLTAGE:

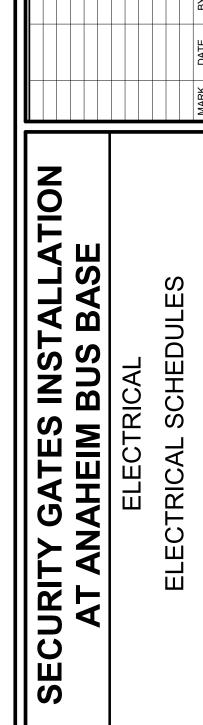
GENERAL NOTES:

PANEL DESIGNATION:

- 1. INFORMATION ON THE CIRCUIT NUMBERS OF EXISTING LOADS WERE OBTAINED FROM AVAILABLE AS-BUILTS AND MAY NOT BE ENTIRELY ACCURATE. CONTRACTOR SHALL REARRANGE THE NUMBERING OF CIRCUITS IN THE PANELBOARD TO MATCH CLOSELY THE PANEL SCHEDULE ON THIS SHEET. CONTRACTOR TO VERIFY THE CIRCUIT NUMBERS IN THE FIELD PRIOR TO INSTALLATION. INCLUDE ALL COSTS IN THE BID.
- 2. CONTRACTOR TO VERIFY CIRCUIT AND PANEL INFORMATION IN THE FIELD PRIOR TO INSTALLATION.

	ELECTRICAL FEEDER SCHEDULE													
(LABEL) NO.	FROM	то	WIRE SIZE	NO. & SIZE	GND	NOTE								
20A	(E) 'MELA'	(N) DISCONNECT SW. A1 AND A2	3/4"	2#12	1#12	30AS, 20AT, 2P, 250VAC DISCONNECT SWITCH								
20A	(E) 'MELA'	(N) EXTERIOR LIGHTING	3/4"	2#12	1#12	20A, 120V, 1P, LED FIXTURE								
30A	(E) 'MPZ-A'	(N) DISCONNECT SW. A3 AND A4	3/4"	2#10	1#10	30AS, 30AT, 2P, 250VAC DISCONNECT SWITCH								
40A	(E) 'HPF'	(N) MINI-POWER UNIT SUBSTATION	3/4"	2#8	1#10	SINGLE PHASE, 15KVA, 480/120-240V, TYPE-3R								

	LIGHTING FIXTURE SCHEDULE												
TYPE	MANUFACTURE	MODEL NUMBER	TOTAL V-A	LAMP TYPE	COLOR TEMP	CRI	VOLTAGE	LIGHT LOSS FACTOR	NOTES				
FX-A	LITHONIA LIGHTING	WDGE2 LED P3 40K 80CRI VF MVOLT SRM	18	LED	4000	80	120V	.7	SURFACE MOUNTED WALLPACK				



GANNETT
FLEMING

G.F. # 067909-02

601 SOUTH FIGUEROA ST. SUITE 3800
LOS ANGELES, CA 90017
T: 213 624 0347
www.gannettfleming.com



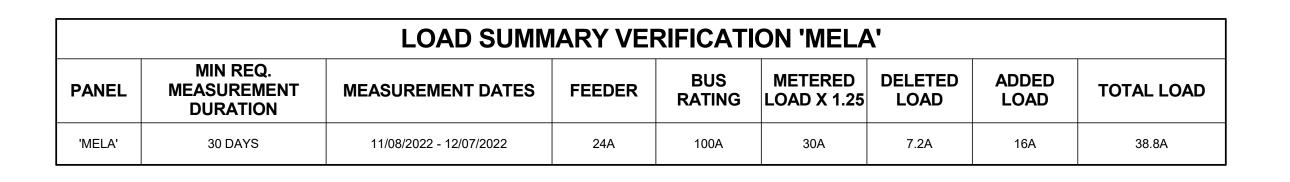
|| E-ANA-601

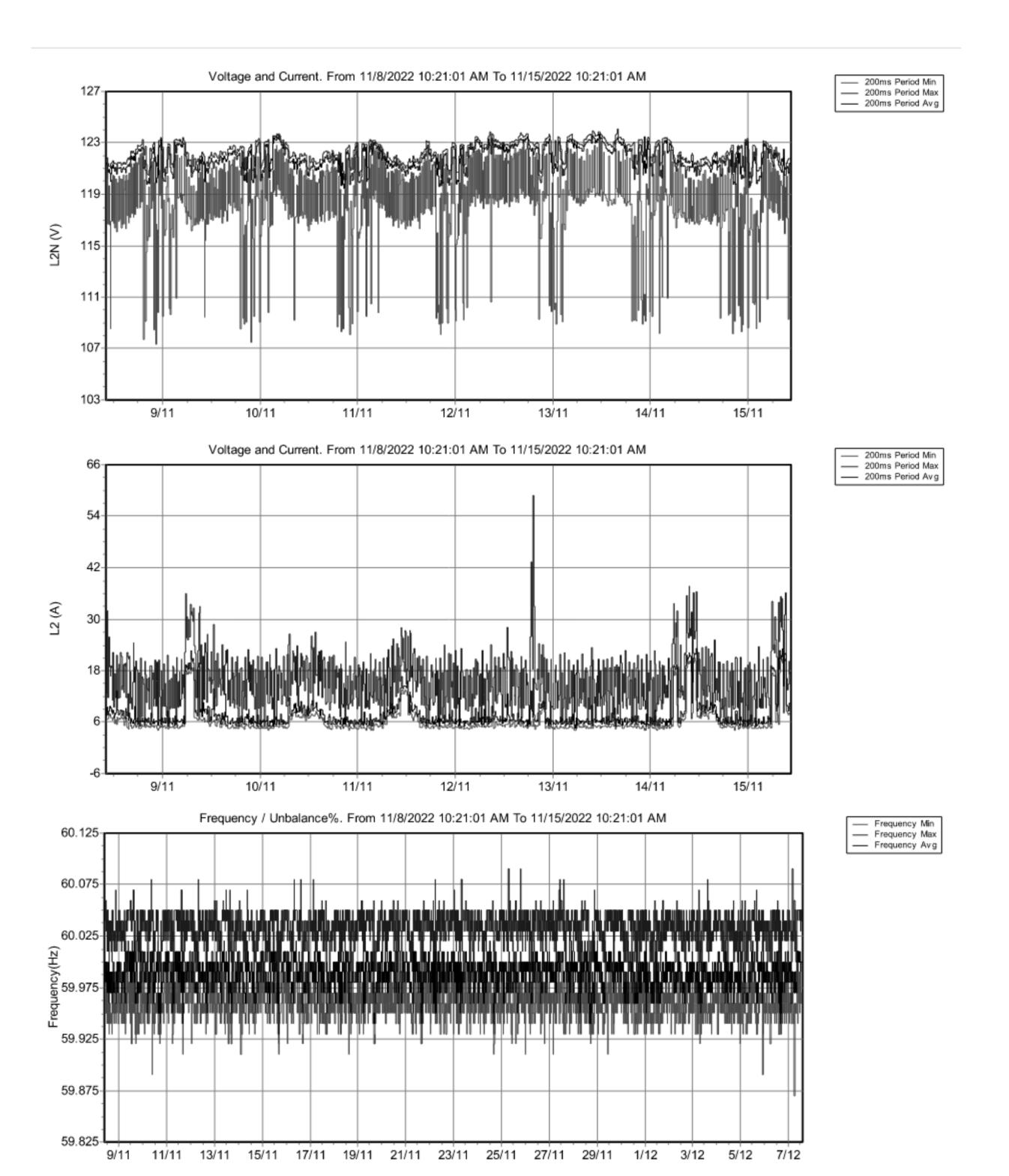
1717 E. VIA BURTON STREET

ANAHEIM, CA 92806

714/560/OCTA

LOAD SUMMARY SCALE: NTS	'MELA'
SCALE: NTS	





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G.F. # 067909-02

601 SOUTH FIGUEROA ST. SUITE 3800

LOS ANGELES, CA 90017

T: 213 624 0347

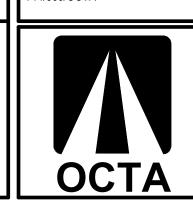
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JOB#	067909-02
DESIGN BY:	AS
DRAWN BY:	GM
CHECKED BY:	MM
DATE:	01.20.2023
SCALE:	NONE
SHEET:	

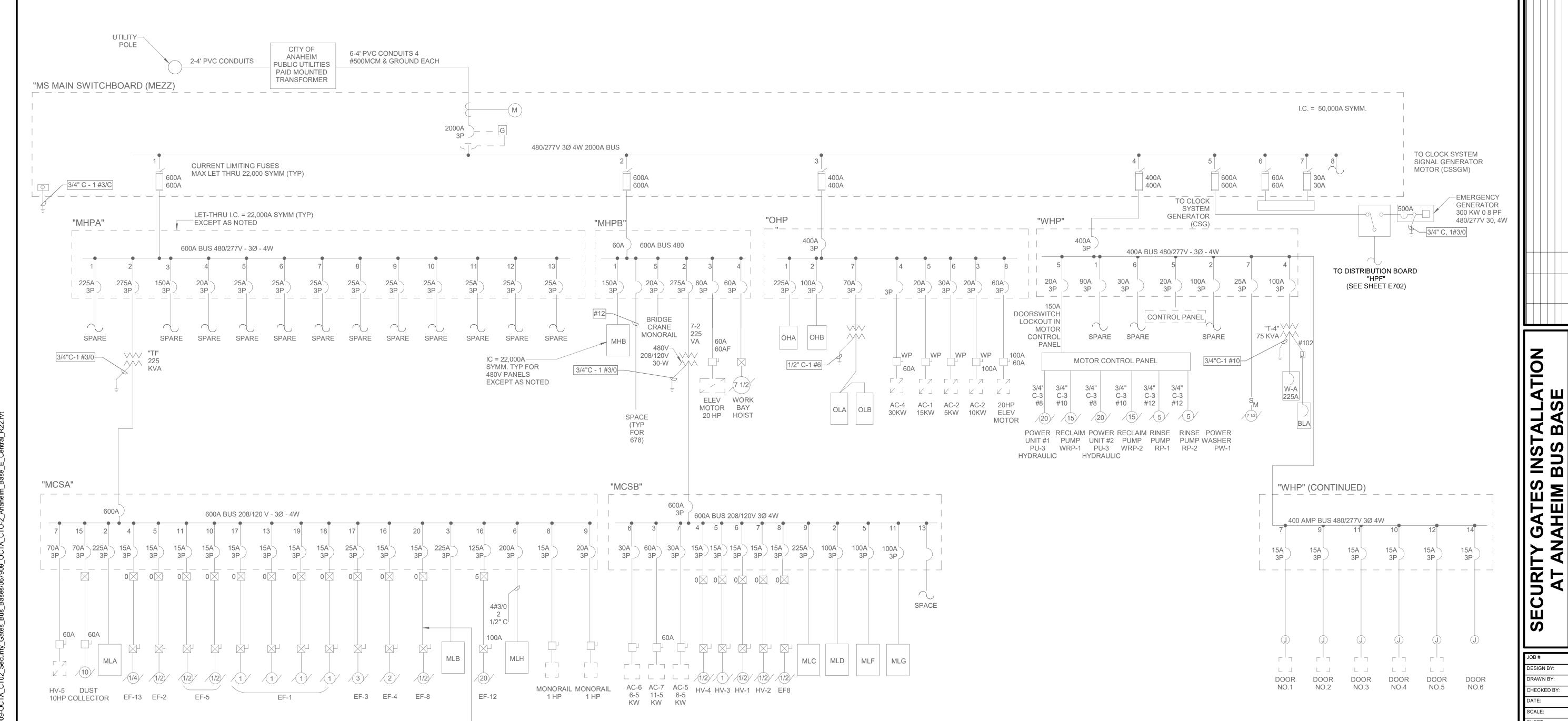
E-ANA-602

1717 E. VIA BURTON STREET
ANAHEIM, CA 92806
714/560/OCTA



GENERAL NOTES

1. SINGLE LINE DIAGRAM IS SHOWN FOR REFERENCE. IF APPLICABLE, PROJECT RELATED INFORMATION PERTAINING TO PROJECT SCOPE OF WORK IS HIGHLIGHTED IN A DASHED LINE AND MARKED AS 'SCOPE OF WORK'. REFER TO LEAD SHEET FOR PROJECT SCOPE OF WORK AND FLOOR PLANS FOR ADDITIONAL INFORMATION.



∖E-ANAHIEM BASE SINGLE LINE DIAGRAM (SHOWN FOR REFERENCE)

30 A WP

(TYP FOR 11)





FOR

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ELECTRICA SINGLE LINE DIAGRAM REFERENC

067909-02

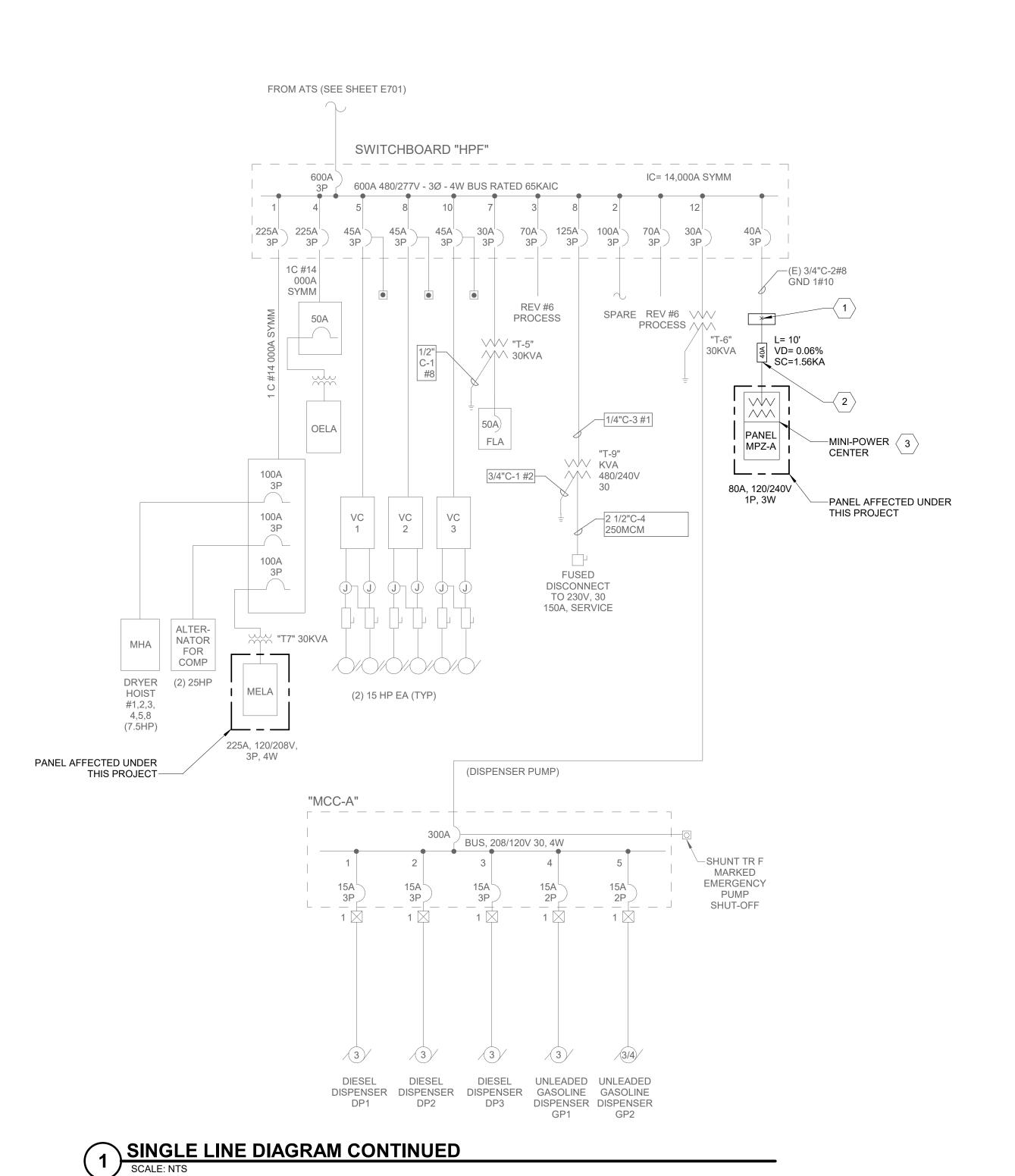
01.20.2023

E-ANA-701

1717 E. VIA BURTON STREET

ANAHEIM, CA 92806

714/560/OCTA



GENERAL NOTES

1. SINGLE LINE DIAGRAM IS SHOWN FOR REFERENCE. IF APPLICABLE, PROJECT RELATED INFORMATION PERTAINING TO PROJECT SCOPE OF WORK IS HIGHLIGHTED IN A DASHED LINE AND MARKED AS 'SCOPE OF WORK'. REFER TO LEAD SHEET FOR PROJECT SCOPE OF WORK AND FLOOR PLANS FOR ADDITIONAL INFORMATION.



SHEET NOTES

- 1. UTILIZE EXISTING ENCLOSURE TO INTERCEPT EXISTING FEEDERS. PROVIDE AND EXTEND NEW FEEDER IN NEW CONDUIT TO PROPOSE MINI-POWER 'MPZ-A'. REFER TO SHEET E-ANA-01 ON ENLARGED PLAN #4 FOR EXACT LOCATION.
- 2. NEW FEEDER AND CONDUIT TO MATCH EXISTING INTERCEPTED CONDUITS AND FEEDERS. REFER TO ENLARGED PLANS ON SHEET E-ANA-101 FOR PANELBOARD LOCATION. REFER TO FEEDER SCHEDULE ON SHEET E-ANA-601 FOR FEEDER SIZES AND QUALITY.
- 3. CONTRACTOR SHALL FURNISH AND INSTALL PROPOSE MINI POWER ZONE UNIT SUBSTATION, 80A, 15KVA, 480V PRIMARY, 120/240V SECONDARY, TYPE-3R ENCLOSURE. REFER TO SHEET E-ANA-004 CUT SHEET FOR ADDITIONAL INFORMATION.

CHECKED BY 01.20.2023

067909-02

E-ANA-702

1717 E. VIA BURTON STREET ANAHEIM, CA 92806 714/560/OCTA





STATE OF CALIFORNIA

Project Name:

Project Address:

Outdoor Lighting

CERTIFICATE OF COMPLIANCE

A. GENERAL INFORMATION

01 Project Location (city)

Registration Number:

CA Building Energy Efficiency Standards - 2019 Nonresidential Compliance

02 Climate Zone 03 Outdoor Lighting Zone per Title 24 Part 1 §10.114 or as designated by Authority Having Jurisdiction (AHJ): ☐ LZ-0: Very Low - Undeveloped Parkland ☐ LZ-2: Moderate - Rural Areas ☐ LZ-4: High - Must be reviewed by CA Energy Commission for Approval ☐ LZ-1: Low - Developed Parkland ☐ LZ-3: Moderately High - Urban Areas **B. PROJECT SCOPE** This table includes outdoor lighting systems that are within the scope of the permit application and are demonstrating compliance using the prescriptive path outlined in §140.7 or 141.0(b)2L for alterations. My Project Consists of: New Lighting System Is your alteration increasing the connected lighting load (Watts)? Sum Total of Luminaires Being Added or Altered Calculation Method % of Existing Luminaires Being Altered¹ □ < 10% □ >= 10% and < 50% □ >= 50% Please proceed to Table F. Outdoor Lighting Fixture Schedule to define the project's luminaires. ¹ FOOTNOTES: % of Existing Luminaires Being Altered = (Sum Total of Luminaires Being Added or Altered / Existing Luminaires within the Scope of the Permit Application) x 100. Registration Number: Registration Date/Time: Registration Provider: Energysoft Report Generated: 2022-12-26 09:55:36 CA Building Energy Efficiency Standards - 2019 Nonresidential Compliance Report Version: 2019.1.003 Schema Version: rev 20200601 STATE OF CALIFORNIA **Outdoor Lighting** CALIFORNIA ENERGY COMMISSION CERTIFICATE OF COMPLIANC NRCC-LTO-E Anaheim Bus Base Report Page (Page 4 of 7 Project Name: 1717 East Via Burton Date Prepared: 12/26/2022 Project Address: H. OUTDOOR LIGHTING CONTROLS This table demonstrates compliance with controls requirements for all new or altered luminaires installed as part of the permit application. For alteration projects, luminaires which are existing to remain (ie untouched) and luminaires which are removed and reinstalled (wiring only) do not need to be included in this table even if they are within the spaces covered by the permit application. When an option having a * is selected, the notes section of this table must be completed. The lighting controls section of the Compliance Summary Table on the first page will show "DOES NOT COMPLY" if the notes are left blank. Mandatory Controls Field Inspector Shut-Off Auto-Schedule Motion Sensor Area Description §130.2(c)1 §130.2(c)2 §130.2(c)3 EX: Not permitted by health & safety to be turned off; EXCEPTION 1 to §130.2 Pedestrian door lighting wattage is less than 30w I. LIGHTING POWER ALLOWANCE (per §140.7) This table includes areas using allowance calculations per <u>§140.7</u>. General Hardscape Allowance is per Table 140.7-A while "Use it or lose it" Allowances are per Table 140.7-B . "Use it or lose it" Allowance (select all that apply) (select all that apply) ☐ General Indicate which allowances are being used to expand sections for user input. Luminaires Hardscape ☐ Per Specif that qualify for one of the "Use it or lose it" allowances shall not qualify for another "Use Allowance Application it or lose it" allowance. Table K Table L Table I (below) Table J Table M ated General Hardscape Lighting Power Allowance per Table 140.7-A (LZ 0. 1 & 4 culated General Hardscape Lighting Power Allowance per Table 140.7-A (LZ 2 & 3) Registration Number: Registration Date/Time: Registration Provider: Energysoft Report Generated: 2022-12-26 09:55:36 CA Building Energy Efficiency Standards - 2019 Nonresidential Compliance Report Version: 2019.1.003 Schema Version: rev 20200601 STATE OF CALIFORNIA **Outdoor Lighting** CALIFORNIA ENERGY COMMISSION CERTIFICATE OF COMPLIANCE (Page 7 of 7 Project Name: Anaheim Bus Base Report Page 1717 East Via Burton Date Prepared: Project Address: 12/26/202 DOCUMENTATION AUTHOR'S DECLARATION STATEMENT I certify that this Certificate of Compliance documentation is accurate and complete. tation Author Signature: Gannett Fleming, Inc. 2022-12-26 CEA/ HERS Certification Identification (if applicable) Address: Figueroa at Wilshire, 601 S Figueroa St #3800 ity/State/Zip: Los Angeles CA 90017 RESPONSIBLE PERSON'S DECLARATION STATEMENT rtify the following under penalty of perjury, under the laws of the State of California The information provided on this Certificate of Compliance is true and correct. I am eligible under Division 3 of the Business and Professions Code to accept responsibility for the building design or system design identified on this Certificate of Compliance (responsible designer) The energy features and performance specifications, materials, components, and manufactured devices for the building design or system design identified on this Certificate of Compliance conform to the requirement. of Title 24, Part 1 and Part 6 of the California Code of Regulations. 4. The building design features or system design features identified on this Certificate of Compliance are consistent with the information provided on other applicable compliance documents, worksheets, calculations, plans and specifications submitted to the enforcement agency for approval with this building permit application. I will ensure that a completed signed copy of this Certificate of Compliance shall be made available with the building permit(s) issued for the building, and made available to the enforcement agency for all applicable inspections. I understand that a completed signed copy of this Certificate of Compliance is required to be included with the document Morrisola Mandar Manjarekar Gannett Fleming 2022-12-26 Figueroa at Wilshire, 601 S Figueroa St #3800 213.409.6123 Los Angeles CA 90017

Registration Date/Time:

Report Version: 2019.1.003

Schema Version: rev 20200601

Registration Provider: Energysoft

Report Generated: 2022-12-26 09:55:36

Anaheim Bus Base Report Page

4 Total Illuminated Hardscape Area (ft²

STATE OF CALIFORNIA **Outdoor Lighting** CALIFORNIA ENERGY COMMISSION CERTIFICATE OF COMPLIANCE NRCC-LTO-E Anaheim Bus Base Report Page: (Page 2 of 7) Project Name: Project Address: 1717 East Via Burton Date Prepared: . COMPLIANCE RESULTS to Table D. Exceptional Conditions for quidance or see applicable Table referenced below. General Per Specific Hardscape Total Allowed Total Actual Application Frontage Area §140.7(d)2 Allowance Allowance §140.7(d)2 §140.7(d)2 §140.7(d)2 (Watts) (Watts) §140.7(d)1 (See Table L) §141.0(b)2 (See Table J) (See Table K) (See Table M) (See Table I) (See Table N) 0 + 36 Controls Compliance (See Table H for Details) D. EXCEPTIONAL CONDITIONS This table is auto-filled with uneditable comments because of selections made or data entered in tables throughout the form. E. ADDITIONAL REMARKS

Results in this table are automatically calculated from data input and calculations in Tables F through I. Note: If any cell on this table says "COMPLIES with Exceptional Conditions" refer 7 must be >= 0 COMPLIES COMPLIES with Exceptional Condition This table includes remarks made by the permit applicant to the Authority Having Jurisdiction.

Registration Date/Time: Registration Provider: Energysoft Report Generated: 2022-12-26 09:55:36 CA Building Energy Efficiency Standards - 2019 Nonresidential Compliance Report Version: 2019.1.003 Schema Version: rev 20200601 STATE OF CALIFORNIA **Outdoor Lighting** CALIFORNIA ENERGY COMMISSION NRCC-LTO-E NRCC-LTO-E CERTIFICATE OF COMPLIANC Anaheim Bus Base Report Page (Page 5 of 7 Project Name: 1717 East Via Burton Date Prepared: 12/26/202 J. LIGHTING ALLOWANCE: PER APPLICATION This table includes areas using the wattage allowance per application from Table 140.7-B . 03 04 05 CALCULATED ALLOWANCE (Watts) DESIGN WATTS Area Description Application per Table 140.7-B # of Allowance Watts per per Allowance Name or (Watts) Luminaire (Watts) Item Tag Location² FX-A 18 18 Pedestrian Entrance A5 Building Entrance/Exit Total Design Watts for this Area: Building Entrance/Exit FX-A 18 Pedestrian Entrance A6 Total Design Watts for this Area: 18

FOOTNOTES: Primary entrance applications are only available for senior care facilities, healthcare facilities, police stations, hospitals, fire stations, and emergency vehicle facilities.

 2 The Allowance per Location for ATMs is 100W for the first ATM and 35W for each additional per Table 140.7-B . ³ For luminaires indicated in Table F as linear, wattage in column 07 is W/lf instead of Watts/luminaire. Total linear feet should be indicated in column 08 instead of number of luminaires.

K. LIGHTING ALLOWANCE: SALES FRONTAGE This section does not apply to this project. L. LIGHTING ALLOWANCE: ORNAMENTAL his section does not apply to this projec

This section does not apply to this project N. EXISTING CONDITIONS POWER ALLOWANCE (alterations only) This section does not apply to this project.

M. LIGHTING ALLOWANCE: PER SPECIFIC AREA

CALIFORNIA ENERGY COMMISSION

(Page 1 of 7)

Registration Date/Time: Registration Number: CA Building Energy Efficiency Standards - 2019 Nonresidential Compliance Report Version: 2019.1.003 Schema Version: rev 20200601

Registration Provider: Energysoft Report Generated: 2022-12-26 09:55:36

STATE OF CALIFORNIA **Outdoor Lighting**

NRCC-LTO-E			CALIFORNIA ENERGY COMMISSION
CERTIFICATE OF COMPLIANCE			NRCC-LTO-E
Project Name:	Anaheim Bus Base	Report Page:	(Page 3 of 7)
Project Address:	1717 East Via Burton	Date Prepared:	12/26/2022

OUTDOOR LIGHTING FIXTURE SCHEDULE

For new or altered lighting systems demonstrating compliance with <u>§140.7</u> all new luminaires being installed and any existing luminaires remaining or being moved within the spaces covered by the permit application are included in the Table below. For altered lighting systems using the Existing Power method per §141.0(b)2L only new luminaires being installed and

ernent turninaires being instaned as part of the project scope are included (ie, existing furninaires remaining or existing furninaires being moved are not included).											
ed Wattage:											
01	02		03	04	05	06	07	08	09	10	0
or Item ag	em Complete Luminaire Description		Watts per luminaire ^{1, 2}	How is Wattage determined	Total number luminaires ²	Luminaire Status ³	Excluded per §140.7(a)	Design Watts	Cutoff Req. > 6,200 initial lumen output §130.2(b) 4	Fie Inspe Pass	
X-A	FX-A - 18w LED	Linear	18	Mfr. Spec	2	New		36	NA: < 6200 lumens		
Total Design Watts						Design Watts:	36				
S. Coloctions with a * require a note in the chare helow explaining how compliance is achieved											

: Luminaire is lighting a statue; EXCEPTION 2 to §130.2(b)

 1 FOOTNOTES: Authority Having Jurisdiction may ask for Luminaire cut sheets to confirm wattage used for compliance per $\S130.0$ (c ² For linear luminaires, wattage should be indicated as W/lf instead of Watts/luminaire. Total linear feet should be indicated in column 05 instead of number of luminaires

³ Select "New" for new luminaires in a new outdoor lighting project, or for added luminaires in an alteration. Select "Altered" for replacement luminaires in an alteration. Select "Existing to Remain" for existing luminaires within the project scope that are not being altered and are remaining. Select "Existing Reinstalled" for existing luminaires which are being removed and reinstalled as part of

Compliance with mandatory cutoff requirements is required for luminaires with initial lumen output >= 6,200 unless exempted by <u>§130.2(b)</u>

G. CUTOFF REQUIREMENTS (BUG) This section does not apply to this project

Registration Number: Registration Date/Time: Registration Provider: Energysoft Report Generated: 2022-12-26 09:55:36 CA Building Energy Efficiency Standards - 2019 Nonresidential Compliance Report Version: 2019.1.003

Schema Version: rev 20200601

STATE OF CALIFORNIA **Outdoor Lighting**

CALIFORNIA ENERGY COMMISSION NRCC-LTO-E CERTIFICATE OF COMPLIANCE Anaheim Bus Base Report Page (Page 6 of 7) oiect Name 1717 East Via Burton Date Prepared: 12/26/202

O. DECLARATION OF REQUIRED CERTIFICATES OF INSTALLATION ections have been made based on information provided in this document. If any selection have been changed by permit applicant, an explanation should be included in Table E.

lditional Remarks. These documents must be provided to the building inspector during construction and can be found online at ttps://www.energy.ca.gov/title24/2019standards/2019_compliance_documents/Nonresidential_Documents/NRCI/ Field Inspector Form/Title Pass Fail NRCI-ITO-01-E - Must be submitted for all buildings NRCI-LTO-02-E- Must be submitted for a lighting control system, or for an Energy Management Control System (EMCS), to be recognized for

P. DECLARATION OF REQUIRED CERTIFICATES OF ACCEPTANCE

ections have been made based on information provided in this document. If any selection have been changed by permit applicant, an explanation should be included in Table E. dditional Remarks. These documents must be provided to the building inspector during construction and must be completed through an Acceptance Test Technician Certification rovider (ATTCP). For more information visit: http://www.energy.ca.gov/title24/attcp/providers.html

Field Inspector Systems/Spaces To Be Field Verified Pass Fail NRCA-LTO-02-A - Must be submitted for all outdoor lighting controls except for alterations where controls are added to <

Registration Date/Time: Registration Provider: Energysoft Registration Number: Report Generated: 2022-12-26 09:55:36 CA Building Energy Efficiency Standards - 2019 Nonresidential Compliance Report Version: 2019.1.003 Schema Version: rev 20200601

> G.F. # 067909-02 601 SOUTH FIGUEROA ST. SUITE 3800 LOS ANGELES, CA 90017 T: 213 624 0347 www.gannettfleming.com



067909-02

01.20.2023

NONE

NOIT

URI AT

CHECKED BY

Project Number: 06790889-02 1/20/2023 11:14:19 AM

SYMBOLS

SECURITY SYSTEM

CLOSED CIRCUIT TELEVISION (CCTV) CAMERA

ACCESS CONTROL SYSTEM

KB KNOX BOX

KEY CONTROL

INT INTERCOM

ACS
LRR ACCESS CONTROL NEDAP
LONG RANGE READER

VEHICULAR EXIT LOOP/ SAFETY LOOP

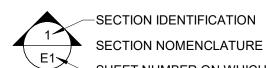
<u>LIGHTING</u>

POLE MOUNTED LIGHT FIXTURE (SINGLE)

POLE MOUNTED LIGHT FIXTURE (DOUBLE)

MISCELLANEOUS:

KEYNOTE OR EQUIPMENT IDENTIFICATION



—SHEET NUMBER ON WHICH SECTION IS SHOWN

DETAIL IDENTIFICATION
DETAIL NOMENCLATURE

-SHEET NUMBER ON WHICH DETAIL IS SHOWN

---- UNDERGROUND ELECTRICAL/COMMUNICATION CONDUITS

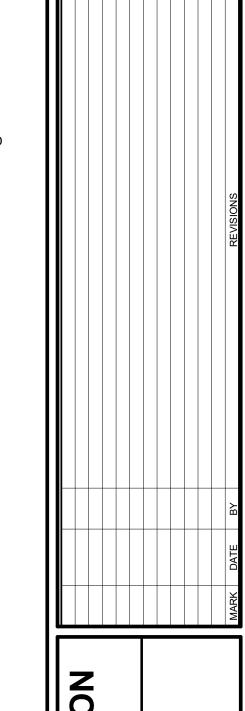
HANDHOLE
'C' DENOTES COMMUNICATIONS HANDHOLE
'P' DENOTES POWER HANDHOLE

ABBREVIATIONS

@	AT	MH	MANHOLE
AC	ALTERNATING CURRENT	MIN	MINIMUM
ACM	ASBESTOS CONTAINING MATERIAL	MISC	MISCELLANEOUS
AFF	ABOVE FINISHED FLOOR	MM	MULTIMODE (FIBER OPTIC CABLE)
AFG	ABOVE FINISHED GRADE	MUX	MULTIPLEXER
APPROX	APPROXIMATELY		
ASPH	ASPHALT	N	NEUTRAL
AWG	AMERICAN WIRE GAUGE	NC	NORMALLY CLOSED CONTACT
		NEC	NATIONAL ELECTRICAL CODE
BATT	BATTERY	NIC	NOT IN CONTRACT
BMS	BALANCED MAGNETIC SWITCH	NO or #	NUMBER
BR	BRICK	NTS	NOT TO SCALE
BR	BRIDGE	NVR	NETWORK VIDEO RECORDER
BLDG	BUILDING	N/A	NOT APPLICABLE
С	CENTER	ОН	OVERHEAD
C, CND	CONDUIT		
CAT	CATENARY	PIDS	PASSENGER INFORMATION DISPLAY SYSTEM
CB	CIRCUIT BREAKER		PLATFORM
	CLOSED CIRCUIT TELEVISION		PANEL
CCTV		PNL	
CKT, CCT	CIRCUIT	PROP	PROPOSED
CP	CATENARY POLE		PAVEMENT
COM	COMMUNICATION	PTZ	PAN TILT AND ZOOM
СТ	CATENARY TOWER	PWR	POWER
DC DEG	DIRECT CURRENT DEGREE	QUANTITY	QUANTITY
DIA, Ø	DIAMETER	ROW	RIGHT OF WAY
DIS. SW.	DISCONNECT SWITCH	RR	
			RAILROAD
DVR	DIGITIAL VIDEO RECORDER	RTE	ROUTE
EA	EACH	RTU	REMOTE TERMINAL UNIT
		CF.	COLLARE FEET
EG	EQUIPMENT GROUND	SF	SQUARE FEET
EHH	ELECTRICAL HANDHOLE	SP	SPARE
EOCC	EMERGENCY OPERATIONS CONTROL CENTER	SS	STAINLESS STEEL
ER	EQUIPMENT RACK/CABINET	STA	STATION
ELEC	ELECTRICAL	STD	STANDARD
ELEV	ELEVATION	SW	SWITCH
EQUIP	EQUIPMENT	SMH	SEWER MANHOLE
EX	EXISTING TO REMAIN	SM	SINGLE MODE (FIBER OPTIC CABLE)
EXIST	EXISTING	SMFOPP	SINGLE MODE FIBER OPTIC PATCH PANEL
		STMH	STEAM MANHOLE
FO	FIBER OPTIC	STOMH	STORM MANHOLE
	FIBER OPTIC MEDIA CONVERTOR		
FOMC FOPP	FIBER OPTIC MEDIA CONVERTOR FIBER OPTIC PATCH PANEL	SWBD	SWITCHBOARD
		Т	THERMOSTAT
GEN	GENERAL	TBR	TO BE REMOVED
GA	GAUGE	TEMP	TEMPORARY
GRV	GRAVEL		TOP OF RAIL
GALV	GALVANIZED	TYP	TYPICAL
G, GND	GROUND	TK	TRACK
GRD	GRADE	TEL	TELEPHONE
		TMH	TELEPHONE MANHOLE
IN	INCH		
INFO	INFORMATION		UTILITY POLE
INV	INVERT	U/G	UNDERGROUND
IJ	INSULATED JOINT	UTP	UNSHIELDED TWISTED PAIR
JT	JOINT	V	VOLT
JB	JUNCTION BOX		
		W	WIRE
KVA	KILOVOLT AMPERE		WITH
		W/O	WITHOUT
LP	LIGHT POLE		WEATHERPROOF
LTG	LIGHTING	WH	WATER HYDRANT
-10	LIGHTING	****	WALLATTI DIVANI
MAX	MAXIMUM	XFMR	TRANSFORMER
MCB	MAIN CIRCUIT BREAKER	XING	CROSSING
MDF	MAIN DISTRIBUTION FRAME		
- -			

GENERAL NOTES

- ALL MATERIALS PROVIDED SHALL BE NEW, UL LISTED AND CONFORM TO CONTRACT SPECIFICATIONS, DRAWINGS AND THE 2014 EDITION OF NATIONAL ELECTRICAL CODE.
- ALL WORK SHALL COMPLY WITH THE 2014 EDITION OF NATIONAL ELECTRICAL CODE AND THE REQUIREMENTS OF ALL LOCAL CODES AND REGULATIONS OF AUTHORITIES HAVING JURISDICTION OVER THE WORK.
- 3. PROVIDE FIRESTOP TO ALL PENETRATIONS (I.E. WALL, FLOOR, ETC.)
- 4. ALL CABLING & TERMINATION SHALL COMPLY WITH EIA/TIA STANDARDS.
- 5. THE DRAWINGS SCALES AND DIMENSIONS ARE FOR REFERENCE ONLY. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS, FLOOR PLANS, AND ADJUST ACCORDINGLY.
- 6. FIELD MOUNT ALL LOW-PROFILE PANELS WITH UNISTRUT AS REQUIRED AND FIELD LOCATE; P-1000 GALVANIZED, FURNISH AND INSTALL. COMM CABINETS LOCATE 18" AFF TO BOTTOM OF
- 7. PROVIDE ALL APPURTENANCES FOR A COMPLETE AND OPERATIONAL INSTALLATION; WHETHER OR NOT SHOWN IN THE DRAWINGS OR CALLED OUT IN THE SPECIFICATIONS.
- 8. CONDUITS INSTALLED UNDER ROADWAYS OR DRIVE AREAS SHALL BE CONCRETE ENCASED AND EXTEND 3' BEYOND. CONDUIT IN GRASS AREAS SHALL BE DIRECT BURIED.
- 9. PROVIDE GROUND ROD AT EVERY NEW GATE CONTROLLER LOCATION, NEW SWING GATE, NEW VEHICLE GATE, NEW WEDGE BARRIER LOCATION, NEW SITE LIGHTING POLE LOCATION, AND NEW SITE COMMUNICATIONS ENCLOSURE.
- 10. ALL MATERIALS PROVIDED SHALL BE NEW, UL LISTED AND CONFORM TO CONTRACT SPECIFICATIONS, DRAWINGS AND THE LATEST EDITION OF NATIONAL ELECTRICAL CODE.
- 11. ALL WORK SHALL COMPLY WITH THE LATEST EDITION OF NATIONAL ELECTRICAL CODE AND THE REQUIREMENTS OF ALL LOCAL CODES AND REGULATIONS OF AUTHORITIES HAVING JURISDICTION OVER THE WORK.
- 12. PROVIDE FIRESTOP TO ALL PENETRATIONS (I.E. WALL, FLOOR, ETC.)
- 13. ALL CABLING & TERMINATION SHALL COMPLY WITH EIA/TIA STANDARDS.
- 14. THE DRAWINGS SCALES AND DIMENSIONS ARE FOR REFERENCE ONLY. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS, FLOOR PLANS, AND ADJUST ACCORDINGLY.
- 15. FIELD MOUNT ALL LOW-PROFILE PANELS WITH UNISTRUT AS REQUIRED AND FIELD LOCATED; P-100 GALVANIZED, FURNISH AND INSTALL. COMM CABINETS LOCATE 18" AFF TO BOTTOM OF CABINET.
- 16. PROVIDE ALL APPURTENANCES FOR A COMPLETE AND OPERATIONAL INSTALLATION: WHETHER OR NOT SHOWN IN THE DRAWING OR CALLED OUT IN THE SPECIFICATIONS.



ANAHEIM BUS BASE

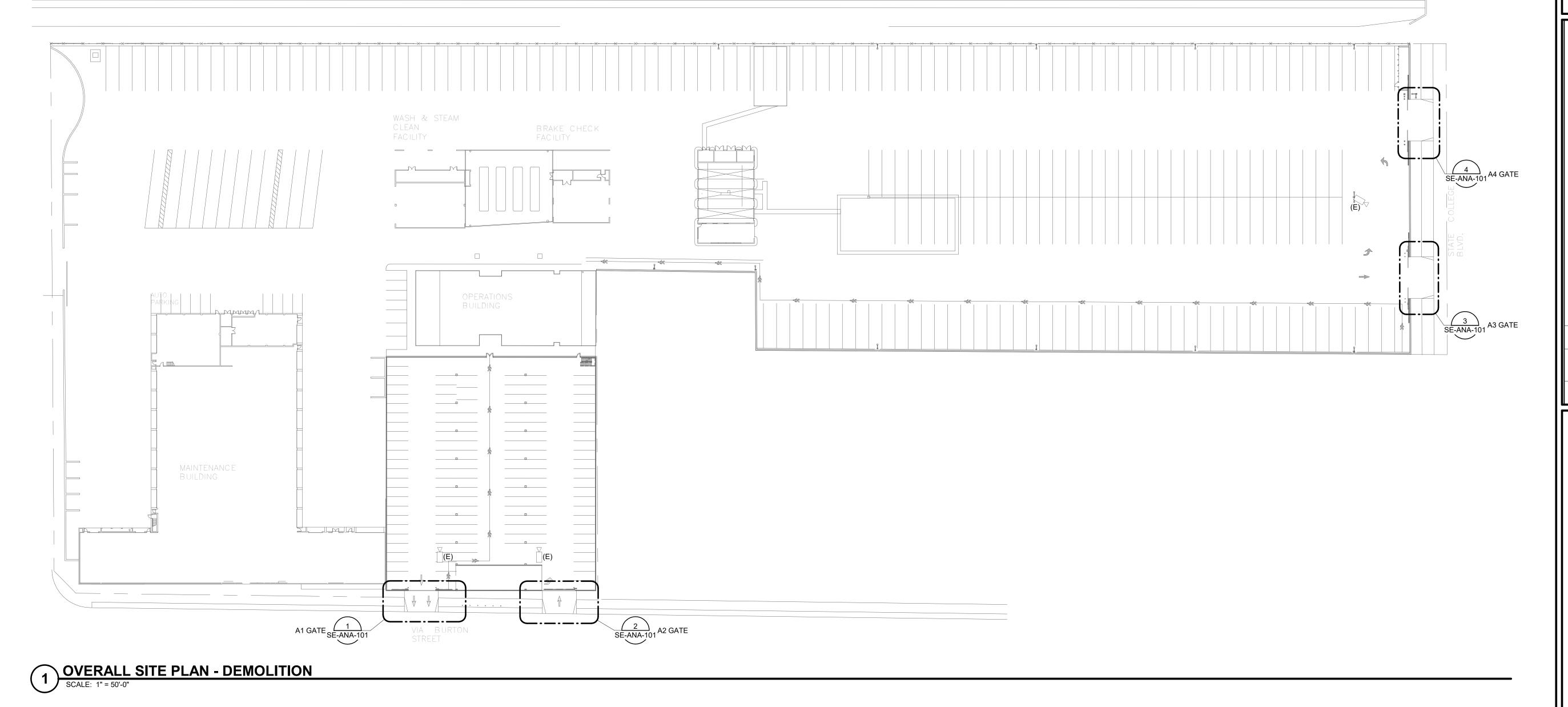
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DESIGN BY:	RH
DRAWN BY:	AH
CHECKED BY:	MM
DATE:	01.20.2023
SCALE:	NONE

SE-ANA-001

1717 E. VIA BURTON STREET
ANAHEIM, CA 92806
714/560/OCTA

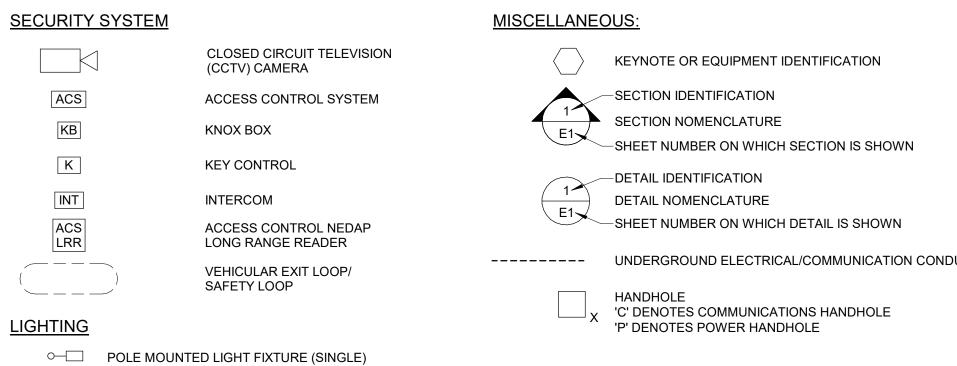


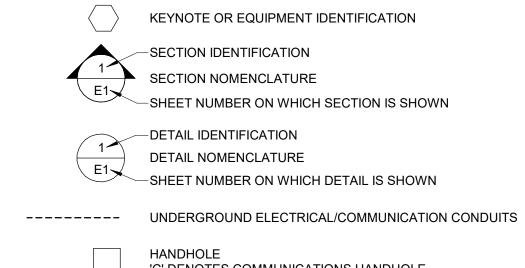




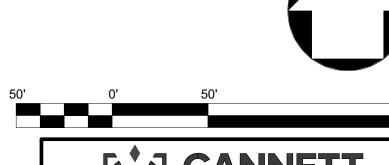
SYMBOLS

POLE MOUNTED LIGHT FIXTURE (DOUBLE)

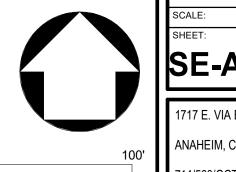














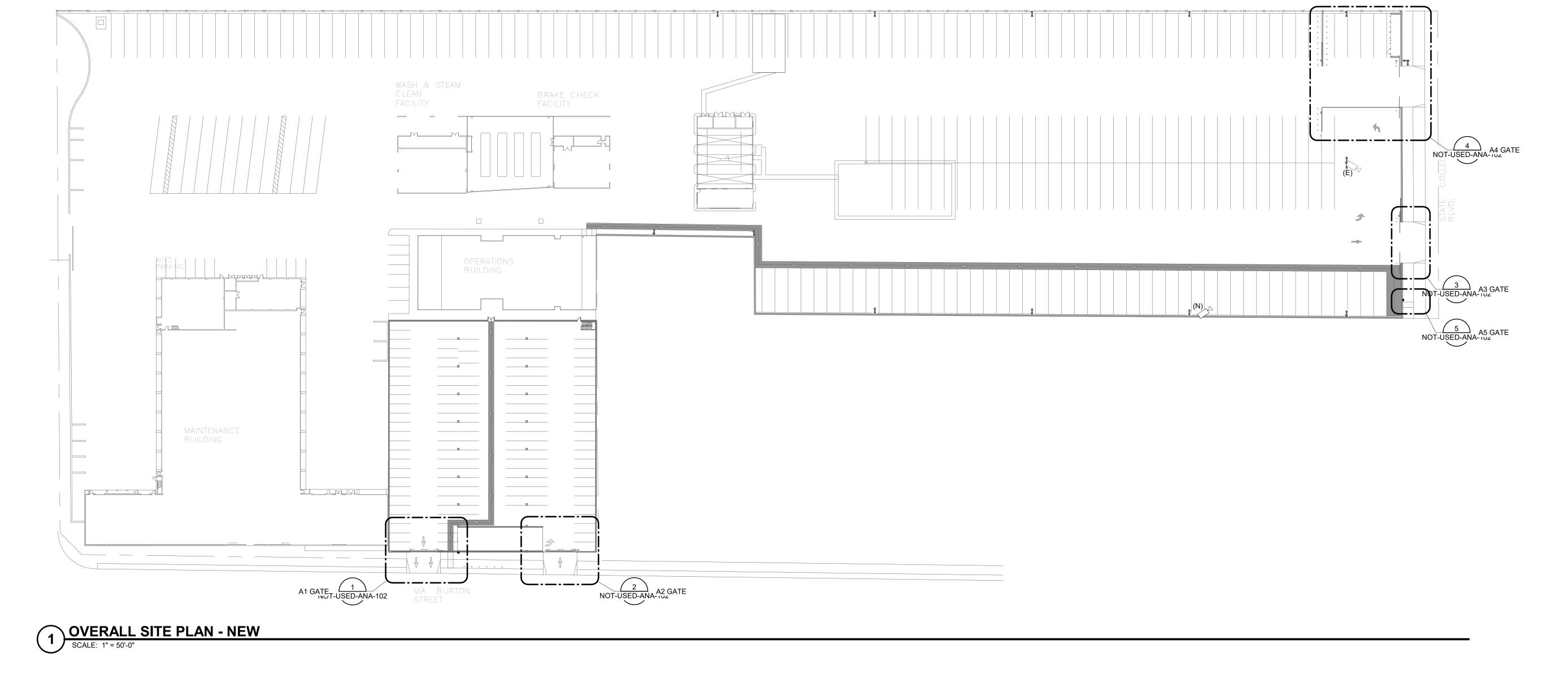
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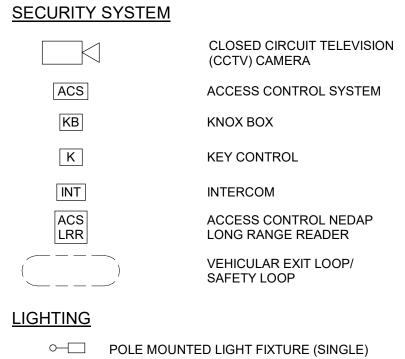
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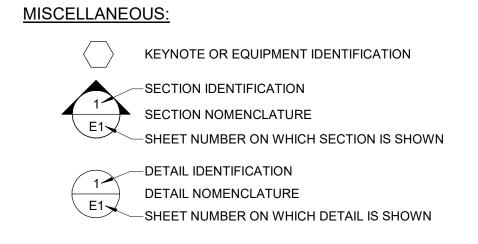




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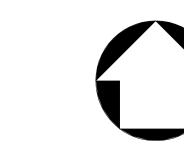


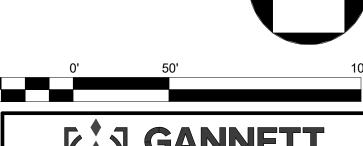
POLE MOUNTED LIGHT FIXTURE (DOUBLE)



----- UNDERGROUND ELECTRICAL/COMMUNICATION CONDUITS

HANDHOLE
'C' DENOTES COMMUNICATIONS HANDHOLE
'P' DENOTES POWER HANDHOLE









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1717 E. VIA BURTON STREET

ANAHEIM, CA 92806

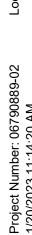
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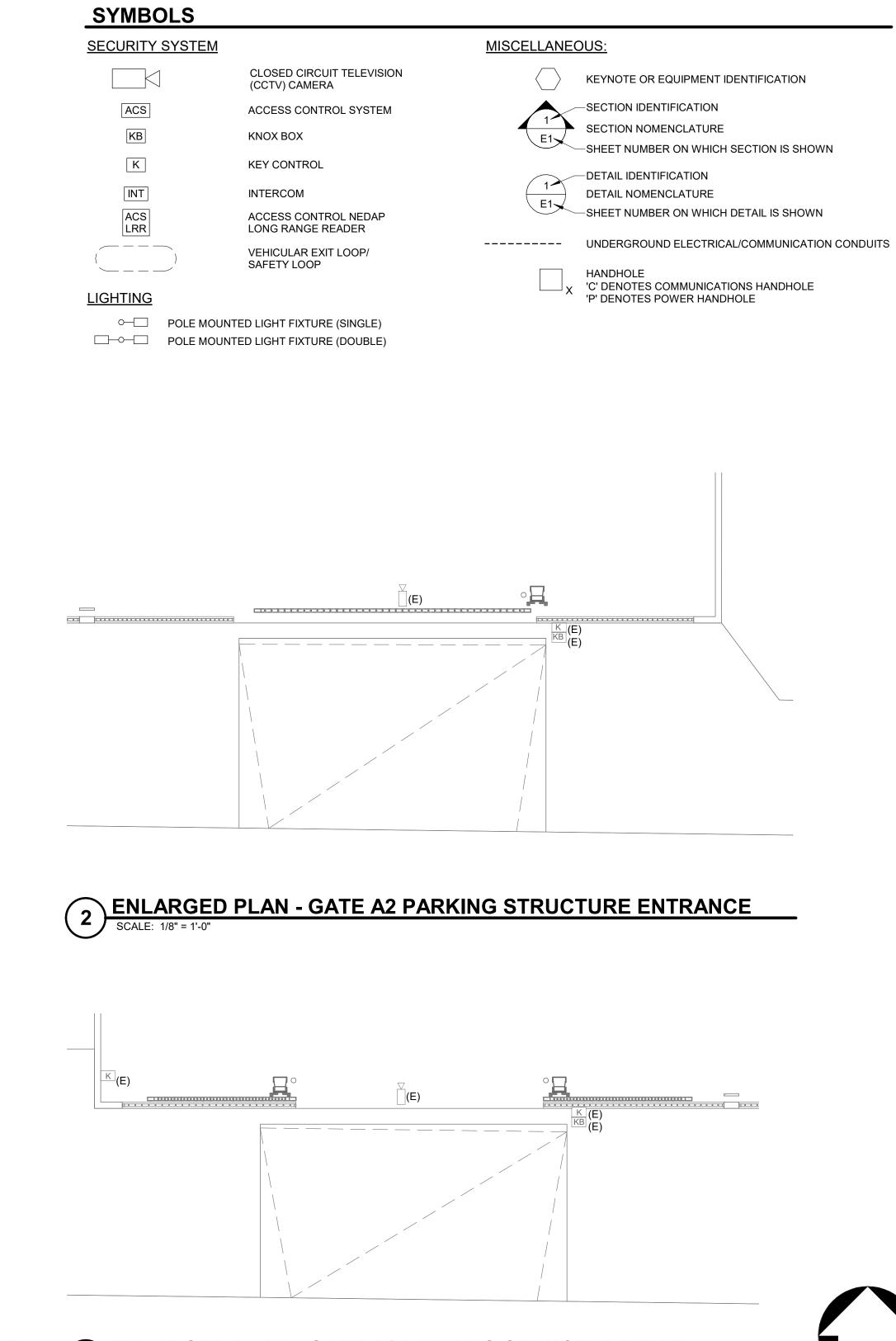
GATES INSTA

CHECKED BY:



ENLARGED PLAN - GATE A4 BUS YARD ENTRANCE

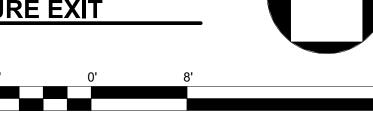
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3 ENLARGED PLAN - GATE A3 BUS YARD EXIT

SCALE: 1/8" = 1'-0"



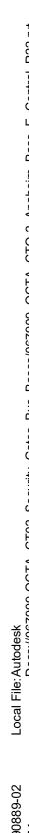


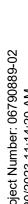


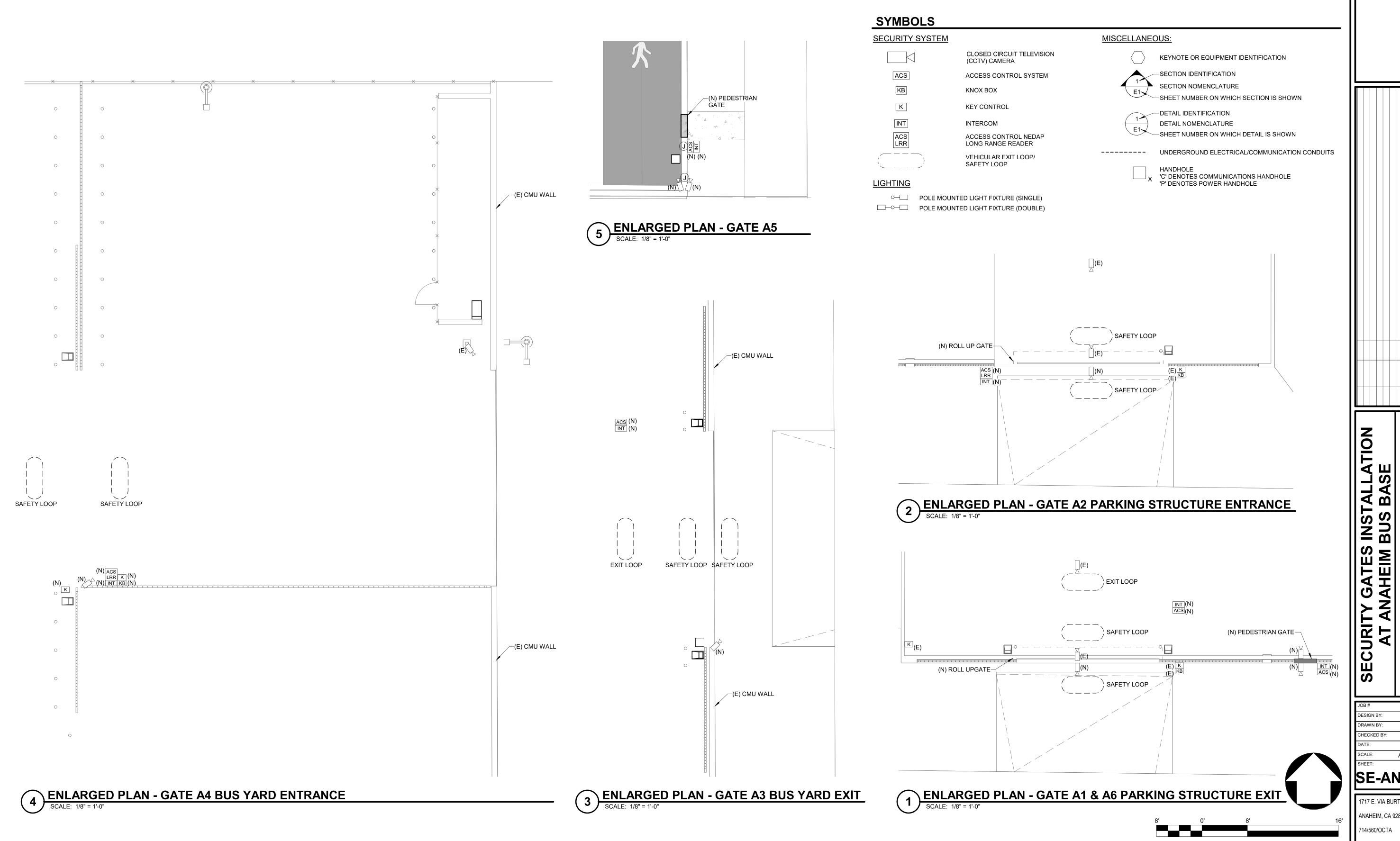


||SE-ANA-101|

AS INDICATED





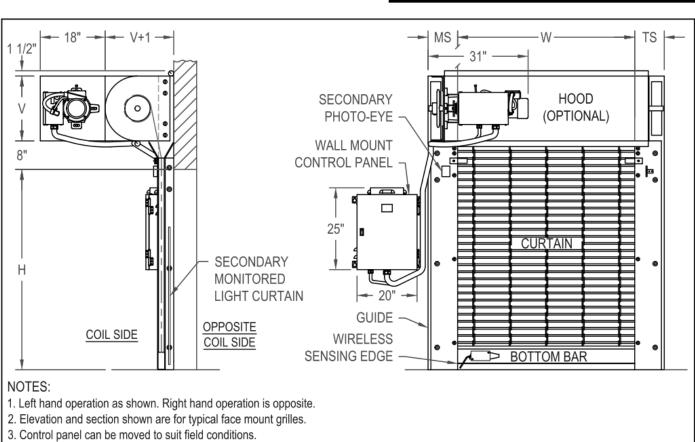


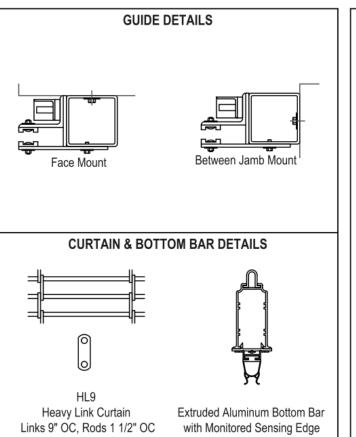
714/560/OCTA

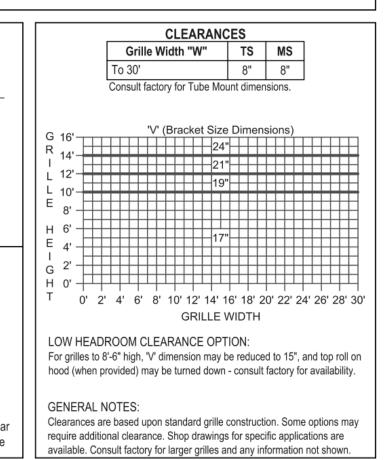
OCTA

G.F. # 067909-02 601 SOUTH FIGUEROA ST. SUITE 3800 LOS ANGELES, CA 90017 T: 213 624 0347 www.gannettfleming.com AS INDICATED

Model PG High Performance Grilles

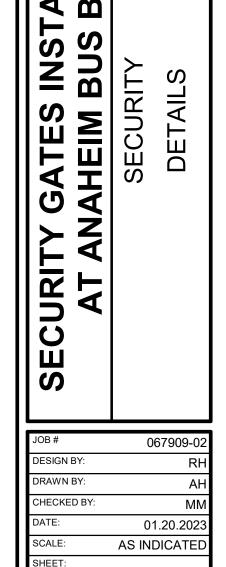






OVERHEAD ROLLING GATE A1 & A2

SCALE: NTS



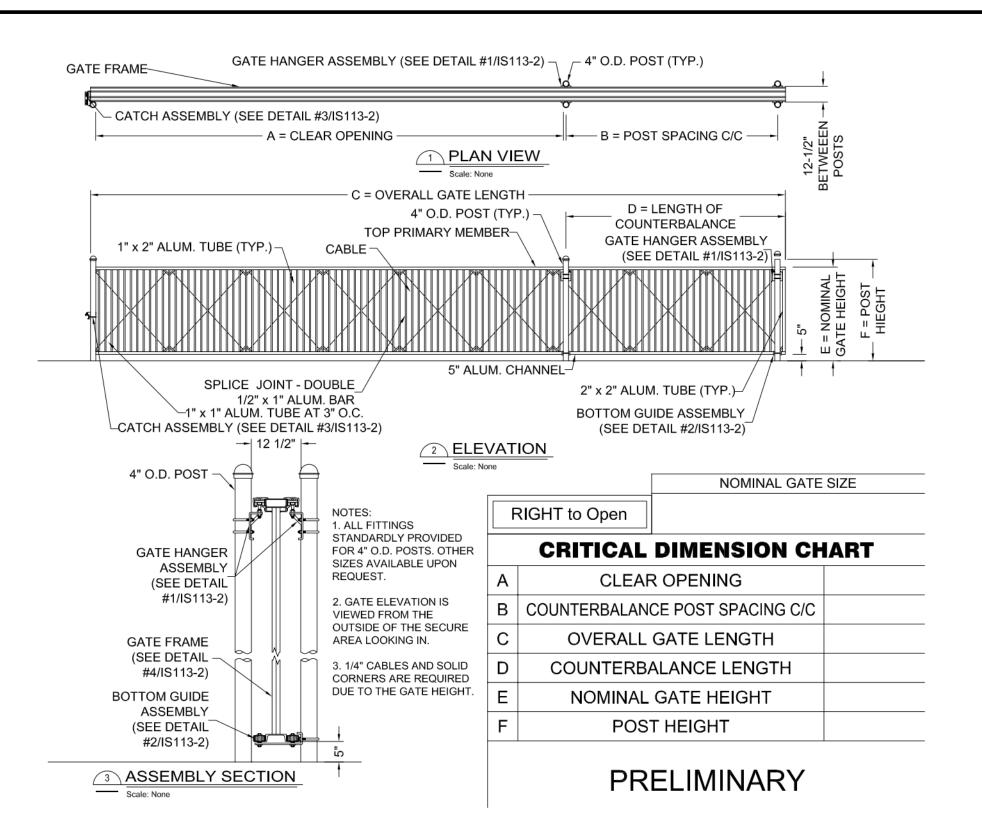
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||SE-ANA-501|

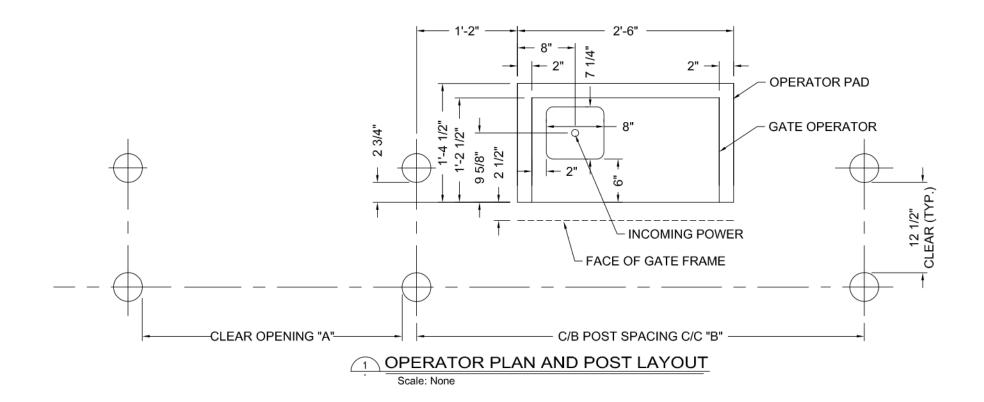
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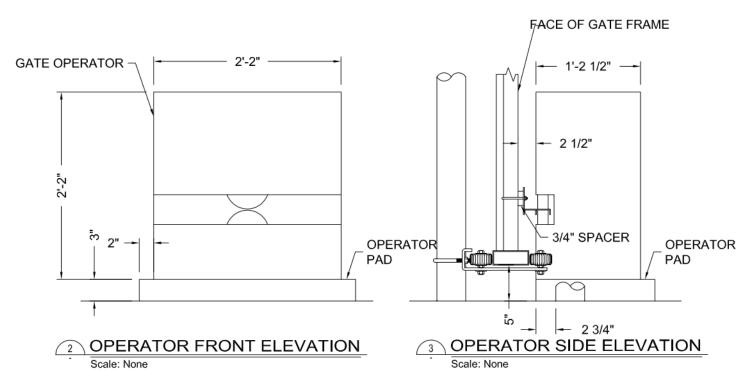






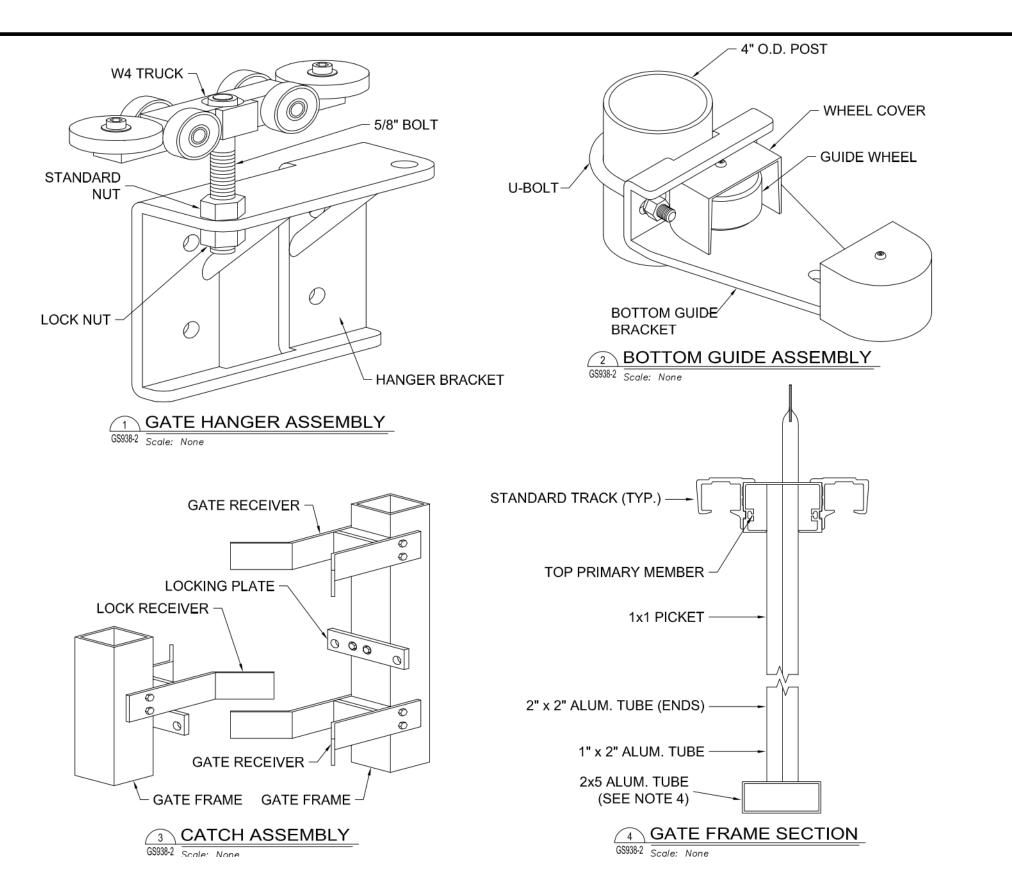
4 INTERNAL PICKET STRUCTURAL CANTILEVER SLIDE GATE RIGHT OPEN SCALE: NTS



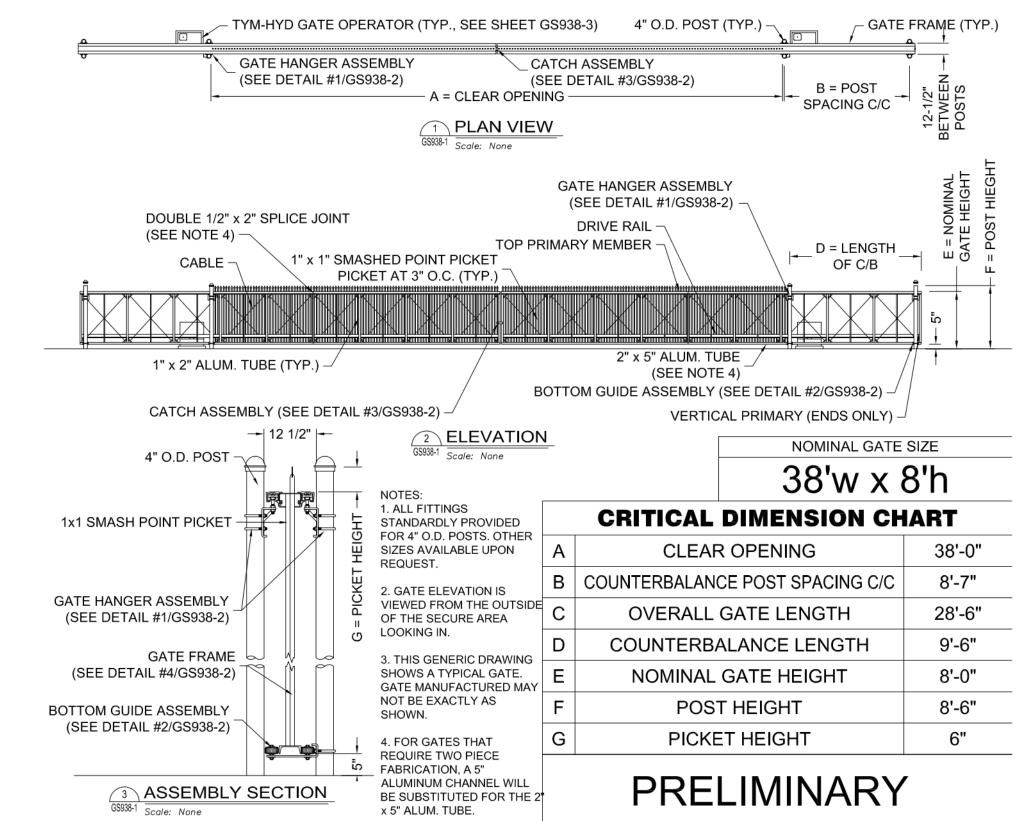


TYM-HYD HYDRAULIC GATE OPERATOR A3 & A4

SCALE: NTS



STRUCTURAL CANTILEVER SLIDE GATE DETAILS A3 & A4



DOUBLE STRUCTURAL CANTILEVER SLIDE GATE WITH TYM-HYD HYDRAULIC 1 GATE OPERATOR A3 & A4







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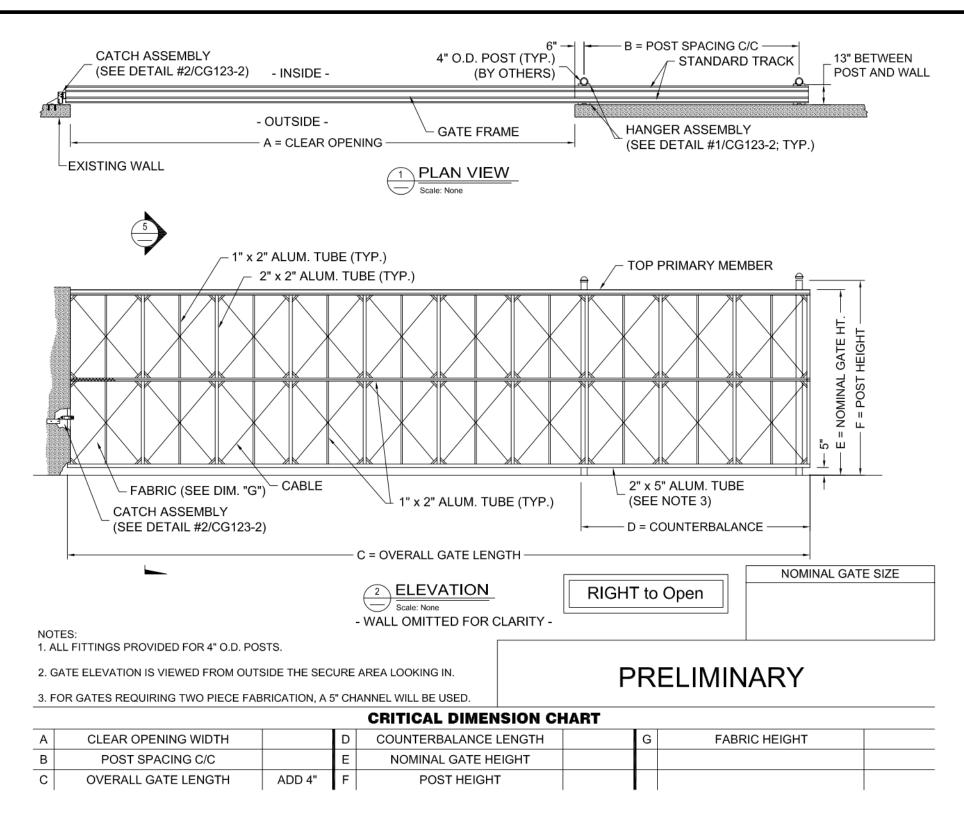
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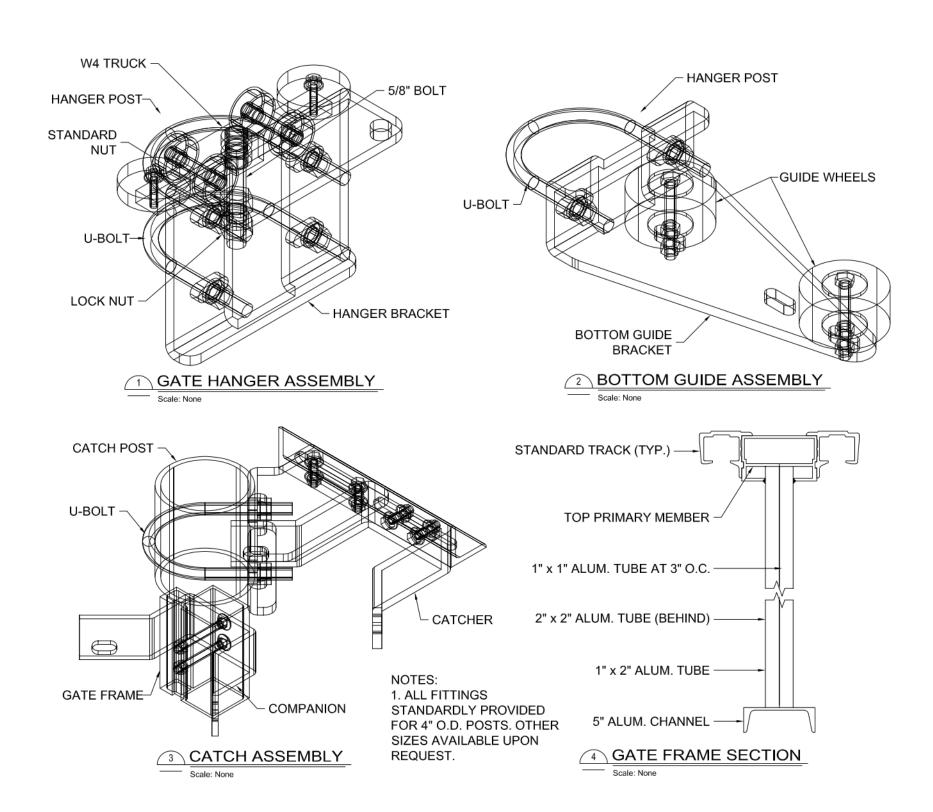
1717 E. VIA BURTON STREET

SECURITY GATES INS
AT ANAHEIM BUS
SECURITY
DETAILS

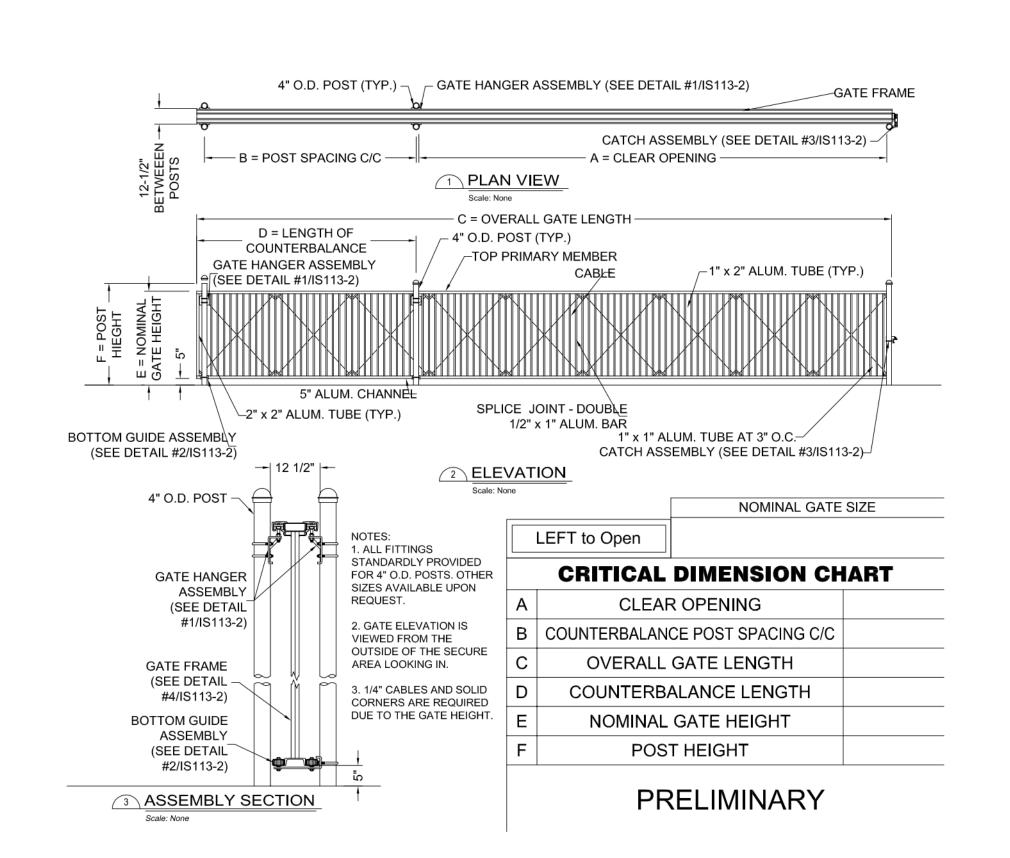
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WALL MOUNTED STRUCTURAL CANTILEVER SLIDE GATE RIGHT OPEN



3 INTERNAL PICKET STRUCTURAL CANTILEVER SLIDE GATE



1) INTERNAL PICKET STRUCTURAL CANTILEVER SLIDE GATE LEFT OPEN





SE-ANA-503

1717 E. VIA BURTON STREET

ANAHEIM, CA 92806

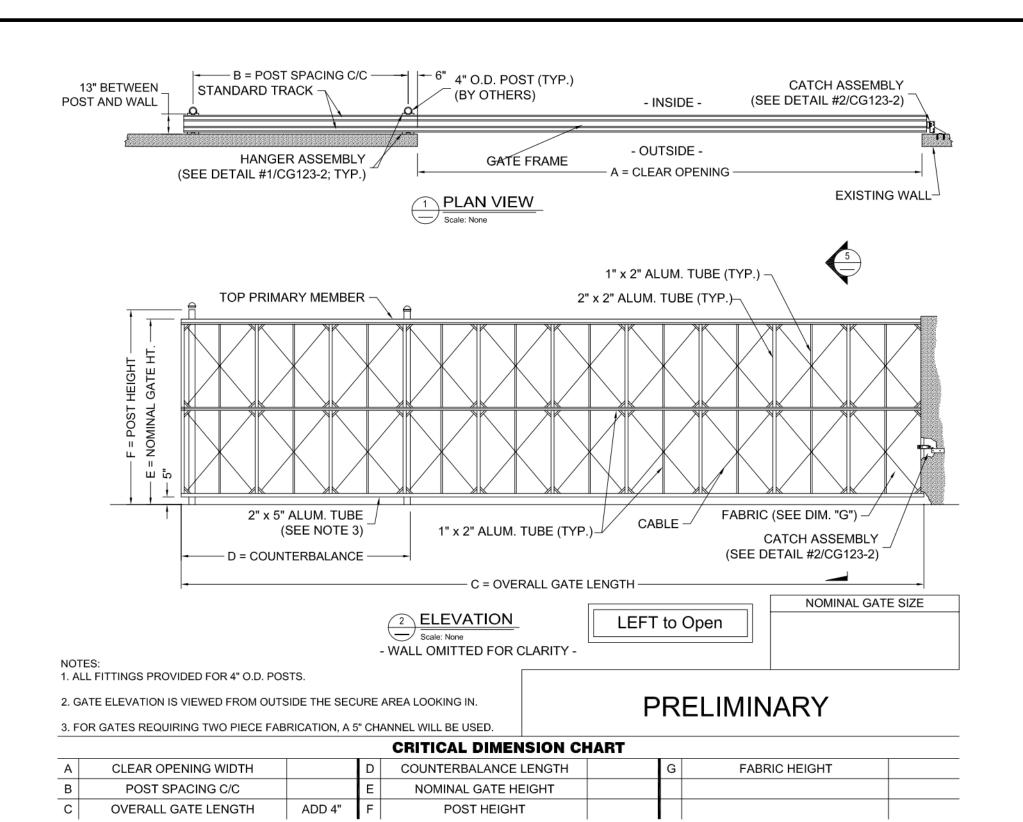
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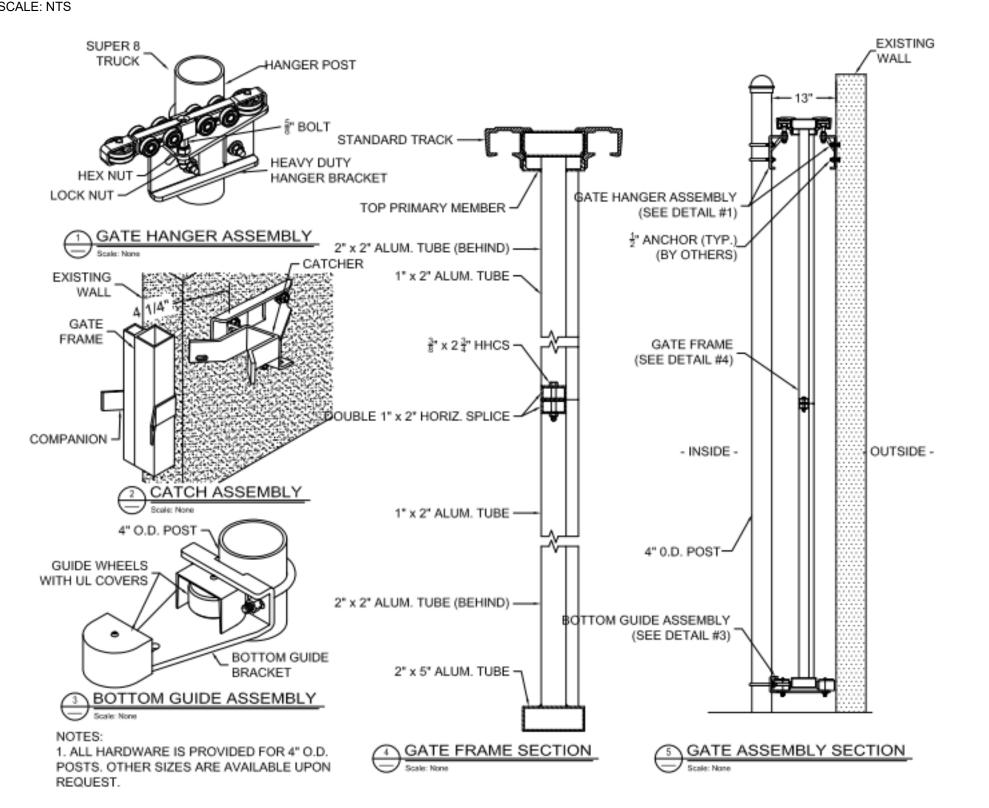
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AS INDICATED

ATION

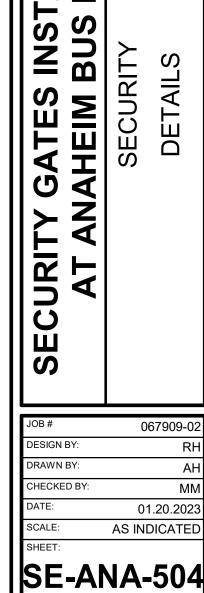


WALL MOUNTED STRUCTURAL CANTILEVER SLIDE GATE LEFT OPEN
SCALE: NTS



WALL MOUNTED STRUCTURAL CANTILEVER SLIDE GATE DETAILS



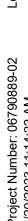


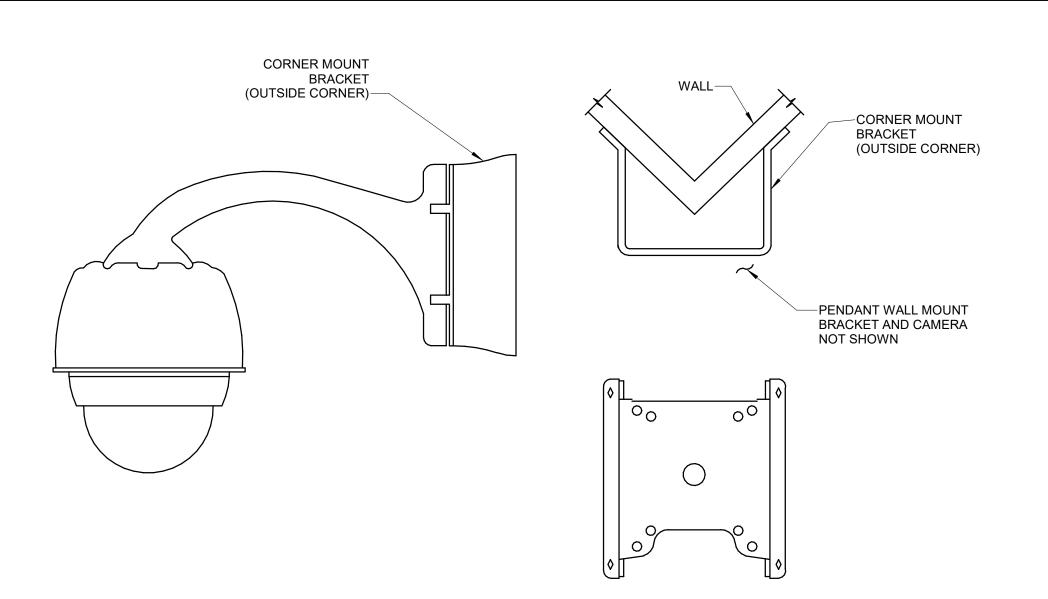
1717 E. VIA BURTON STREET

ANAHEIM, CA 92806

714/560/OCTA

ATION





-METALLIC CONDUIT SLEEVE (SEE DETAIL '2' ON S-301 CAT-6 CABLE, TYPE CMP → TO ROOM 237 CAMERA-CAMERA OUTLET BOX (WEATHERTITE) -CEILING ACCESSIBLE **BRICK WALL**

POLE MOUNT— -WEATHER PROOF BOX -1" CONDUIT

POLE PER 2/E-104-

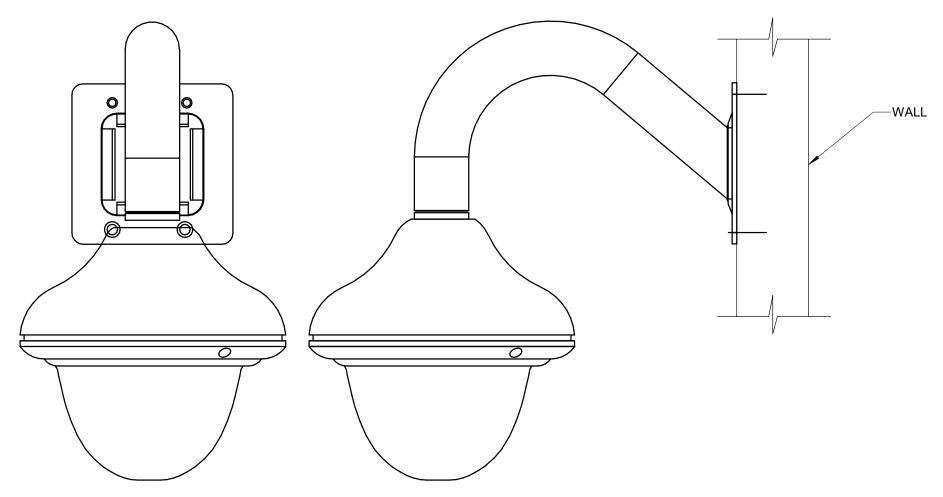
AXIS T91B47

ADMIN BUILDING CAMERA/CONDUIT PENETRATION DETAIL

7 ADMIN BUILDING CAMERA/CONDUIT PENETRATION DETAIL

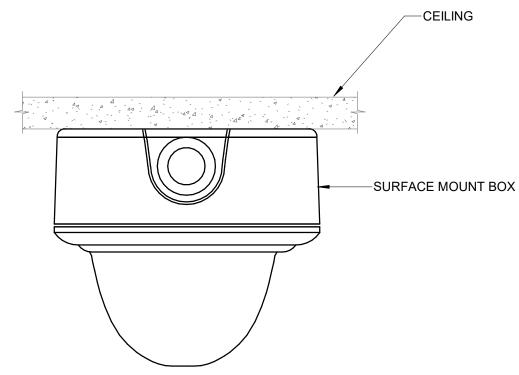
SCALE-NTS

1 SECURITY CAMERA CORNER MOUNTING DETAIL



1. IF PENETRATING AT OTHER THAN CAMERA LOCATION, PROVIDE LIQUIDTITE FLEXIBLE METALLIC FROM PENETRATION TO CAMERA OUTLET BOX.

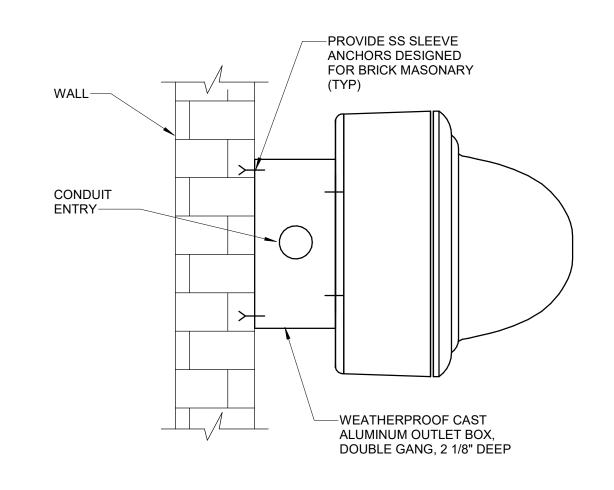
DETAIL NOTES



5 CEILING-SURFACE MOUNTING DETAIL
SCALE: NTS

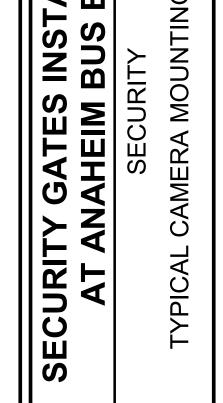
2 SECURITY CAMERA WALL MOUNTED DETAIL
SCALE: NTS

3 FIXED WALL MOUNTING DETAIL
SCALE: NTS



-CEILING

6 CEILING FLUSH MOUNTING DETAIL
SCALE: NTS



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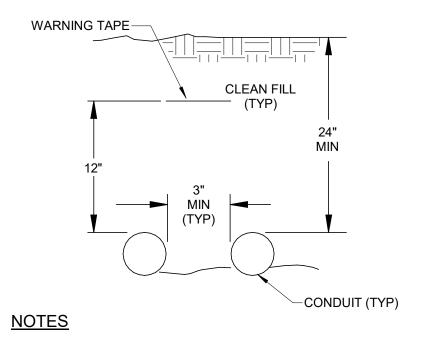
SE-ANA-505

1717 E. VIA BURTON STREET ANAHEIM, CA 92806 714/560/OCTA

GANNETT FLEMING

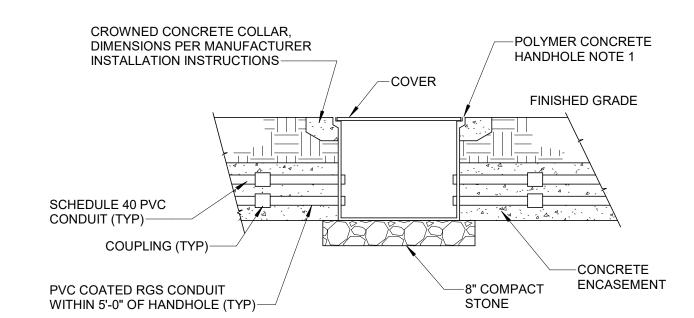
G.F. # 067909-02 601 SOUTH FIGUEROA ST. SUITE 3800 LOS ANGELES, CA 90017 T: 213 624 0347 www.gannettfleming.com





- 1. NUMBER OF CONDUITS SHOWN FOR ILLUSTRATION PURPOSES ONLY. PROVIDE ACTUAL NUMBER AND SIZES OF CONDUITS AS INDICATED IN THE DUCTBANK DETAILS.
- 2. ALLOWABLE CONDUIT TYPES PER SPECS.

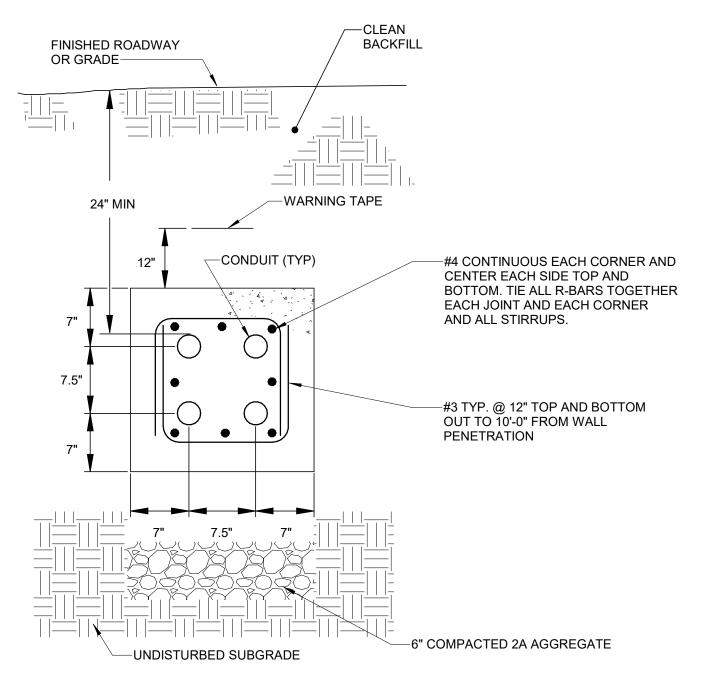
\ DIRECT BURIED CONDUIT DETAIL



<u>NOTES</u>

1. STACK BOXES AS REQUIRED TO MATCH CONDUIT DEPTH.

POLYMER HANDHOLE DETAIL
SCALE: NTS



<u>NOTES</u>

- 1. NUMBER OF CONDUITS SHOWN FOR ILLUSTRATION PURPOSES ONLY. PROVIDE ACTUAL NUMBER AND SIZES OF CONDUITS AS INDICATED IN THE DUCTBANK DETAILS.
- 2. ALLOWABLE CONDUIT TYPES PER SPECS.





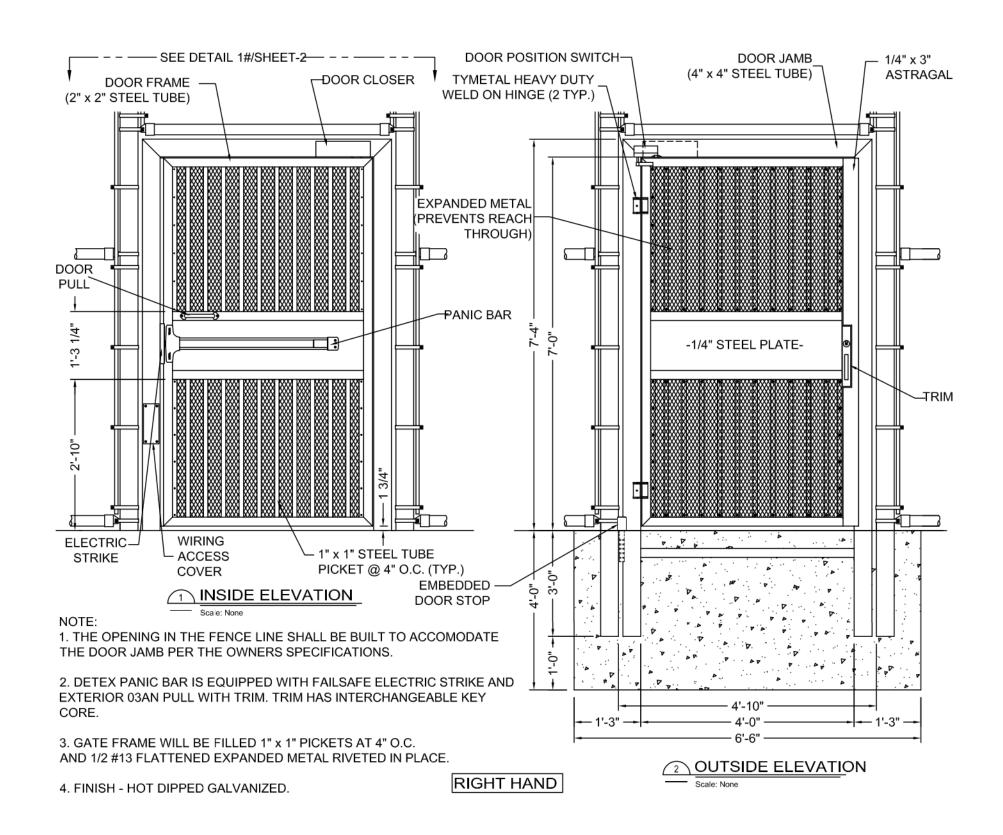
JOB#	067909-02
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CHECKED BY:	MM
DATE:	01.20.2023
SCALE:	AS INDICATED
SHEET:	

SE-ANA-506

1717 E. VIA BURTON STREET ANAHEIM, CA 92806 714/560/OCTA

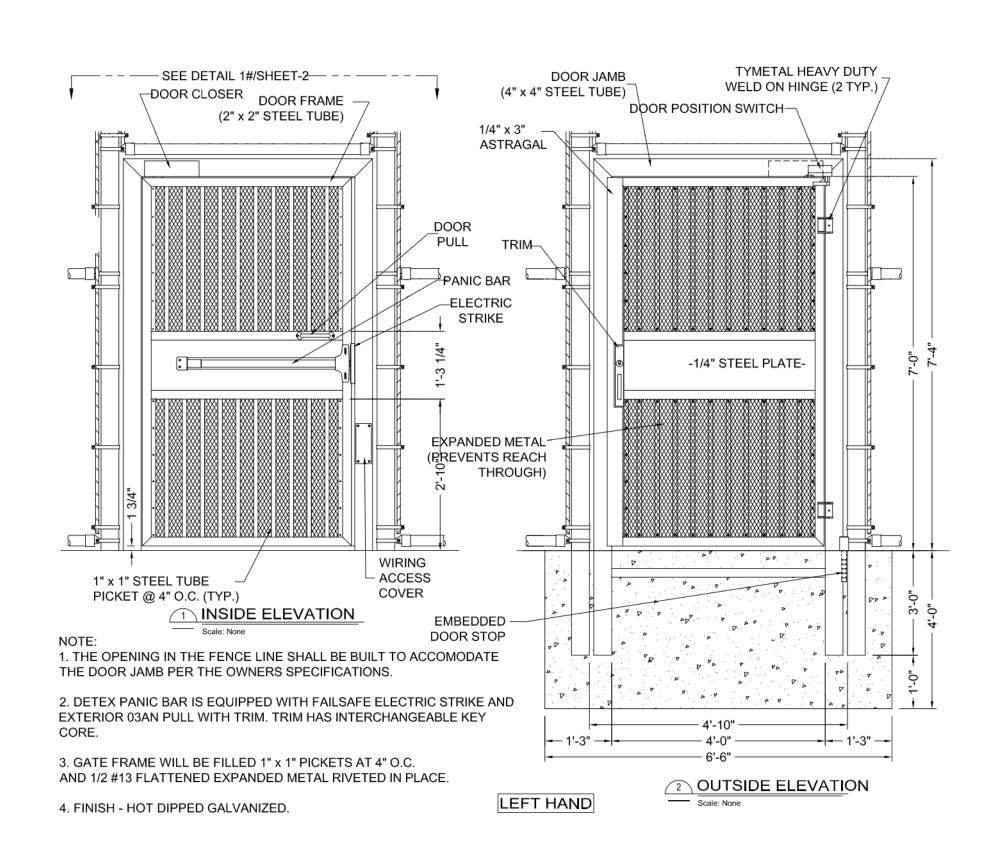




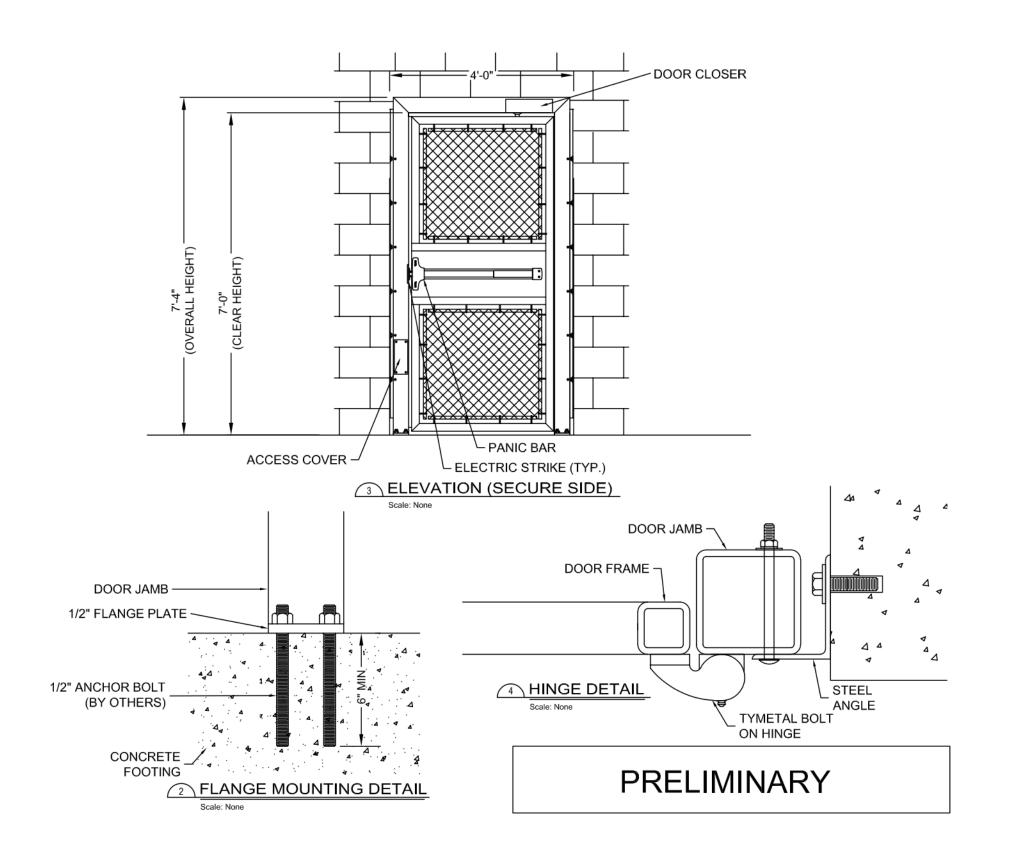


(WALL OPENING) MASONARY WALL PLAN VIEW
Scale: None 1/4" STEEL ASTRAGAL DOOR FRAME /- KEYED LEVER 2" x 2" STEEL TUBE (TYP.) 1/4" x 2" STEEL BAR (TYP.) DOOR JAMB 4" x 4" STEEL -TUBE (TYP.) TYMETAL WELD ON HINGE (2 TYP.) 3'-2" (CLR. OPENING) ∽ STEEL ANGLE 3'-10" 1/2" STEEL BASE (OVERALL WIDTH) PLATE (TYP.) (WALL OPENING) 2 ELEVATION (NON-SECURE SIDE) 1. GATE FRAME WILL BE FILLED WITH 2X9 CHAIN LINK. 2. PANIC BAR TO BE DETEX #V40 WITH WEATHERIZED BATTERY OPERATED ALARM. **PRELIMINARY** 3. KEYED ENTRY FROM LEVER SIDE. DETEX LEVER WILL ACCEPT BEST INTERCHANGEABLE CORE.

1) 2150 PEDESTRIAN SWING GATE (4'-0" X 7'-0" OPENING) A6-RH TYPICAL SCALE: NTS



3 SINGLE 2150 PEDESTRIAN GATE - A5 TYPICAL



2) 2150 PEDESTRIAN SWING GATE (4'-0" X 7'-0" OPENING) A6-LF TYPICAL SCALE: NTS

SINGLE 2150 PEDESTRAIN GATE - A5 TYPICAL





067909-02 CHECKED BY 01.20.2023 AS INDICATED

||SE-ANA-507

1717 E. VIA BURTON STREET ANAHEIM, CA 92806

714/560/OCTA

SECURITY GATES INSTALLATION OCTA - GARDEN GROVE BUS BASE 11790 CARDINAL CIRCLE **GARDEN GROVE, CA 92843**

CONTRACT NO. C-3-2279

GANNETT FLEMING

CONTACT: FREDRICK CROOKS, AIA

601 SOUTH FIGUEROA STREET, SUITE 3800 LOS ANGELES, CALIFORNIA 90017

PHONE: 213.409.6632 FAX: 213.559.9508

VICINITY MAP

SITE PLAN

GENERAL NOTES

- 1. CONTRACTOR SHALL COORDINATE AND SCHEDULE WORK OF ALL TRADES WITH THE OWNER'S REPRESENTATIVE. EACH SUBCONTRACTOR SHALL START HIS WORK PROMPTLY, PURSUE IT IN ACCORDANCE WITH CONTRACTOR'S PROGRESS SCHEDULE. NORMALLY EXPECTED RAINFALL CONDITIONS SHALL NOT BE CAUSE FOR AUTHORIZED EXTENSION.
- 2. PROVIDE TEMPORARY SAFETY BARRIERS AS REQUIRED BY CODE AND TAKE ALL NECESSARY PRECAUTIONS TO ENSURE PUBLIC SAFETY AND WELFARE.
- 3. ALL DEBRIS SHALL BE REMOVED AND LEGALLY DISPOSED OF OFF SITE DAILY AND MAINTAINED IN CLEAN ROOM CONDITION AT ALL TIMES.
- 4. AGENCY APPROVED PLANS SHALL BE KEPT IN A PLAN RACK AND SHALL NOT BE MARKED OR USED BY ANY WORKMEN. ALL CONSTRUCTION SETS SHALL REFLECT THE SAME LATEST INFORMATION. THE CONTRACTOR SHALL ALSO MAINTAIN IN GOOD CONDITION, ONE COMPLETE SET OF PLANS WITH ALL REVISIONS, ADDENDA, AND CHANGE ORDERS ON THE PREMISES AT ALL TIMES, AND IT IS TO BE UNDER THE CARE OF THE JOB SUPERINTENDENT.
- 5. PROVIDE TEMPORARY UTILITIES AS NECESSARY FOR THE CONSTRUCTION.
- 6. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS AND COORDINATE WITH ALL TRADES. NOTIFY THE ARCHITECT IMMEDIATELY OF ANY DISCREPANCIES OR CONFLICT PRIOR TO PROCEEDING WITH ANY WORK.
- 7. CONTRACTOR SHALL PROTECT ALL WORK FROM INCLEMENT WEATHER AND
- 8. ALL WORK PERTAINING TO THIS PROJECT SHALL CONFORM TO THE PLANS AND SPECIFICATIONS AND CITY OF ANAHEIM BUILDING CODE REQUIREMENTS. FURTHER THE CONTRACTOR SHALL COMPLY WITH THE STATE DEPARTMENT OF INDUSTRIAL RELATIONS, DIVISION OF INDUSTRIAL SAFETY (O.S.H.A.).
- 9. THE CONTRACTOR SHALL OBTAIN ALL PERMITS, LICENSES, AND INSPECTIONS FROM THE CITY OF ANAHEIM TO COMPLETE THE WORK.
- 10. THE PROTECTION OF ALL STRUCTURES AND UTILITIES ON THE SITE IS THE RESPONSIBILITY OF CONTRACTOR.
- 11. INFORM OCTA 72 HOURS PRIOR TO BEGINNING OF WORK.
- THE EXTENT OF THE WORK IS ONLY INDICATED GENERALLY ON THE DRAWINGS AND SHALL NOT BE CONSIDERED AS THE COMPLETE SCOPE. CONDITIONS INDICATED ARE BASED ON LIMITED SURVEYS OF EXISTING CONDITIONS AND
- 13. IT IS THE INTENT OF THESE CONSTRUCTION DOCUMENTS TO INCLUDE ITEMS AND COMPONENTS OF THE PROPER EXECUTION OF THE WORK, AND THE PROVISIONS FOR A COMPLETE AND FUNCTIONAL FACILITY. IN THAT REGARD ALL APPURTENANT AND ACCESSORY ITEMS AND COMPONENTS REQUIRED FOR CONSTRUCTION OF COMPLETE AND FUNCTIONAL SYSTEMS WITHIN THE CONSTRUCTION SHALL BE PROVIDED WHETHER SPECIFICALLY IDENTIFIED IN THESE CONSTRUCTION DOCUMENTS OR NOT.
- 14. DEVIATIONS AND CONDITIONS WHICH COULD NOT BE REASONABLY ANTICIPATED SHALL BE GOVERNED BY PROVISION IN THE CONDITIONS OF THE CONTRACT PERTAINING TO UNFORESEEN CONDITIONS.
- 15. INSPECTION OF SITE:
- BEFORE SUBMITTING BID, CONTRACTOR SHALL VISIT THE SITE, VERIFY ALL EXISTING ITEMS SHOWN ON THE PLANS OR SPECIFIED AND BE FAMILIAR WITH THE WORKING CONDITIONS, HAZARDS, EXISTING ELEVATIONS AND THE LOCAL REQUIREMENTS INVOLVED; SUBMISSION OF BIDS SHALL BE DEEMED EVIDENCE OF SUCH VISIT. ALL PROPOSALS SHALL TAKE THESE EXISTING CONDITIONS INTO CONSIDERATIONS AND THE LACK OF SPECIFIC INFORMATION ON THE DRAWINGS SHALL NOT RELIEVE THE CONTRACTOR OF ANY RESPONSIBILITY. NO REQUEST FOR ADDITIONAL PAYMENT SHALL BE CONSIDERED AS VALID, DUE TO FAILURE TO ALLOW FOR CONDITIONS WHICH CURRENTLY EXIST.
- 16. EXISTING LOCATIONS: LOCATIONS AND ELEVATIONS OF THE VARIOUS ITEMS INCLUDED WITHIN THIS SCOPE OF THIS WORK HAVE BEEN OBTAINED FROM EXISTING AND LIMITED SURVEYS. EXAMINATION OF THE SITE, VERIFY LOCATIONS, ELEVATIONS AND QUANTITIES OF THE SITE, VERIFY LOCATIONS, ELEVATIONS AND QUANTITIES OF ALL ITEMS, UTILITIES AND SERVICES REQUIRED AND BE ADEQUATELY INFORMED AS TO THEIR RELATION TO THE WORK. THE SUBMISSION OF SUCH BID SHALL DEEMED EVIDENCE OF SUCH A VISIT.
- 17. ONGOING OCTA OPERATIONS:
- OCTA WILL CONTINUE TO USE THE FACILITIES THROUGH OUT THE CONSTRUCTION ACTIVITIES. CONSTRUCTION ACTIVITIES SHALL NOT INTERFERE 33. ALL MATERIALS SHALL BE NEW, UNLESS NOTED OTHERWISE. WITH ONGOING OPERATIONS AT THE FACILITIES. THE CONTRACTOR SHALL COORDINATE AND SEQUENCE WORK WITH OCTA PROJECT MANAGER TO MINIMIZE DISRUPTIONS TO OWNER'S CONTINUING OPERATIONS. CONTRACTOR SHALL ARRANGE HIS WORK TO OFFER LEAST INTERFERENCE WITH OCTA DAILY WORK OPERATIONS AND MAINTENANCE. OCTA PROJECT MANAGER WILL COORDINATE WORK ACTIVITIES, AND TEMPORARY CHANGES IN FACILITY ACTIVITY WHICH ARE NECESSARY FOR CONTRACTOR'S WORK.

- 18. EXISTING SYSTEMS, EQUIPMENT AND SERVICES: CONTRACTOR SHALL MAKE ARRANGEMENTS FOR TEMPORARY DEACTIVATION OR RELOCATION OF EXISTING SYSTEMS, EQUIPMENT, UTILITIES AND SERVICES REQUIRED TO FACILITATE THE SCOPE OF WORK. KEEP DEACTIVATION PERIODS TO A MINIMUM. USE INTERMITTENT PERIODS AS DIRECTED. SCHEDULE WITH OWNER DEACTIVATION PERIODS TO MINIMUM. USE INTERMITTENT PERIODS AS DIRECTED. SCHEDULE WITH OWNER DEACTIVATION PERIODS FOR SYSTEMS TO REMAIN IN SERVICE. ALL UTILITIES SHALL BE OPERATIONAL AT END OF WORK
- 19. WORK UNDER THIS CONTRACT SHALL BE DONE SO THAT EXISTING BUS OPERATIONS AND MAINTENANCE FACILITIES SHALL REMAIN IN FULL OPERATIONS DURING CONSTRUCTION. CONTRACTOR SHALL ARRANGE HIS WORK TO OFFER LEAST INTERFERENCE WITH OCTA DAILY WORK OPERATIONS AND MAINTENANCE. OCTA PROJECT MANAGER WILL COORDINATE WORK ACTIVITIES, AND TEMPORARY CHANGES IN FACILITY WHICH ARE NECESSARY FOR CONTRACTOR'S WORK. CONTRACTOR SHALL COORDINATE HIS WORK
- 20. CONTRACTOR WILL BE REQUIRED TO COVER ALL OCTA EQUIPMENT, MATERIAL, AND ACCESSORIES DURING CONSTRUCTION WORK TO PREVENT DAMAGE.
- 21. CONTRACTOR SHALL TAKE ALL PREVENTIVE MEASURES DURING CONSTRUCTION WORK BELOW. OCTA FACILITY WILL BE OPERATIONAL DURING CONSTRUCTION. THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR AND SHALL REPLACE OR REMEDY ANY FAULTY. IMPROPER OR INFERIOR MATERIAL OR WORKMANSHIP OR ANY DAMAGE TO WORK OR ADJACENT
- 22. THE CONTRACTOR SHALL REPORT TO THE ARCHITECT / ENGINEER THROUGH PROJECT MANAGER ANY ERROR, INCONSISTENCY, OR OMISSION HE MAY DISCOVER. THE CONTRACTOR IS RESPONSIBLE FOR CORRECTING ANY ERROR AFTER THE START OF CONSTRUCTION WHICH HAS NOT BEEN BROUGHT TO THE ATTENTION OF THE ARCHITECT. THE CONTRACTOR IS RESPONSIBLE FOR CORRECTING ANY ERROR AT NO COST TO THE AUTHORITY AFTER THE START OF CONSTRUCTION.
- 23. DO NOT SCALE DRAWINGS: ON SITE VERIFICATION OF ALL DIMENSIONS AND CONDITIONS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. NOTIFY ARCHITECT OF ANY DISCREPANCY.
- 24. THE ARCHITECT'S REVIEW OF SHOP DRAWINGS SHALL NOT RELIEVE THE CONTRACTOR FROM RESPONSIBILITY FOR DEVIATION FROM DRAWINGS OR SPECIFICATIONS UNLESS HE HAS (IN WRITING) CALLED THE ARCHITECT'S ATTENTION TO SUCH DEVIATIONS AT THE TIME OF SUBMISSION AND RECEIVED FURTHER CLARIFICATION FROM THE ARCHITECT: NOR SHALL IT RELIEVE HIM OF RESPONSIBILITY FOR ERRORS IN THE SHOP DRAWINGS.
- 25. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO LOCATE ALL EXISTING UTILITIES, WHETHER SHOWN HEREON OR NOTE, AND TO PROTECT THEM FROM DAMAGE. THE CONTRACTOR SHALL BEAR ALL EXPENSE OF REPAIR OR REPLACEMENT OF UTILITIES OR OTHER PROPERTY DAMAGED BY OPERATIONS IN CONJUNCTION WITH THE EXECUTION OF THE WORK.
- 26. EXISTING ELEVATIONS AND LOCATIONS TO BE JOINED SHALL BE VERIFIED BY THE CONTRACTOR BEFORE CONSTRUCTION. IF THEY DIFFER FROM THOSE SHOWN ON THE DRAWINGS, THE CONTRACTOR SHALL NOTIFY THE ARCHITECT SO THAT MODIFICATIONS CAN BE MADE BEFORE PROCEEDING WITH THE WORK.
- 27. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COMPLETE SECURITY OF HIS WORK AND MATERIAL AND EQUIPMENT WHILE JOB IS IN PROGRESS AND UNTIL JOB IS COMPLETED.
- IN PLACE. THE CONTRACTOR SHALL BE RESPONSIBLE TO PROVIDE TEMPORARY BRACING AS REQUIRED OR PORTION THEREOF DURING CONSTRUCTION.

28. THE STRUCTURE IS DESIGNED AS A STABLE UNIT AFTER ALL COMPONENTS ARE

- 29. PROVIDE ALL NECESSARY BLOCKING, BACKING, SLEEVES, AND FRAMING FOR A
- 30. ALL TRADES SHALL DO THEIR OWN CUTTING, FITTING, PATCHING, ETC. TO MAKE THE WORK OF ALL TRADES COME TOGETHER PROPERLY AND FIT TO RECEIVE WORK OF OTHER TRADES.
- 31. CONTRACTOR SHALL NOT BREAK SETS FOR TRADE BIDDING. THE CONTRACTOR DOES SO AT HIS OWN RESPONSIBILITY AND THE OWNER AND / OR ARCHITECT TAKES NO RESPONSIBILITY IF HE DOES SO.
- 32. CONSTRUCTION HOURS 7:00 AM TO 3:30 PM. ALL EXISTING FACILITIES SHALL BE OPERATIONAL AT THE END OF THE WORK DAY. (3:30 PM).
- 34. THE CONTRACTOR SHALL PROVIDE ALL BARRICADES, WARNING SIGNS, AND PROTECTIVE DEVICES AND SHALL TAKE ALL PRECAUTIONARY MEASURES TO PROTECT ALL PERSONNEL, PROPERTY, AND WORK SITE.
- 35. THE CONTRACTOR SHALL POST IN ADVANCE CONSTRUCTION WARNING SIGNS, AND SHALL INFORM THE AUTHORITY PROJECT ENGINEER 72 HOURS BEFORE STARTING CONSTRUCTION WORK.

SUMMARY OF WORK

THE FOLLOWING SUMMARY OF WORK DESCRIPTIONS ARE GENERAL IN NATURE AND NOT INTENDED TO CAPTURE EVERY ITEM REQUIRED TO ACHIEVE THE INTENDED WORK RESULTS ENCOMPASSED BY THE CONTRACT DOCUMENTS.

- 1. DEMOLISH THE INDICATED EXISTING ROLLING VEHICULAR SECURITY GATES AND REPLACE WITH NEW CANTILEVERED SLIDE GATES, INCLUDING POSTS. FOUNDATIONS, AND OPERATORS. PROVIDE RELATED ELECTRICAL DEMOLITION AND NEW ELECTRICAL WIRING, CONDUITS, BOXES, DISCONNECTS, AND CONNECTIONS UNLESS EXISTING ARE INDICATED TO BE REUSED.
- 2. FURNISH AND INSTALL NEW GUARD BOOTH WHERE INDICATED, PROVIDE CONNECTION FOR ELECTRICAL POWER TO BOOTH PANEL. FURNISH AND INSTALL ELECTRICAL WIRING. CONDUITS, AND BOXES BETWEEN BOOTH AND INDICATED POWER SOURCE. FURNISH AND INSTALL RACEWAY SYSTEM FOR COMMUNICATIONS CABLING BETWEEN BOOTH AND EXISTING BUILDING AS
- 3. MODIFY BUS BASE SITE AND PARKING CONFIGURATIONS TO ACCOMMODATE NEW VEHICULAR SECURITY GATES AND GUARD BOOTH. CUT AND PATCH ASPHALT AND CONCRETE PAVING. PROVIDE ALL NECESSARY EARTHWORK AND UTILITY TRENCHING, UPON COMPLETION OF EARTHWORK, RESTORE FINISHED GRADE AND PAVING TO MATCH EXISTING EXCEPT WHERE NEW FINISHED GRADE SURFACE IS INDICATED.
- 4. PROVIDE THE INDICATED PAINTED PAVEMENT STRIPING AND OTHER PAVEMENT MARKINGS. PROVIDE SEALED CONSTRUCTION JOINTS.
- 5. NEW VEHICULAR SECURITY GATES SHALL BE INTEGRATED WITH EXISTING BUS BASE GATE CONTROL SYSTEM AND SHALL HAVE THE ABILITY TO BE OPERATED MANUALLY BY AUTHORIZED OCTA STAFF IN THE EVENT OF AN EMERGENCY AND/OR POWER OUTAGE.

TRASK AVE.

WOODBURY RD

WESTMINISTER AVE

- 6. INTEGRATE NEW SECURITY GATE CONTROL SYSTEMS, INCLUDING INTERCOMS WITH EXISTING BUS BASE SECURITY SYSTEM AND BUS OPERATIONS. ENTRANCE GATES SHALL BE ACCESS CONTROLLED. GATE CONTROL FOR BUSES SHALL USE THE TRANSPONDER SYSTEM ON THE BUS, CARD READER SYSTEM (EMPLOYEE BADGES READER), AND INTERCOM SYSTEM, AS APPLICABLE, EMBED SENSOR LOOPS IN THE PAVEMENT AT VEHICULAR EXIT GATES TO OPEN THE GATES AUTOMATICALLY UPON PRESENCE OF AN EXITING VEHICLE. FURNISH AND INSTALL EMBEDDED SAFETY LOOPS ON EACH SIDE OF EACH VEHICULAR GATE TO PREVENT GATE FROM CLOSING PREMATURELY.
- 7. AT EACH INTERCOM, AN INTEGRATED SURVEILLANCE CAMERA SHALL BE PROVIDED TO RECOGNIZE THE DRIVER WHO IS ASKING FOR ACCESS TO THE BUS BASES. EXISTING SURVEILLANCE CAMERAS SHALL REMAIN AND BE UTILIZED UNLESS INDICATED TO BE REMOVED. NEW SURVEILLANCE CAMERAS SHALL BE INSTALLED TO RECOGNIZE THE LICENSE PLATE NUMBER OF THE VEHICLE REQUESTING ACCESS. NEW SURVEILLANCE CAMERAS SHALL BE COMPATIBLE AND INTEGRATED INTO THE OCTA BUS BASE EXISTING VIDEO SURVEILLANCE SYSTEM (VSS) MILESTONE VSS PLATFORM
- 8. FURNISH AND INSTALL NEW GALVANIZED STEEL BOLLARDS WHERE INDICATED. PAINT NEW BOLLARDS.
- 9. FURNISH AND INSTALL INDICATED SIGNAGE.

AREAS OF WORK

- 10. FURNISH AND INSTALL NEW ELECTRICAL PANEL AS INDICATED.
- 11. PROVIDE MODIFICATIONS AND MINOR REPAIRS TO EXISTING MASONRY WALLS AS INDICATED, ADJACENT TO GATE GG3 AND NEW GUARD BOOTH. FURNISH AND INSTALL CUSTOM STEEL PICKET FENCE AT MODIFIED WALL.

NORTH

SHEET INDEX

GENERAL

G-GG-001 TITLE SHEET

<u>CIVIL</u>

CG-GG-100	GARDEN GROVE BUS BASE CIVIL NOTES
CG-GG-101	GARDEN GROVE BUS BASE CIVIL NOTES
CD-GG-101	GARDEN GROVE GATE 1 CIVIL DEMOLITION
CD-GG-102	GARDEN GROVE GATE 2 CIVIL DEMOLITION
CD-GG-103	GARDEN GROVE GATE 3 CIVIL DEMOLITION
CP-GG-101	GARDEN GROVE GATE 1 CIVIL SITE LAYOUT
CP-GG-102	GARDEN GROVE GATE 2 CIVIL SITE LAYOUT
CP-GG-103	GARDEN GROVE GATE 3 CIVIL SITE LAYOUT
CP-GG-104	GARDEN GROVE BUS BASE CIVIL DETAILS
CP-GG-105	CIVIL/STRUCTURAL INFILL FENCE PLAN, SECTIONS
	AND DETAILS
CP-GG-106	CIVIL/STRUCTURAL ENLARGED GATE PLANS
CP-GG-107	CIVIL/STRUCTURAL SECTIONS AND DETAILS

ELECTRICAL

E-GG-001 **ELECTRICAL LEGEND** E-GG-003 **ELECTRICAL GENERAL NOTES & ABBREVIATIONS** ELECTRICAL CUT SHEETS E-GG-004 **ELECTRICAL OVERALL SITE PLAN - DEMOLITION** E-GG-010 ELECTRICAL OVERALL SITE PLAN - RENOVATION E-GG-011 E-GG-100 ELECTRICAL ENLARGED PLANS - DEMOLITION **ELECTRICAL ENLARGED PLANS - RENOVATION** E-GG-101 ELECTRICAL ENLARGED PLANS - RENOVATION E-GG-102 ELECTRICAL DETAILS E-GG-501 E-GG-601 ELECTRICAL PANEL SCHEDULES **ELECTRICAL 30 DAY LOAD SUMMARY**

SE-GG-010 SECURITY OVERALL SITE PLAN - DEMO SE-GG-011 SECURITY OVERALL SITE PLAN - RENO SE-GG-100 SECURITY ENLARGED PLANS - DEMOL SE-GG-101 SECURITY ENLARGED PLANS - RENOV SE-GG-501 SECURITY DETAILS SE-GG-502 SECURITY DETAILS SE-GG-503 SECURITY DETAILS SE-GG-504 SECURITY DETAILS SE-GG-505 SECURITY TYPICAL CAMERA MOUNTIN	SECURITY	
1 SE-GG-300 SECONTITUDE MODINING DETAIL	SE-GG-010 SE-GG-011 SE-GG-100 SE-GG-101 SE-GG-501 SE-GG-502 SE-GG-503 SE-GG-504 SE-GG-505 SE-GG-	SECURITY DETAILS SECURITY DETAILS

ELECTRICAL SINGLE LINE DIAGRAM

JOB#	067909-02
DESIGN BY:	AH
DRAWN BY:	MK
CHECKED BY:	FC
DATE:	01.20.2023
SCALE:	NONE
SHEET:	

G-GG-00²





- CONTRACTOR SHALL MEET ALL STANDARDS IN THE COUNTY OF ORANGE -ORANGE COUNTY PUBLIC WORKS DEPARTMENT - SEPTEMBER 2018
- THE STANDARD PLANS FOR PUBLIC WORKS CONSTRUCTION OF PUBLIC WORKS STANDARDS, INC. ARE HERINAFTER CALLED SPPWC. THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION OF PUBLIC WORKS STANDARDS, INC. ARE HERINAFTER CALLED SSPWC.
- THE 2021 EDITION OF THE SPPWC STANDARD PLANS AND STANARD SPECIFICATIONS SHALL BE USED. WHEN OCPW HAS MADE CONDITIONS TO THE SPPWC STANDARD PLANS OR SPECIFICATIONS, THOSE CONDITIONS SHALL BE FOLLOWED.
- 4. DEVELOPER SHALL MEAN THE SUBDIVISION DEVELOPER, PERMITTEE, OR SHALL MEAN CONTRACTOR IN THE CASE OF A PUBLIC WORKS CONTRACT WITH THE COUNTY OF ORANGE
- THE DEVELOPER SHALL OBTAIN AN ENCROACHMENT PERMIT FROM OCPW PRIOR TO WORK WITHIN PUBLIC RIGHT-OF-WAY.
- 6. THE DEVELOPER SHALL TELEPHONE OCPW AT LEAST 48 HOURS PRIOR TO STARTING CONSTRUCTION WORK SUBJECT TO OCPW INSPECTION.
- CORRESPONDING STATE OF CALIFORNIA TEST METHODS MAY BE SUBSTITUTED FOR DESIGNATED ASTM TEST METHODS FOR WORK SUBJECT TO OCPW INSPECTION. RELATIVE COMPACTION: FOR WORK SUBJECT TO OCPW INSPECTION, IN-PLACE DENSITY SHALL BE DETERMINED BY CALIFORNIA TEST METHOD 231, PART I. LABORATORY MAXIMUM DENSITY SHALL BE DETERMINED BY CALIFORNIA TEST METHOD 216, PART II. PRIVATE LABORATORIES PERFORMING RELATIVE COMPACTION TESTING FOR OCPW SHALL PROVIDE A CALTRANS LABORATORY CERTIFICATION AND CERTIFICATION(S) FOR EACH TECHNICIAN PERFORMING THESE COMPACTION TEST PRIOR TO THE START OF WORK.
- JOINTS BETWEEN NEW PAVEMENT AND EXISTING PAVEMENT SHALL BE MADE BY SAWCUTTING OR COLD PLANING (MINIMUM 1 1/2 INCHES) EXISTING PAVEMENT TO EFFECT A NEAT JOINT. OR AS DIRECTED BY THE ENGINEER.
- WITH CONTRACTOR'S REQUEST FOR USE OF MATERIALS, CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CONSTRUCTION MATERIALS TESTING VERIFYING COMPLIANCE WITH SPECIFICATIONS AND SHALL SUBMIT TEST RESULTS. COUNTY WILL PERFORM QUALITY ACCEPTANCE TESTING AS DETERMINED NECESSARY. ACCEPTANCE OF MATERIALS WILL BE BASED ON GRADE SAMPLES.
- 10. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COSTS ASSOCIATED WITH RETESTING OF FAILED MATERIALS TESTS OR COMPACTION TESTS.
- 11. PORTLAND CEMENT CONCRETE SHALL CONFORM TO OCPW 1803. 12. ASPHALT CONCRETE SHALL CONFORM TO OCPW 1805.
- 13. NEW SIDEWALK JOINTS SHALL CONFORM TO OCPW 112-2-OC
- 14. NEW SIDWALK IS ASSUMED TO BE CONSTRUCTED ON EXPANSIVE SOILS AND SHALL CONFORM TO OCPW 1204.
- 15. REMOVAL AND REPLACEMENT OF ASPHALT CONCRETE SHALL CONFORM TO OCPW 133-3-OC.
- 16. REMOVAL AND REPLACEMENT OF CONCRETE PAVEMENT SHALL CONFORM TO SPPWC 132-4.
- 17. ALL EXISTING TOPOGRAPHIC FEATURES AND UTILITIES SHOWN ARE GENERATED BY COMPUTER AIDED DRAFTING SOFTWARE FROM PREVIOUS PROJECTS AND HAND MEASUREMENTS TAKEN IN THE FIELD. TOPOGRAPHIC SURVEY INCLUDING ESTABLISHING HORIZONTAL AND VERTICAL CONTROL POINTS WERE NOT INCLUDED IN THIS PROJECT.
- 18. DO NOT SCALE OFF DRAWINGS TO LOCATE EXISTING SITE FEATURES OR UTILITIES. ANY UTILITIES SHOWN ARE APPROXIMATE.
- 19. CONTRACTOR SHALL VERIFY CLEARANCE TO ALL UTILITIES PRIOR TO CONSTRUCTION. IF CONFLICTS EXIST, CONTRACTOR SHALL NOTIFY THE ENGINEER.
- 20. CONTRACTOR SHALL FOLLOW ALL BLUESTAKE LAW FOR THE PROJECT AREAS.
- 21. NEW APPLICATIONS OF PAINT SHALL BE APPLIED IN TWO EQUAL THICKNESSES AND SHALL INCLUDE 50 PERCENT OF THE REQUIRED BEADS WITH EACH APPLICATION.
- 22. ALL PROPOSED PAVEMENT MARKINGS, WITH THE EXCEPTION OF THE PEDESTRIAN PATHWAY, SHALL BE YELLOW ACETONE BASED OR THERMOPLASTIC AND BE IN ACCORDANCE WITH SSPWC SECTION 214. THE PAINTED PEDESTRIAN PATHWAY SHALL BE GREEN WATERBORNE TRAFFIC LINE PAINT IN ACCORDANCE WITH SSPWC SECTION 214.
- 23. THE GALVANIZED METAL OF THE BOLLARDS SHALL BE PAINTED BASE YELLOW IN ACCORDANCE WITH SSPWC SECTION 210, WITH A VINYL WASH, PRIMER. AND FINISH COAT PER TABLE 210-1.5.
- 24. REMOVAL OF EXISTING STRIPING SHALL BE IN ACCORDANCE WITH SSPWC **SECTION 314-2.**
- 25. INSTALLATION OF NEW PAVEMENT MARKINGS SHALL BE IN ACCORDANCE WITH SSPWC SECTION 314-4.
- 26. SHOULD THE CONTRACTOR SELECT AND RECEIVE APPROVAL FOR A GATE SYSTEM THAT REQUIRES A GROUND MOUNTED TRACK, THE REMOVAL OF THE EXISTING TRACK SHALL CONFORM TO SPPWC REQUIREMENTS LISTED ABOVE.

GENERAL STRUCTURAL NOTES

- 1.01 GENERAL
- A. THE STRUCTURAL DRAWINGS SHOW THE COMPLETED PROJECT THEY DO NOT INCLUDE COMPONENTS THAT MAY BE NECESSARY FOR CONSTRUCTION SAFETY. THE CONTRACTOR IS RESPONSIBLE FOR SAFETY IN AND AROUND THE JOB SITE DURING CONSTRUCTION.
- 1.02 COORDINATION
- A. VERIFY ALL SITE DIMENSIONS, ELEVATIONS, AND SLOPES WITH DRAWINGS BY OTHERS. DIMENSIONS CONTROLLED BY OR RELATED TO MECHANICAL OR ELECTRICAL EQUIPMENT SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION.
- B. ENGINEERING DESIGN PROVIDED BY OTHERS AND SUBMITTED FOR REVIEW SHALL BEAR THE SEAL AND SIGNATURE OF AN INSURED PROFESSIONAL STRUCTURAL OR CIVIL ENGINEER REGISTERED IN THE STATE IN WHICH THE SUBMITTED ITEMS WILL BE INSTALLED WHO IS A RECOGNIZED EXPERT IN THE TYPE OF WORK SHOWN AND
- C. ANY CHANGES PROPOSED BY THE CONTRACTOR TO THE DESIGN OF THE STRUCTURE DURING CONSTRUCTION SHALL BE SUBMITTED FOR REVIEW TO THE STRUCTURAL ENGINEER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COORDINATION OF STRUCTURAL AND NON-STRUCTURAL ELEMENTS AFFECTED BY PROPOSED CHANGES. THE COST OF DESIGN EFFORT NECESSITATED BY PROPOSED CHANGES SHALL BE BORNE BY THE CONTRACTOR.
- D. THE COST OF DESIGN EFFORT RESULTING FROM ERRORS OR OMISSIONS IN CONSTRUCTION SHALL BE BORNE BY THE CONTRACTOR.
- E. IN CASE OF CONFLICTS, THE MORE COSTLY REQUIREMENTS GOVERN SUBMIT CLARIFICATION REQUEST PRIOR TO PROCEEDING WITH
- F. VERIFY NEW AND EXISTING DIMENSIONS AND CONDITIONS PRIOR TO STARTING WORK. NOTIFY THE ENGINEER OF ANY DISCREPANCIES OR INCONSISTENCIES.
- 2.01 FIELD EXECUTION
- A. STRUCTURES HAVE BEEN DESIGNED FOR OPERATIONAL LOADS ON THE COMPLETED STRUCTURES. THE CONTRACTOR SHALL PROVIDE TEMPORARY BRACING, SHORING, GUYING AND OTHER MEANS TO AVOID EXCESSIVE STRESSES AND HOLD STRUCTURAL ELEMENTS IN PLACE DURING CONSTRUCTION
- B. CONTRACTOR SHALL EXERCISE EXTREME CARE TO AVOID DAMAGE TO EXISTING STRUCTURES. CONTRACTOR IS RESPONSIBLE FOR ALL MEANS AND METHODS REQUIRED TO FACILITATE CONSTRUCTION OF THE WORK AND FOR ENSURING THE SAFETY, STABILITY AND INTEGRITY OF ADJACENT STRUCTURES AND FACILITIES.
- C. WHEN ANCHORING, SHOOTING, DRILLING, CHIPPING OR CORING INTO CONCRETE, THE AREA SHALL BE SCANNED USING GROUND PENETRATING RADAR (GPR) PRIOR TO START OF WORK. DO NOT CUT OR NICK EXISTING REINFORCING UNLESS NOTED OTHEWISE
- D. EDGE OF DRILL HOLES AND OPENINGS SHALL BE NO LESS THAN 4" FROM EXISTING REINFORCEMENT.

STRUCTURAL DESIGN PARAMETERS

- 1.01 GENERAL
- A. CONSTRUCTION SHALL COMPLY WITH THE BUILDING CODE AND OTHER APPLICABLE CODES AND STANDARDS.
- B. BUILDING CODE: CALIFORNIA BUILDING CODE (CBC 2019) AS ADOPTED AND AMENDED BY CITY OF GARDEN GROVE.
- 2.01 DESIGN CRITERIA
- A. REFERENCE STANDARDS: MINIMUM DESIGN LOADS AND ASSOCIATED CRITERIA FOR BUILDINGS AND OTHER STRUCTURES, ASCE 7-16.
- B. DEAD LOADS
- 1. MATERIAL WEIGHT OF STRUCTURE AND EQUIPMENT
- C. WIND LOAD PARAMETERS
- 1. EXPOSURE CATEGORY = C
- 2. STRUCTURAL RISK CATEGORY = II 3. BASIC WIND SPEED = 95 MPH
- D. SEISMIC LOAD PARAMETERS
- 1. STRUCTURAL RISK CATEGORY = II
- 2. SITE CLASS D (DEFAULT)
- 3. SEISMIC DESIGN CATEGORY = (NOT AVAILABLE) 4. S(DS) = 1.077q
- 5. S(D1) = (NOT AVAILABLE)
- 6. S(1) = 0.478q7. S(s) = 1.346g
- 8. I(e)= 1.0
- 9. I(p) = 1.0

GROUT

- 1.01 NON-SHRINK GROUT
- A. USE PLASTIC OR STIFF (DRY PACK), NON-METALLIC NON-SHRINK GROUT WITH MINIMUM 7,000 PSI COMPRESSIVE STRENGTH AT 28 DAYS. CONFORM TO THE REQUIREMENTS OF CRD-C 621 CORPS OF ENGINEERS FOR NON-SHRINK GROUT.
- B. USE BASE CONSTRUCTION GROUT, EUCO DRY PACK GROUT, OR EQUAL.

CONCRETE

- 1.01 DESCRIPTION
- A. THIS SECTION INCLUDES THE REQUIREMENTS FOR MATERIALS PROPORTIONING, AND INSTALLATION OF CONCRETE (RE: ACI 301, ACI 318, ACI 350). PROVIDE NORMAL WEIGHT CONCRETE (144PCF WET).
- 1.02 QUALITY ASSURANCE
 - A. PRODUCE AND DELIVER CONCRETE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS IN ACI 301 AND TOLERANCES OF ACI 117. PLACE CONCRETE IN ACCORDANCE WITH ACI 304. CONDUCT HOT WEATHER AND COLD WEATHER CONCRETING IN ACCORDANCE WITH ACI 305 AND ACI 306 RESPECTIVELY.
- 2.01 MIX WATER
- A. USE POTABLE WATER FREE FROM MATERIALS THAT ARE DELETERIOUS TO CONCRETE OR STEEL (ASTM C1602).
- 2.02 CEMENTITIOUS MATERIALS
- A. PORTLAND CEMENT: CONFORM TO ASTM C 150, TYPE II
- B. FLY ASH: ACCEPTABLE FOR USE IN MIX DESIGN IF COMPLIANT WITH REQUIREMENTS OF CONTRACT DOCUMENTS AND THE MAX RATIO OF FLY ASH TO TOTAL CEMENT AND FLY ASH DOES NOT EXCEED 20 PERCENT BY WEIGHT. CONFORM TO ASTM C 618. TYPE F. DO NOT USE FLY ASH IN COLORED CONCRETE WITHOUT WRITTEN APPROVAL.
- 2.03 AGGREGATE
- A. PROVIDE A SINGLE SIZE OR A GRADATION OF AGGREGATE WITH THE MAXIMUM SIZE AS SHOWN ON THE MIX DESIGN PROPORTIONS BELOW. DO NOT USE AGGREGATES CONTAINING SOLUBLE SALTS OR OTHER SUBSTANCES SUCH AS IRON SULFIDES, PYRITE, MARCASITE, OCHRE OR OTHER MATERIALS THAT MAY CAUSE STAINS ON EXPOSED CONCRETE SURFACES.
- B. UNLESS NOTED OTHERWISE, AGGREGATE SHALL BE NORMAL WEIGHT CONFORMING TO ASTM C33.
- 2.04 SLUMP
- A. TOLERANCE FOR SPECIFIED SLUMP IS +/- 1 INCH BEFORE THE ADDITION OF SUPERPLASTICIZERS/WATER REDUCERS PER ACI 117. MAXIMUM SLUMP WITH SUPERPLASTICIZERS IS 8 INCHES. WATER MAY BE ADDED ON SITE FOR SLUMP ADJUSTMENT IF THE TOTAL AMOUNT ADDED IS WITHIN THE WATER/CEMENTITIOUS RATIO AND SLUMP LIMITS SPECIFIED. DO NOT ADD WATER IF SUPERPLASTICIZERS ARE
- 2.05 MIX DESIGN PROPORTIONS (NORMAL WT CONCRETE U.N.O.)
- A. PROVIDE COMPUTERIZED BATCH RECORDS WITH ALL LOAD LOCATION.

LOCATION	COM	28 DAY IPRESSIVE ENGTH (PSI)	MAX W/CM RATIO	SLUMP (IN)	% AIR	MAX AGGREGATE SIZE (IN)
DRILLED PIE	RS	3000	0.58	6	4.5	1
FOOTINGS, GRADE BEAM	ИS	4000	0.50	5	4.5	1

- 3.01 CONCRETE PLACING
- A. DO NOT PLACE CONCRETE IN CONTACT WITH ALUMINUM. B. DO NOT ADD WATER ON SITE OR AFTER SUPERPLASTICIZERS HAVE
- **BEEN ADDED** C. THE MAXIMUM FREE DROP OF CONCRETE IS 6'-0" WITHOUT A TREMIE
- PIPE TO PREVENT SEGREGATION. DEPOSIT CONCRETE AS NEAR AS POSSIBLE TO ITS FINAL POSITION. DO NOT EMPLOY ANY PRACTICES CAUSING SEGREGATION SUCH AS VIBRATING CONCRETE TO SPEED CONVEYANCE
- D. MECHANICALLY VIBRATE CONCRETE. REVIBRATE CAISSONS (DRILLED

MASONRY

- 1.01 DESCRIPTION
- A. THIS SECTION INCLUDES THE REQUIREMENTS FOR MATERIAL PROPORTIONING, AND REQUIREMENTS FOR INSTALLATION OF MASONRY CONSTRUCTION.
- 1.02 QUALITY ASSURANCE
- A. MINIMUM 28-DAY COMPRESSIVE STRENGTH OF EACH WYTHE OF CONCRETE MASONRY. F'm = 2000 PSI.
- 2.01 MATERIALS
- A. LOAD BEARING HOLLOW CONCRETE MASONRY UNITS: MEDIUM WEIGHT WITH COMPRESSIVE STRENGTH OF 1900 PSI ON THE NET AREA. UNITS SHALL CONFORM TO ASTM C-90.
- B. GROUT: 2000 PSI, MINIMUM 28 DAY COMPRESSIVE STRENGTH. GROUT SHALL CONFORM TO ASTM C 476 AND ACI-530 BUILDING CODE.
- C. MORTAR SHALL BE PORTLAND CEMENT-LIME TYPE S CONFORMING TO ASTM C 270, WITH A MINIMUM AVERAGE 28 DAY COMPRESSIVE STRENGTH OF 1800 PSI AND MAXIMUM AIR CONTENT OF 12%. DO NOT USE MASONRY CEMENT IN MORTAR. THE MIXTURE OF CEMENTITIOUS MATERIAL. AGGREGATE.AND WATER SHALL CONFORM TO THE FOLLOWING PROPORTIONS BY VOLUME
- 1. 1 PART PORTLAND CEMENT OR BLENDED CEMENT CONFORMING TO ASTM C 150 AND ASTM C515 RESPECTIVELY.
- 2. 1/4 TO 1/2 PARTS HYDRATED LIME OR LIME PUTTY CONFORMING TO **ASTM C 207.**
- 3. VOLUME OF AGGREGATE, MEASURED IN DAMP LOOSE CONDITION, EQUAL TO 2 1/4 TO 3 TIMES THE SUM OF THE VOLUMES OF THE ABOVE CEMENTITIOUS MATERIALS.

REINFORCING STEEL

- 1.01 DESCRIPTION
- A. THIS SECTION INCLUDES REQUIREMENTS FOR MATERIALS, DETAILING, AND INSTALLATION OF REINFORCING STEEL (RE: ACI 301-05, ACI 318-05, ACI 350-06).
- B. PLACE REINFORCEMENT IN CONFORMANCE WITH CONTRACT DRAWINGS AND ACI DETAILING MANUAL SP-66.
- 1.02 COORDINATION
- A. DO NOT DAMAGE OR DISRUPT REINFORCING BARS OR STEEL EMBEDS FROM THEIR PROPER LOCATION BY THE PLACEMENT OF EMBEDDED PIPING OR CONDUIT. PROVIDE REQUIRED CLEARANCE BETWEEN REINFORCEMENT AND EMBEDDED PIPING AND CONDUIT.
- 1.03 QUALITY ASSURANCE
- A. TOLERANCES FOR FABRICATION, PLACEMENT, BAR BENDS, STANDARD HOOKS AND LAP SPLICES FOR REINFORCEMENT SHALL CONFORM TO ACI 117, SECTION 2 AND CRSI STANDARDS.
- 2.01 REINFORCEMENT MATERIALS
- A. REINFORCING STEEL SHALL CONFORM TO THE FOLLOWING STANDARDS.
- 1. #3 BARS AND LARGER ASTM A 615, GRADE 60 2. WELDABLE REINFORCING STEEL - ASTM A 706
- 3.01 COVER A. CONCRETE COVER FOR REINFORCING BARS (TO FACE OF BAR INCLUDING PRIMARY REINFORCEMENT) UNLESS NOTED OTHERWISE ON DRAWINGS.
- B. CAST-IN-PLACE CONCRETE ACI 350 (NON-PRESTRESSED) 1. CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH • ALL BARS - 3"
- 3.02 WELDING
- A. WELD REINFORCING BARS IN CONFORMANCE WITH AWS D1.4 USING ELECTRODE E8018-X.
- B. SUBMIT WELDER CERTIFICATIONS AND WELDING PROCEDURES PER AWS D1.4.

FOUNDATIONS

- 1.01 GENERAL
 - A. PRESUMPTIVE BUILDING CODE MINIMUM VALUES FOR SOIL LOAD-BEARING CAPACITIES SHALL BE USED UNLESS GEOTECHNICAL ENGINEERING DATA TO SUBSTANTIATE HIGHER VALUES IS SUBMITTED
- AND APPROVED. B. FOUNDATION DESIGN IS BASED ON THE FOLLOWING PRESUMPTIVE
- LOAD-BEARING VALUES PROVIDED BY THE BUILDING CODE 1. SOIL CLASSIFICATION = TYPE 5: CLAY, SANDY CLAY, SILTY CLAY,
- 2. VERTICAL (GRAVITY) NET BEARING PRESSURE = 1500 PSF
- 3. LATERAL PASSIVE PRESSURES = 100 PSF/FT 4. LATERAL SLIDING RESISTANCE = 130 PSF (IN NO CASE SHALL THE LATERAL SLIDING RESISTANCE EXCEED ONE-HALF THE DEAD
- LOAD). C. SEE OTHER SECTIONS OF THE GENERAL STRUCTURAL NOTES FOR
- ADDITIONAL INFORMATION ON DRILLED PIER FOUNDATIONS. D. FOR SHORING REQUIRED TO PROTECT EXISTING STRUCTURES. CONTRACTOR SHALL SUBMIT SHORING SHOP DRAWINGS AND CALCULATIONS TO THE ENGINEER FOR REVIEW. SHOP DRAWINGS AND CALCULATIONS SHALL BEAR THE SEAL OF A GEOTECHNICAL ENGINEER REGISTERED IN THE STATE IN WHICH CONSTRUCTION WILL BE DONE.
- 2.01 CONTROLLED LOW STRENGTH MATERIAL (CLSM)
- A. CLSM SHALL BE USED AS AN UNREINFORCED FILL MATERIAL TO REPLACE EXCAVATED SOIL UNDER STRUCTURE FOUNDATIONS AND AS SHOWN ON DRAWINGS.
- B. PROPORTIONS: CEMENT CONTENT = 94 LBS/CU YD (+/- 5%); SLUMP = 7 INCHES (+/- 1 INCH): COMPRESSIVE STRENGTH AT 28 DAYS= 150 PSI (+/-50 PSI).
- 3.01 PLACEMENT
- A. PLACE FOUNDATION CONCRETE ONLY ON CLEAN, FIRM BEARING MATERIAL. VERIFY THE SUITABILITY OF THE BEARING MATERIAL WITH THE GEOTECHNICAL ENGINEER BEFORE PLACING FOUNDATIONS.
- B. PLACE DOWELS AND ANCHORS BEFORE PLACING CONCRETE. USE TEMPLATES TO ENSURE PROPER PLACEMENT.



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B. SUBMIT SHOP DRAWINGS FOR ENGINEER'S REVIEW. FABRICATE ONLY FROM REVIEWED DRAWINGS.

1.02 QUALITY ASSURANCE

A. STEEL CONSTRUCTION SHALL CONFORM TO THE SPECIFICATIONS AND STANDARDS AS CONTAINED IN THE LATEST EDITION OF THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC) MANUAL. INCLUDING THE COMMENTARY AND SUPPLEMENTS.

B. ALL STEEL FABRICATION WORK SHALL BE PREFORMED BY A FABRICATOR APPROVED BY THE OWNER.

2.01 MATERIALS

VI	CATEGORY	<u>ASTM</u>	GRADE, FY (KSI)
	OTHER ROLLED SECTIONS (ANGLES, CHANNELS, PLATES, ETC.)	A36	FY=36
	WHERE NOTED "50 KSI" ON DRAWINGS	A572	FY=50
	STEEL PIPE (TYPE E)	A53	GR B, FY=35
	STRUCTURAL ROUND (HSS)	A500	GR B, FY=42
	STRUCTURAL TUBES (HSS)	A500	GR C, FY=50
	STRUCTURAL BOLTS (U.N.O.) (TYPE N CONNECTION)	F3125	A325
	ANCHOR RODS/BOLTS	F1554	GR 36
	SHEET STEEL	A1011	GR 36
	WELDING RODS (LOW HYDROGEN)		E-70XX SERIES

2.02 ANCHOR RODS

A. PROVIDE HEADED OR THREADED AND NUTTED ANCHOR RODS. HOOKED ANCHOR RODS ARE NOT ACCEPTABLE.

B. DO NOT HEAT OR BEND ANCHOR RODS.

3.01 FIELD WELDING

A. PROVIDE HOT WORK PERMITS. HOT WORK IS ANY WORK INVOLVING WELDING, TORCH CUTTING, GRINDING, OPEN-FLAME SOLDERING, BRAZING OR SIMILAR OPERATIONS CAPABLE OF INITIATING FIRES OR EXPLOSIONS.

B. WELDING SHALL CONFORM TO THE FOLLOWING AMERICAN WELDING SOCIETY (AWS) STRUCTURAL WELDING CODES AS APPLICABLE.

 AWS D1.1 STRUCTURAL WELDING CODE-STEEL 2. AWS D1.3 STRUCTURAL WELDING CODE-SHEET STEEL

3. AWS D1.4 STRUCTURAL WELDING CODE-REINF'G STEEL

4. AWS D1.8 STRUCTURAL WELDING CODE SEISMIC SUPPLEMENT C. WELDERS SHALL HOLD VALID CERTIFICATES ISSUED BY AN ACCEPTED TESTING AGENCY WITHIN THE LAST 12 MONTHS. IF ANY CERTIFICATE IS MORE THAN 12 MONTHS OLD, SUBMIT DETAILS OF COMPANY QUALITY CONTROL.

POST-INSTALLED ANCHORS AND DOWELS

1.01 DESCRIPTION

A. POST INSTALLED ANCHORS AND DOWELS SHALL ONLY BE USED WHERE SPECIFIED ON THE CONSTRUCTION DOCUMENTS.

1.02 QUALITY ASSURANCE

A. PROVIDE SPECIAL INSPECTION IN ACCORDANCE WITH THE APPLICABLE ICC-ES REPORT. THE BUILDING CODE. AND THE GENERAL STRUCTURAL NOTES.

B. INSTALL ALL ADHESIVE ANCHORS, DOWELS AND MECHANICAL ANCHORS PER ADHESIVE MANUFACTURER'S REQUIREMENTS.

SPECIAL INSPECTION

1.01 GENERAL

A. THE OWNER OR THE REGISTERED DESIGN PROFESSIONAL ACTING AS THE OWNER'S AGENT SHALL EMPLOY ONE OR MORE SPECIAL STRUCTURAL INSPECTORS IN ACCORDANCE WITH THE APPLICABLE BUILDING CODE.

1.02 CONTRACTOR AND STRUCTURAL INSPECTOR RESPONSIBILITIES A. IT IS THE CONTRACTOR'S RESPONSIBILITY TO SELF-INSPECT THE STRUCTURAL WORK FOR CONFORMANCE WITH THE CONTRACT DOCUMENTS. PRIOR TO REQUESTING ANY SPECIAL INSPECTION, STRUCTURAL INSPECTION PROVIDED BY OTHERS DOES NOT RELIEVE THE CONTRACTOR OF THIS RESPONSIBILITY. STRUCTURAL DEVIATIONS FROM THE CONTRACT DOCUMENTS THAT ARE FOUND AT A LATER DATE AND ARE DECLARED TO BE SIGNIFICANT BY THE STRUCTURAL ENGINEER OF RECORD SHALL BE CORRECTED BY THE CONTRACTOR WITH ALL DISPATCH.

B. THE STRUCTURAL INSPECTOR IS NOT AUTHORIZED TO STOP OR DELAY THE WORK. IF THE CONTRACTOR ELECTS TO CONTINUE WITH CERTAIN WORK AFTER BEING NOTIFIED BY THE STRUCTURAL INSPECTOR THAT SUCH WORK IS UNACCEPTABLE, THE CONTRACTOR DOES SO AT THEIR OWN RESPONSIBILITY AND RISKS CORRECTING THE WORK AT A LESS OPPORTUNE TIME.

C. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING ADEQUATE FACILITIES FOR THE STRUCTURAL INSPECTOR TO INSPECT THE WORK SAFELY AND EFFICIENTLY. TWENTY-FOUR (24) HOUR NOTICE IS REQUIRED PRIOR TO INSPECTION.

D. WORK TO BE INSPECTED MUST BE COMPLETED PRIOR TO TIME OF INSPECTION. CONTRACTOR SHALL BEAR THE EXPENSE OF ADDITIONAL INSPECTIONS THAT MAY OCCUR BECAUSE OF INCOMPLETE OR INCORRECT WORK.

E. INSPECTION OF WORK PROVIDED BY THE CONTRACTOR SUCH AS TEMPORARY SHORING OR JACKING SYSTEMS SHALL BE PROVIDED BY THE CONTRACTOR'S DESIGN ENGINEER FOR THOSE SYSTEMS. THE CONTRACTOR/ENGINEER SHALL PROVIDE A LETTER/REPORT TO BOTH THE OWNER AND ENGINEER OF RECORD THAT THESE INSPECTIONS HAVE BEEN COMPLETED BEFORE EACH PHASE OF SUCH WORK CAN

F. THE STRUCTURAL INSPECTOR IS NOT RESPONSIBLE FOR OSHA COMPLIANCE OR FOR TEMPORARY CONSTRUCTION, SUCH AS

G. THE STRUCTURAL INSPECTOR IS NOT AUTHORIZED TO DIRECT OR APPROVE CHANGES FROM THE CONTRACT DOCUMENTS. IF THE CONTRACTOR WISHES TO QUESTION THE STRUCTURAL INSPECTOR'S INTERPRETATION OF THE CONTRACT DOCUMENTS, THEY MAY DO SO DIRECTLY WITH THE STRUCTURAL ENGINEER OF RECORD.

2.01 SHOP FABRICATIONS

A. SHOP FABRICATION WORK IS SUBJECT TO SPECIAL STRUCTURAL INSPECTION UNLESS THE FABRICATOR IS REGISTERED AND APPROVED BY THE BUILDING OFFICIAL TO PERFORM WORK WITHOUT SPECIAL INSPECTION.

B. FABRICATOR SHALL SUBMIT CERTIFICATE OF COMPLIANCE STATING WORK PERFORMED IS IN ACCORDANCE WITH APPROVED CONSTRUCTION DOCUMENTS.

3.01 NOTES APPLICABLE FOR SPECIAL INSPECTION TABLES BELOW A. "PERIODIC" SPECIAL INSPECTION: THE PART-TIME OR INTERMITTENT OBSERVATION OF WORK REQUIRING SPECIAL INSPECTION BY AN APPROVED SPECIAL INSPECTOR WHO IS PRESENT IN THE AREA WHERE THE WORK HAS BEEN OR IS BEING PERFORMED AND AT THE COMPLETION OF WORK. 2019 CBC CHAPTER 17.

B. "CONTINUOUS" SPECIAL INSPECTION: THE FULL-TIME OBSERVATION OF WORK REQUIRING SPECIAL INSPECTION BY AN APPROVED SPECIAL INSPECTOR WHO IS PRESENT IN THE AREA WHERE THE WORK IS BEING PERFORMED. 2019 CBC CHAPTER 17.

C. ITEMS NOT SHOWN MAY REQUIRE CONTINUOUS OR PERIODIC SPECIAL STRUCTURAL INSPECTION AT THE DISCRETION OF THE ENGINEER OF RECORD. ITEMS LISTED MAY REQUIRE ALTERNATE FREQUENCIES OF INSPECTION OTHER THAN SHOWN, UNDER THE DIRECTION OF THE ENGINEER OF RECORD.

D. "OBSERVED" IN STEEL CONSTRUCTION SPECIAL INSPECTION: THE INSPECTOR SHALL OBSERVE THESE ITEMS ON A RANDOM BASIS. OPERATIONS NEED NOT BE DELAYED PENDING THESE INSPECTIONS

E. "PERFORM" IN STEEL CONSTRUCTION SPECIAL INSPECTION: THESE TASKS SHALL BE PERFORMED FOR EACH BOLTED CONNECTION AND WELDED JOINT OR MEMBER.

3.02 REQUIRED VERIFICATION AND SPECIAL INSPECTIONS

INSPECTION OF CONCRETE CONSTRUCTION (RE: 2019 CBC 1705.3)

TYPE AND FREQUENCY OF INSPECTION

1. INSPECT REINFORCEMENT AND VERIFY PLACEMENT. CONTINUOUS ___ PERIODIC __\/_

2. INSPECT ANCHORS CAST IN CONCRETE. CONTINUOUS ___ PERIODIC _____

3. INSPECT ANCHORS POST-INSTALLED IN HARDENED CONCRETE

a. ADHESIVE ANCHORS INSTALLED IN HORIZONTALLY OR UPWARDLY INCLINED ORIENTATIONS TO RESIST SUSTAINED TENSION LOADS. CONTINUOUS ___ PERIODIC ___

b. MECHANICAL ANCHORS AND ADHESIVE ANCHORS NOT DEFINED IN CONTINUOUS ___ PERIODIC ______

4. VERIFY USE OF REQUIRED DESIGN MIX. CONTINUOUS ___ PERIODIC ______

5. PRIOR TO CONCRETE PLACEMENT, FABRICATE SPECIMENS FOR STRENGTH TESTS, PERFORM SLUMP AND AIR CONTENT TESTS, AND DETERMINE THE TEMPERATURE OF THE CONCRETE. CONTINUOUS ___ PERIODIC ____

6. INSPECT CONCRETE FOR PROPER APPLICATION TECHNIQUES. CONTINUOUS √ PERIODIC

7. VERIFY MAINTENANCE OF SPECIFIED CURING TEMPERATURE AND **TECHNIQUES** CONTINUOUS ___ PERIODIC _____

8. VERIFY IN SITU CONCRETE STRENGTH PRIOR TO REMOVAL OF SHORES AND FORMS FROM STRUCTURAL SLABS. CONTINUOUS ___ PERIODIC _\frac{\sqrt{}}{}__

9. INSPECT FORMWORK FOR SHAPE, LOCATION AND DIMENSIONS OF THE CONCRETE MEMBER BEING FORMED. CONTINUOUS ___ PERIODIC ______

REQUIRED SPECIAL INSPECTIONS AND TESTS OF CAST-IN-PLACE DEEP FOUNDATION ELEMENTS (2019 CBC, TABLE 1705.8)

TYPE AND FREQUENCY OF INSPECTION

1. INSPECT DRILLING OPERATIONS AND MAINTAIN COMPLETE AND ACCURATE RECORDS FOR EACH ELEMENT. CONTINUOUS <u>√</u> PERIODIC ___

2. VERIFY PLACEMENT LOCATIONS AND PLUMBNESS, CONFIRM ELEMENT DIAMETERS, LENGTHS, EMBEDMENT INTO BEDROCK (IF APPLICABLE), AND ADEQUATE END-BEARING STRATA CAPACITY, RECORD CONCRETE OR GROUT VOLUMES. CONTINUOUS _√_ PERIODIC ___

3. FOR CONCRETE ELEMENTS, PERFORM TESTS AND ADDITIONAL SPECIAL INSPECTIONS IN ACCORDANCE WITH SECTION 1705.3.

INSPECTION OF STEEL WELDING (RE: AISC360-16 TABLES N5.4-1, N5.4-2, & N5.4-3)

INSPECTION TASKS PRIOR TO WELDING

1. THE FOLLOWING TASK(S) SHALL BE **OBSERVED**.

A. WELDER QUALIFICATION RECORDS AND CONTINUITY RECORDS.

B. MATERIAL IDENTIFICATION (TYPE/GRADE).

C. WELDER IDENTIFICATION SYSTEM.

D. FIT-UP OF GROOVE WELDS (INCLUDING JOINT GEOMETRY, JOINT PREPARATIONS, DIMENSIONS, CLEANLINESS, TACKING, AND BACKING).

E. FIT-UP OF CJP GROOVE WELDS AT HSS T-, Y- AND K- JOINTS WITHOUT BACKING (INCLUDING JOINT GEOMETRY, JOINT PREPARATIONS, DIMENSIONS, CLEANLINESS, AND TACKING),

F. CONFIGURATION AND FINISH OF ACCESS HOLES G. FIT-UP OF FILLET WELDS (INCLUDING DIMENSIONS, CLEANLINESS,

2. THE FOLLOWING TASKS SHALL BE **PERFORMED**

A. WPS AVAILABLE

AND TACKING).

B. MANUFACTURER CERTIFICATIONS FOR WELDING CONSUMABLES **AVAILABLE**

INSPECTION TASKS DURING WELDING

THE FOLLOWING TASK(S) SHALL BE OBSERVED.

A. CONTROL AND HANDLING OF WELDING CONSUMABLES (INCLUDING PACKAGING AND EXPOSURE CONTROL)

B. NO WELDING OVER CRACKED TACK WELDS.

C. ENVIRONMENTAL CONDITIONS (INCLUDING WIND SPEED WITHIN LIMITS, PRECIPITATION, AND TEMPERATURE).

D. WPS FOLLOWED (INCLUDING SETTINGS ON WELDING EQUIPMENT TRAVEL SPEED. SELECTED WELDING MATERIALS. SHIELDING GAS TYPE/FLOW RATE, PREHEAT APPLIED, INTERPASS TEMPERATURE MAINTAINED (MIN/MAX), AND PROPER POSITION (F, V, H, OH)).

E. WELDER IDENTIFICATION SYSTEM (INCLUDING INTERPASS AND FINAL CLEANING, EACH PASS WITHIN PROFILE LIMITATIONS, AND EACH PASS MEETS QUALITY REQUIREMENTS).

A. PLACEMENT AND INSTALLATION OF STEEL HEADED STUD ANCHORS.

INSPECTION TASKS AFTER WELDING

1. THE FOLLOWING TASK(S) SHALL BE **OBSERVED**.

2. THE FOLLOWING TASK(S) SHALL BE **PERFORMED**.

A. WELDS CLEANED.

B. NO PROHIBITED WELDS HAVE BEEN ADDED WITHOUT THE APPROVAL OF THE EOR.

2. THE FOLLOWING TASK(S) SHALL BE **PERFORMED**

A. SIZE. LENGTH, AND LOCATION OF WELDS. B. WELDS MEET VISUAL ACCEPTANCE CRITERIA (INCLUDING CRACK PROHIBITION, WELD/BASE-METAL FUSION, CRATER CROSS SECTION CRACK PROHIBITION, WELD PROFILES, WELD SIZE, UNDERCUT, AND POROSITY).

C. ARC STRIKES.

D. K-AREA.

E. WELD ACCESS HOLES IN ROLLED HEAVY SHAPES AND BUILT-UP **HEAVY SHAPES.**

F. BACKING REMOVED AND WELD TABS REMOVED (IF REQUIRED). G. REPAIR ACTIVITIES.

H. DOCUMENT ACCEPTANCE OR REJECTION OF WELDED JOINT OR MEMBER.

INSPECTION OF POST-INSTALLED ANCHORS AND DOWELS (RE: PRODUCT ICC-ES EVALUATION REPORT)

INSPECTION ITEM AND FREQUENCY OF INSPECTION

1. ADHESIVE ANCHORS AND REINFORCEMENT DOWELS

• THE FOLLOWING TASKS SHALL BE PERFORMED CONTINUOUSLY. A. VERIFY DRILL BIT TYPE AND SIZE.

B. HOLE DEPTH AND CLEANING PROCEDURE

C. PRODUCT DESCRIPTION INCLUDING NAME, ROD TYPE,

DIAMETER, AND LENGTH. D. ADHESIVE EXPIRATION DATE.

E. PROPER INSTALLATION TECHNIQUE FOR ADHESIVE ANCHORS.

2. MECHANICAL ANCHORS

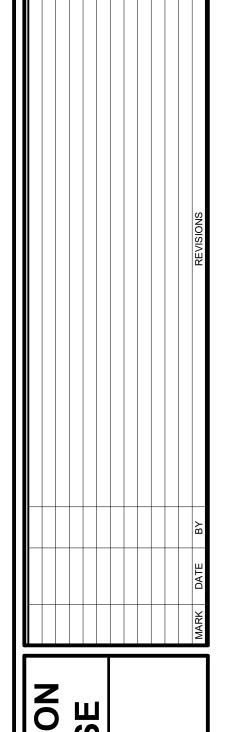
THE FOLLOWING TASKS SHALL BE PERFORMED CONTINUOUSLY.

A. VERIFY DRILL BIT TYPE AND SIZE.

B. HOLE DEPTH AND CLEANING PROCEDURE C. PRODUCT DESCRIPTION INCLUDING NAME, ANCHOR TYPE,

DIAMETER, AND LENGTH. D. PROPER INSTALLATION TECHNIQUE FOR MECHANICAL ANCHORS AND TIGHTENING TORQUE.



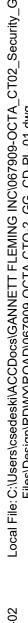


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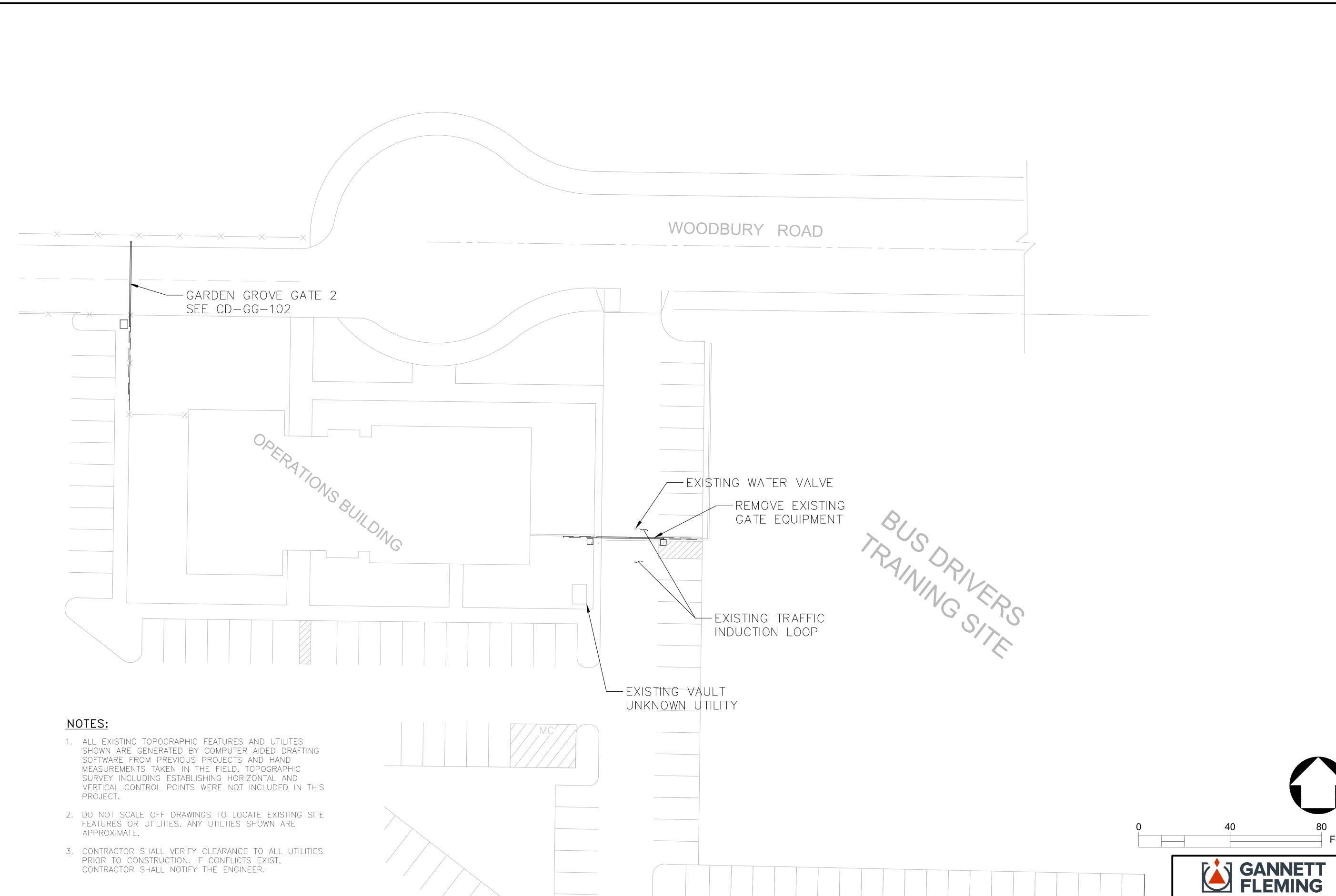
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CG-GG-101





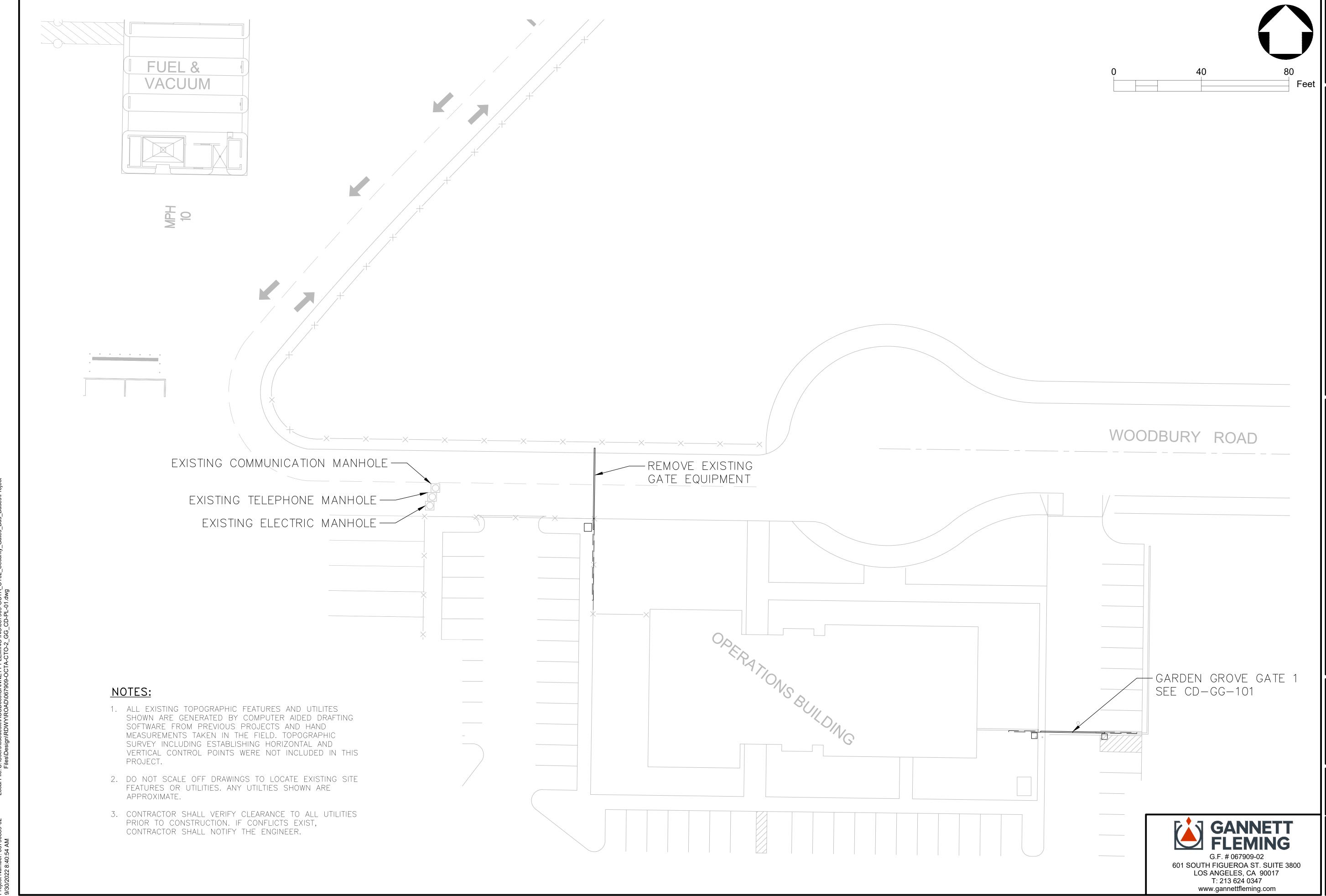




067909-02 01.20.2023 AS INDICATED **CD-GG-101**

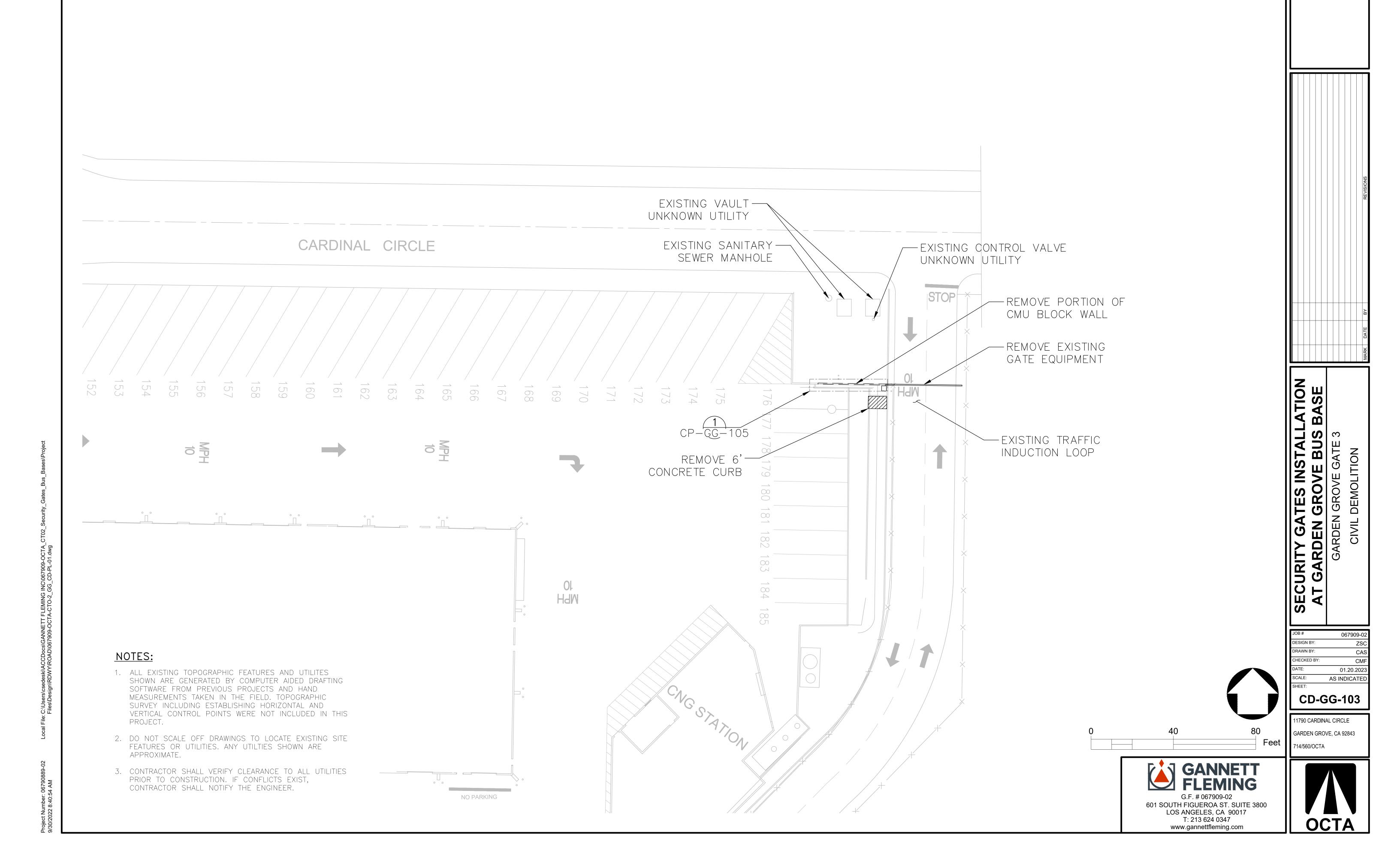
11790 CARDINAL CIRCLE GARDEN GROVE, CA 92843 Feet | | _{714/560/OCTA}

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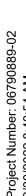


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CD-GG-102

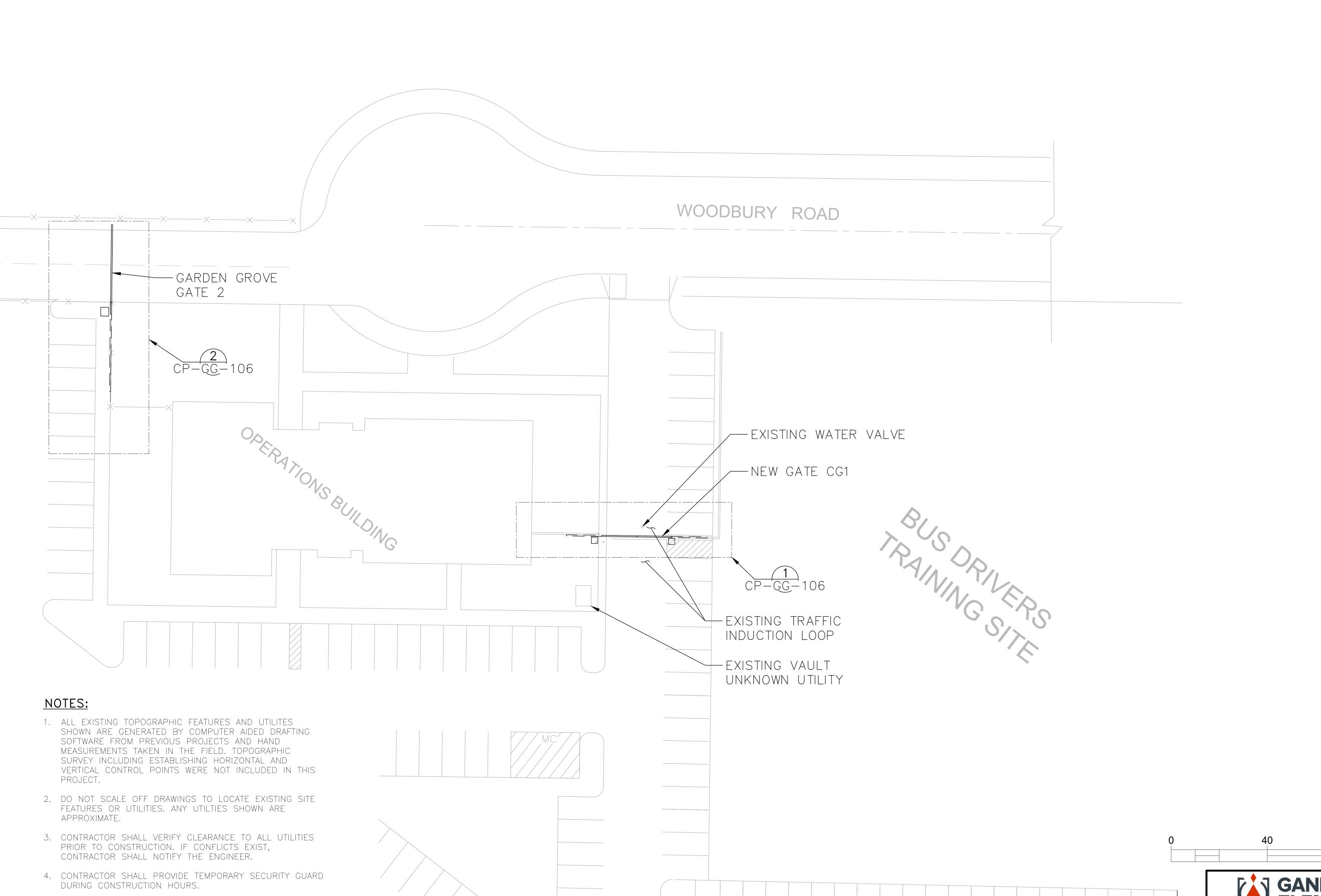






5. IF GATES 1 AND 2 ARE CONSTRUCTED AT THE SAME TIME,

GATE 2 SHALL BE CLOSED WITH A LOCKABLE ROLL—AWAY GATE DURING NON—CONSTRUCTION HOURS.



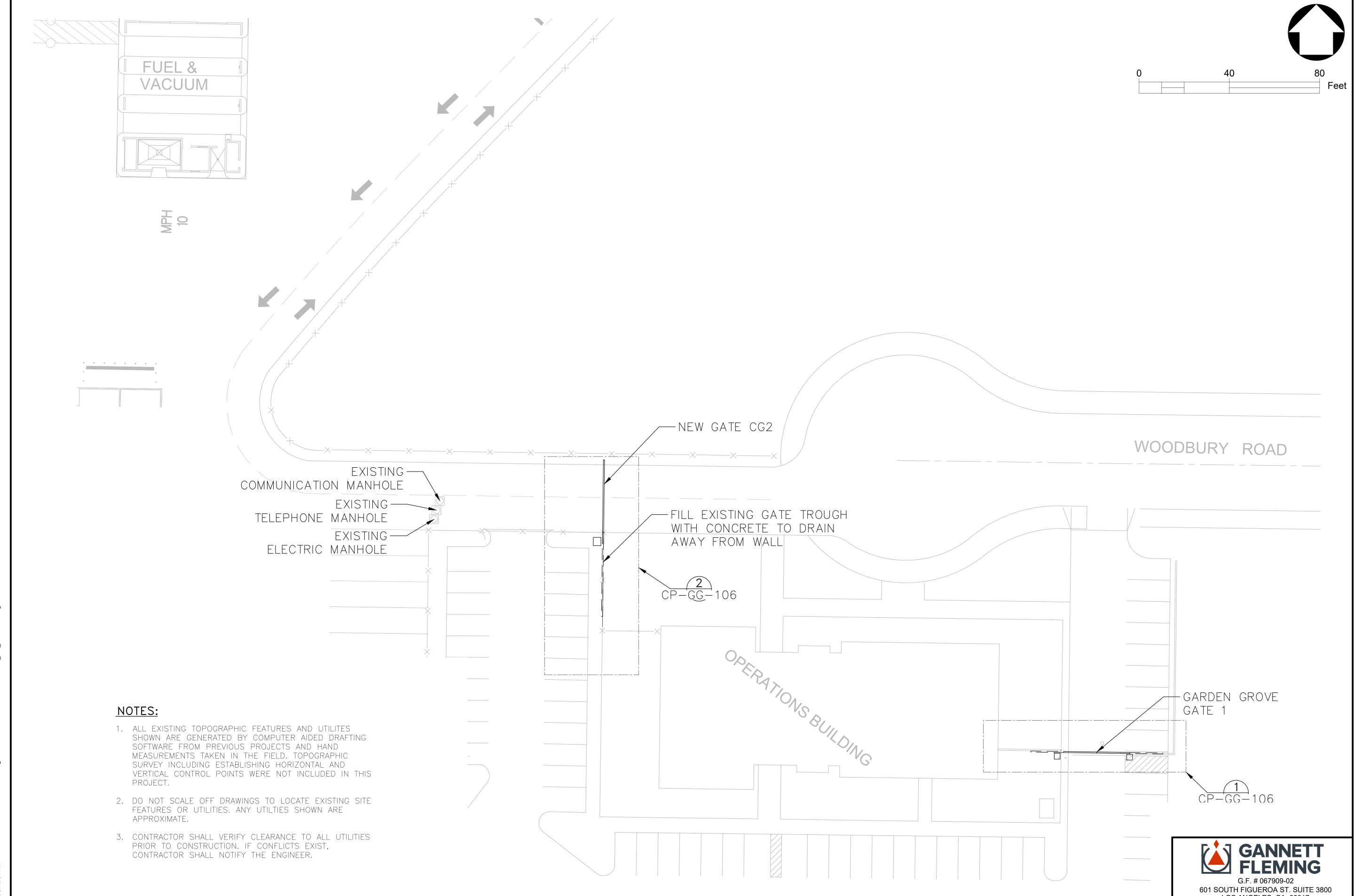
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CP-GG-101

11790 CARDINAL CIRCLE GARDEN GROVE, CA 92843

Feet | | _{714/560/OCTA}





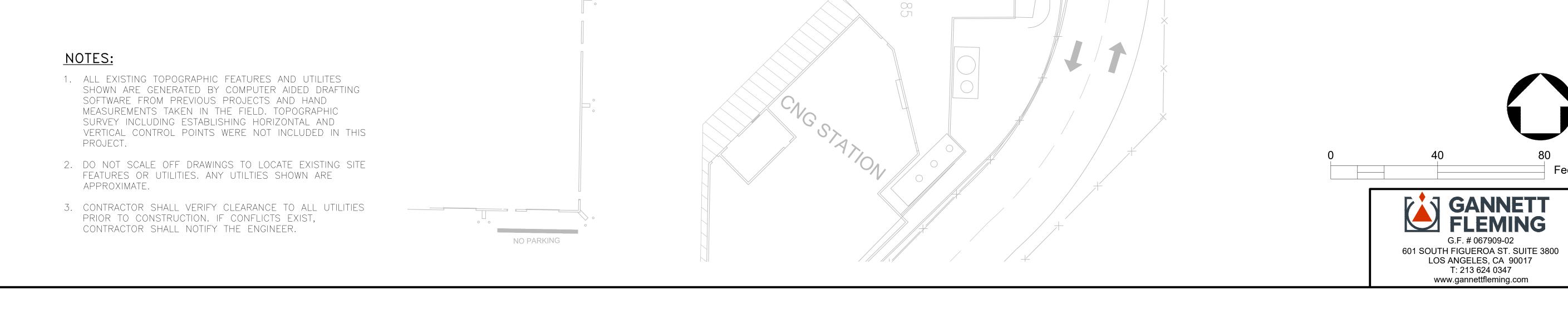
OCTA

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CP-GG-102

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HdM

EXISTING VAULT —

EXISTING SANITARY -

SEWER MANHOLE

CP-GG-106

-EXISTING CONTROL VALVE

-NEW GATE CG3

EXISTING TRAFFIC

-6'x9' GUARD BOOTH

INDUCTION LOOP

UNKNOWN UTILITY

STOP

┌6'**-**0"

UNKNOWN UTILITY

FILL EXISTING GATE TROUGH-

WITH CONCRETE TO DRAIN

AWAY FROM WALL

ASPHALT RAMP

CARDINAL CIRCLE

067909-02 01.20.2023 AS INDICATED

CP-GG-103

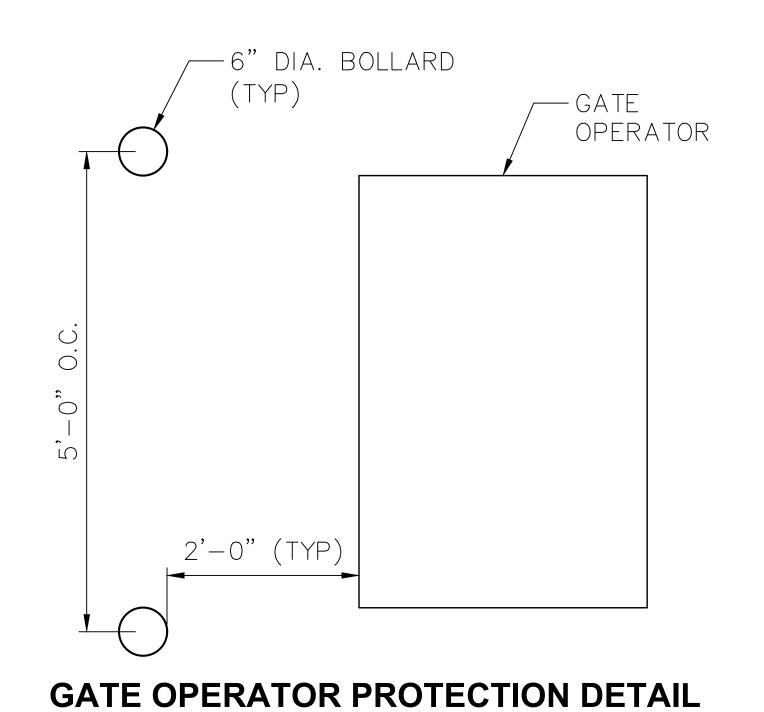
11790 CARDINAL CIRCLE GARDEN GROVE, CA 92843

Feet _{714/560/OCTA}

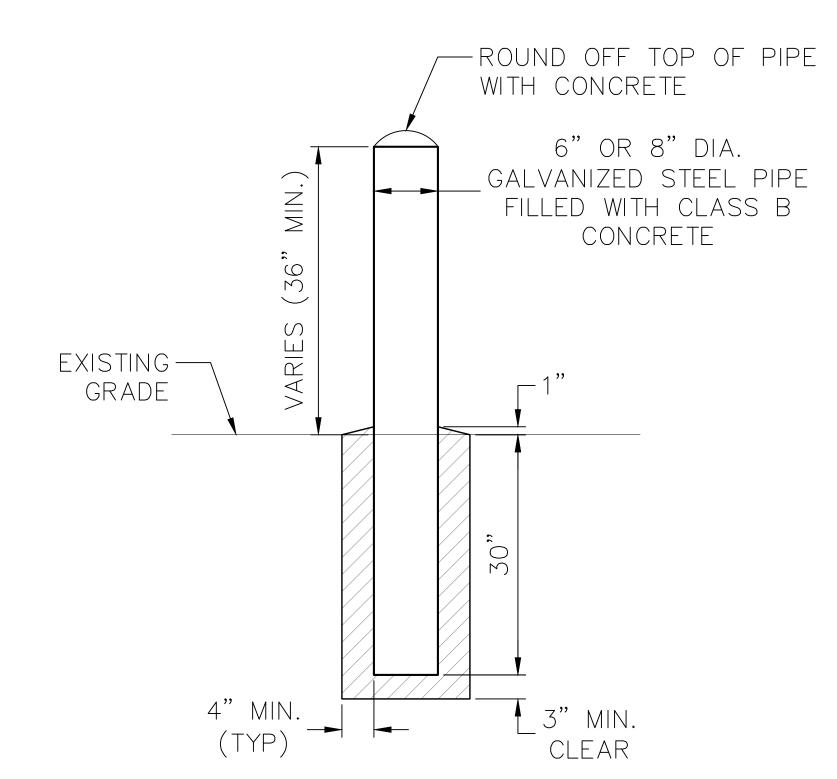
GANNETT FLEMING



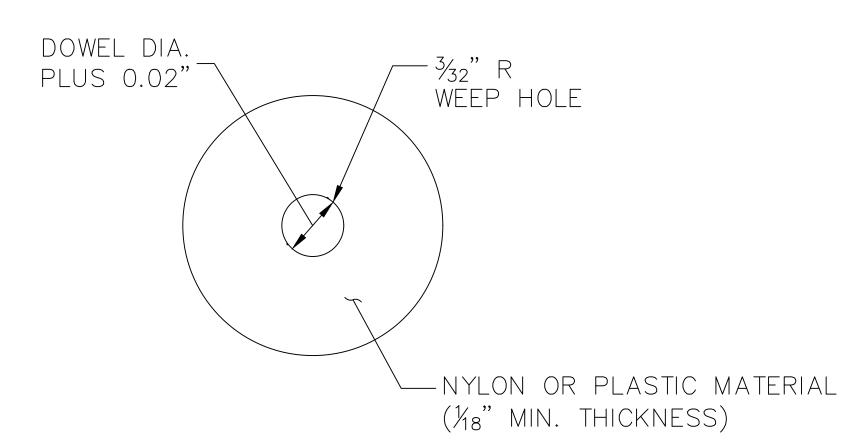




SCALE: 1" = 1'

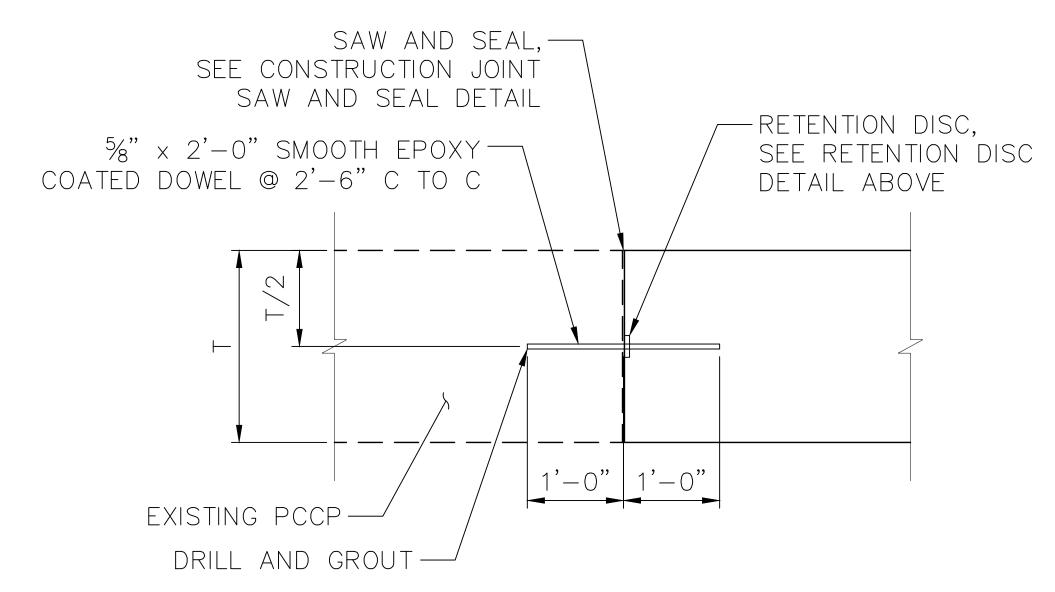


BOLLARD DETAIL SCALE: 1" = 1'



RETENTION DISC DETAIL

SCALE: 1" = 1"

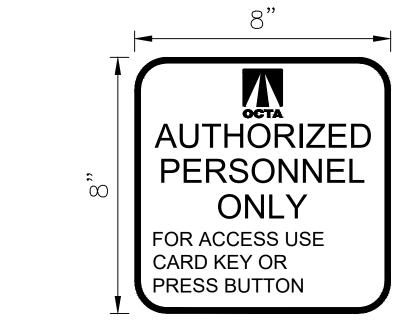


LONGITUDINAL CONSTRUCTION JOINT DETAIL SCALE: 1" = 1'

PCCP REPAIR DETAIL

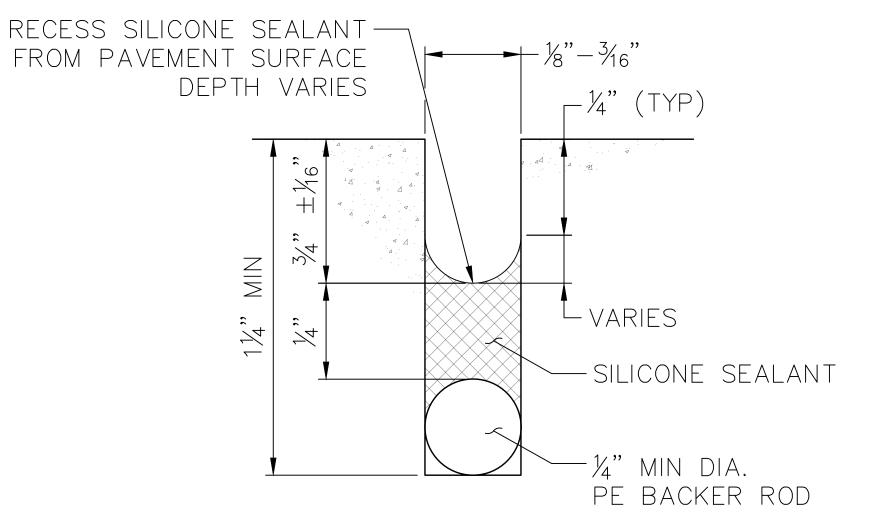
NOTES:

- CONTRACTOR SHALL REMOVE EXISTING PCCP TO NEAREST EXISTING PAVEMENT JOINT.
- 2. THICKNESS "T" SHALL MATCH EXISTING CONDITIONS.



"AUTHORIZED PERSONNEL ONLY" **SIGN DETAIL**

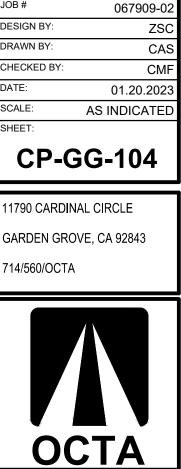
SCALE: 1" = 3"

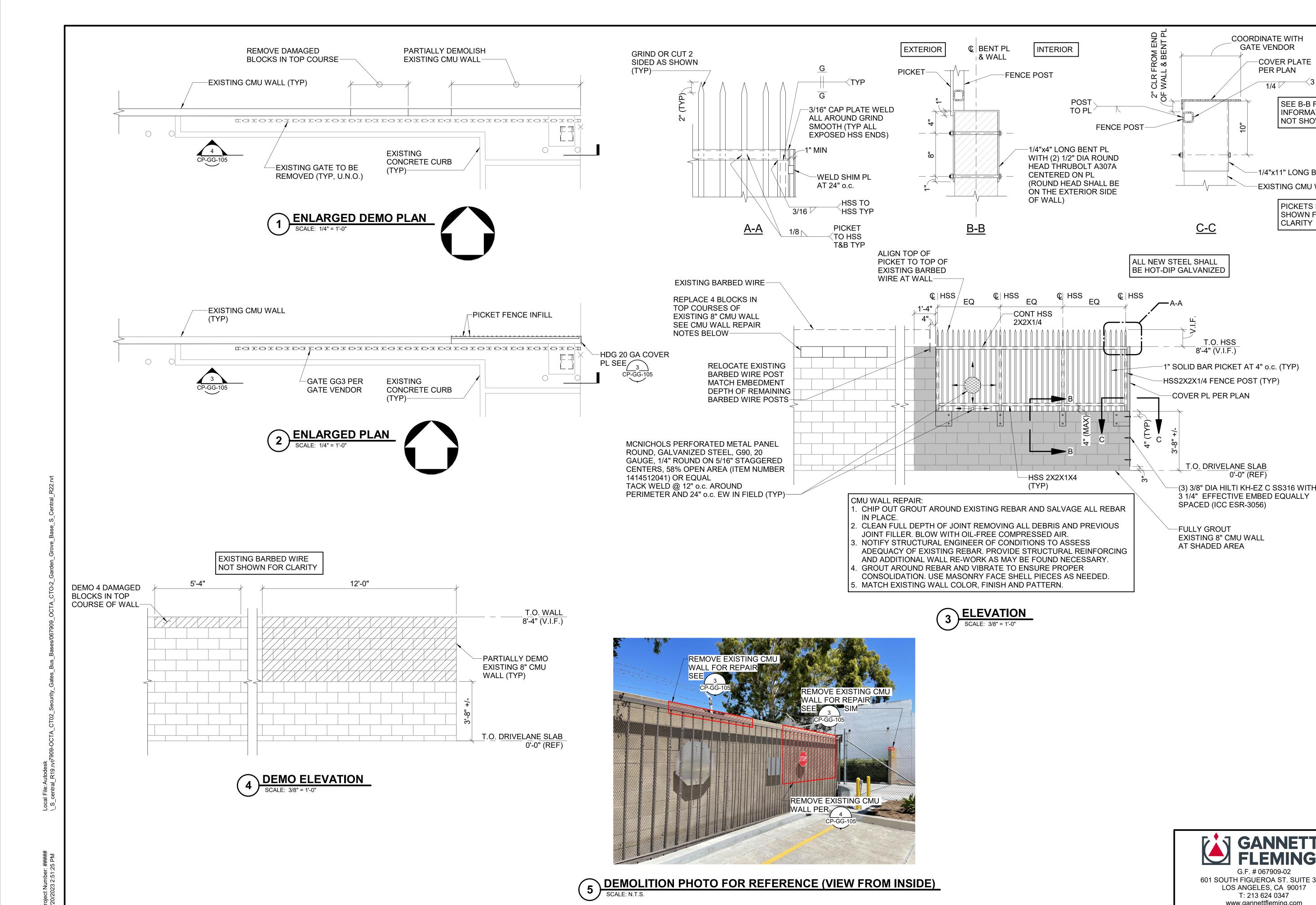


CONSTRUCTION JOINT SAW AND SEAL DETAIL

SCALE: N.T.S.







|| S

DETAILS

AND

GATE VENDOR

-COVER PLATE

√3 SIDES

SEE B-B FOR

INFORMATION

NOT SHOWN

-1/4"x11" LONG BENT PL

PICKETS NOT

SHOWN FOR

CLARITY

-EXISTING CMU WALL

PER PLAN

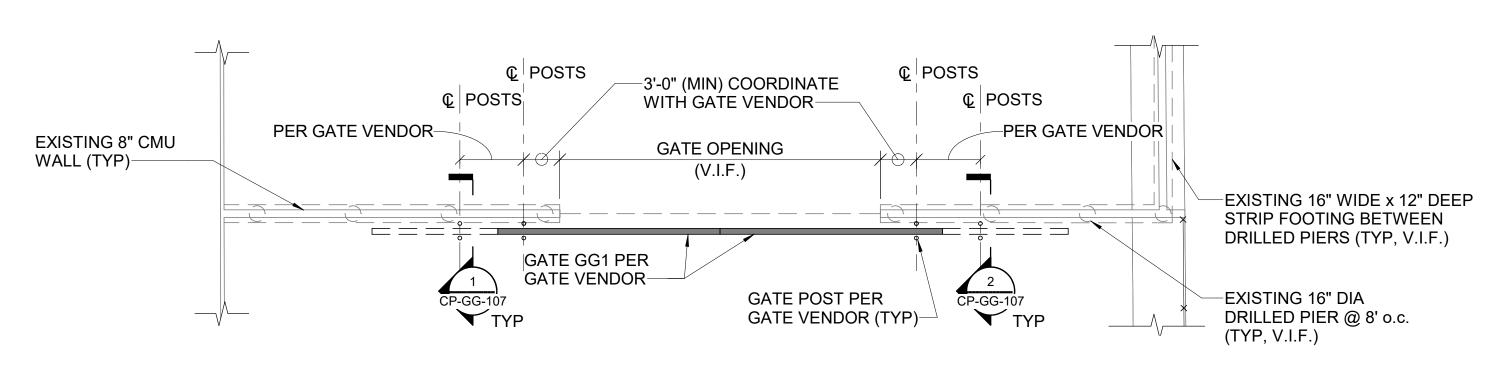
067909-02 CHECKED BY 01.20.2023 AS INDICATE

CP-GG-105

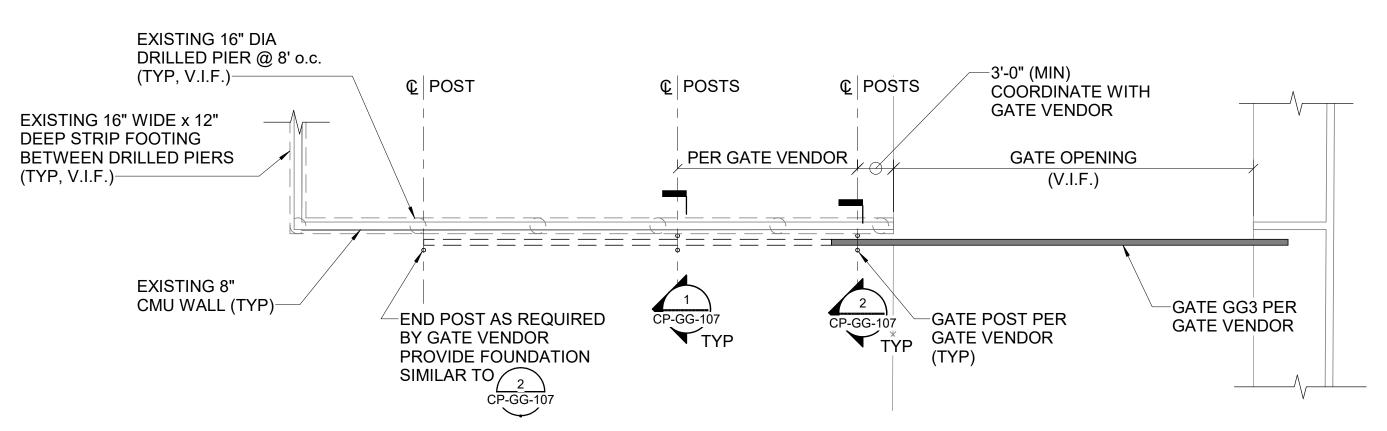
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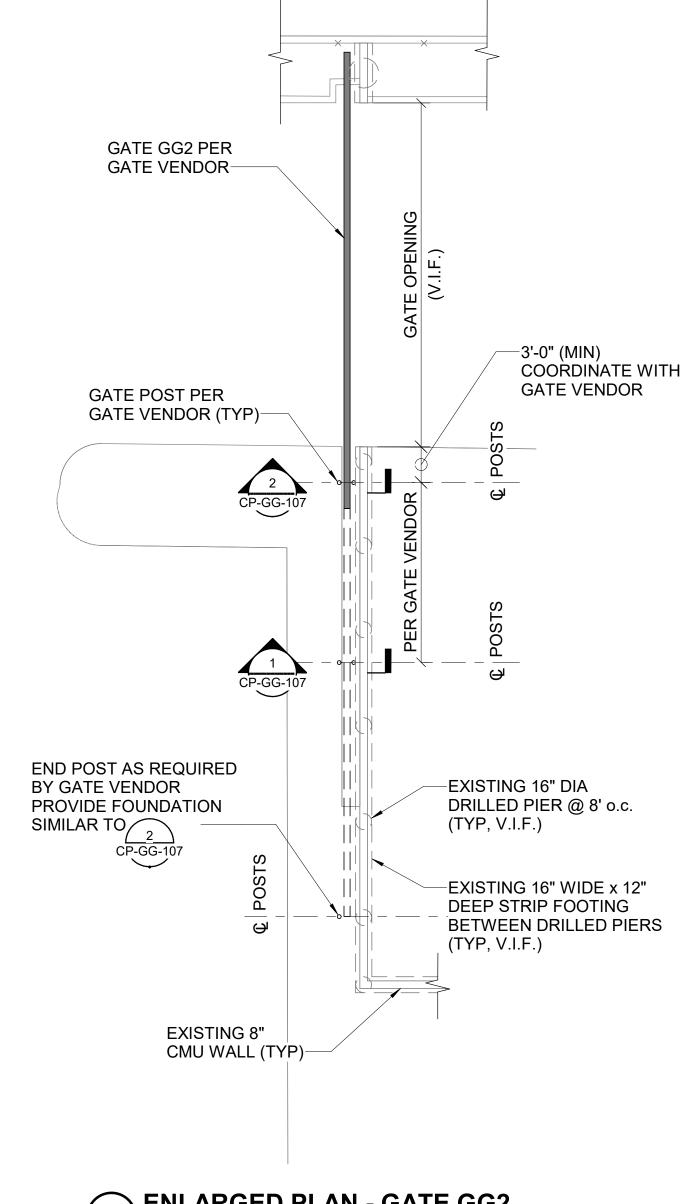




1 ENLARGED PLAN - GATE GG1 SCALE: 1/8" = 1'-0"



ENLARGED PLAN - GATE GG3



2 ENLARGED PLAN - GATE GG2

SCALE: 1/8" = 1'-0"



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||CP-GG-106| 11790 CARDINAL CIRCLE GARDEN GROVE, CA 92843

SECURITY GATES INS
AT GARDEN GROVE
CIVIL/STRUCTUF
ENLARGED GATE F

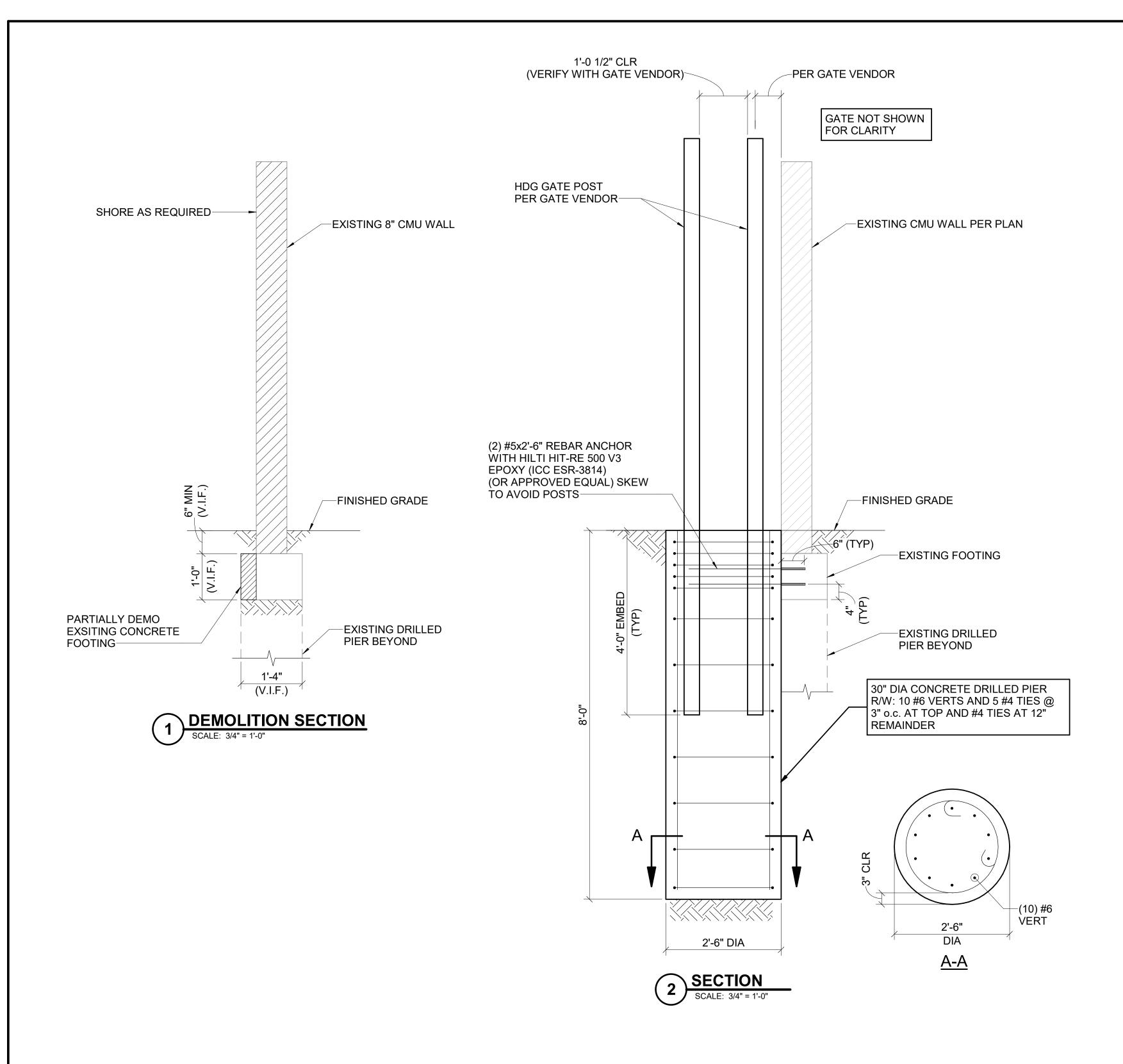
067909-02

01.20.2023 1/8" = 1'-0'

CHECKED BY:







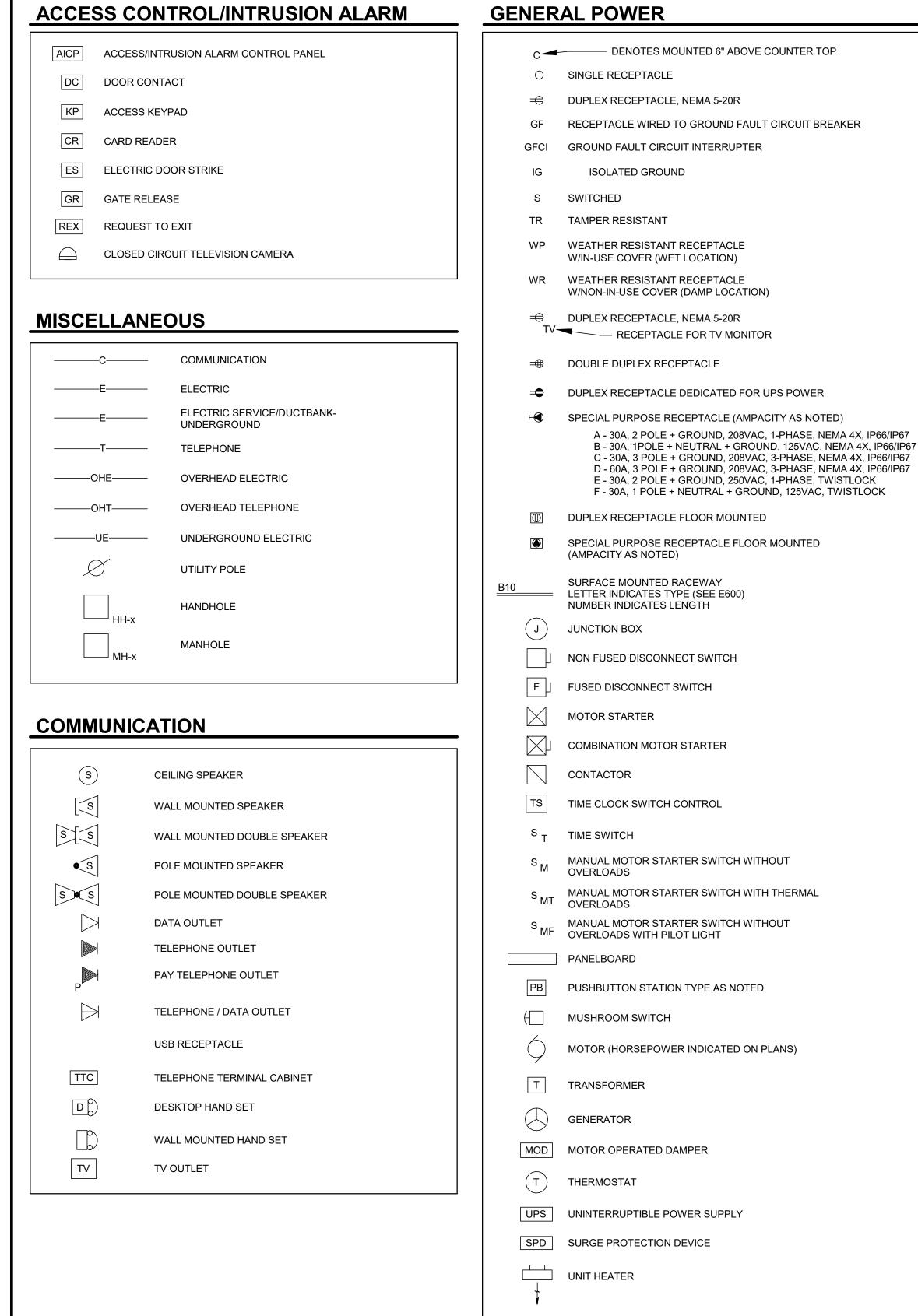


JOB # 067909-02
DESIGN BY: GP
DRAWN BY: JC
CHECKED BY: TK
DATE: 01.20.2023
SCALE: 3/4" = 1'-0"

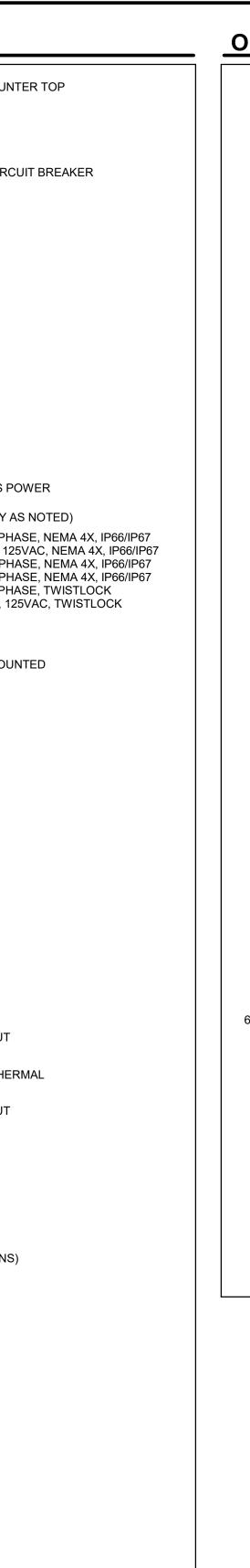
||CP-GG-107

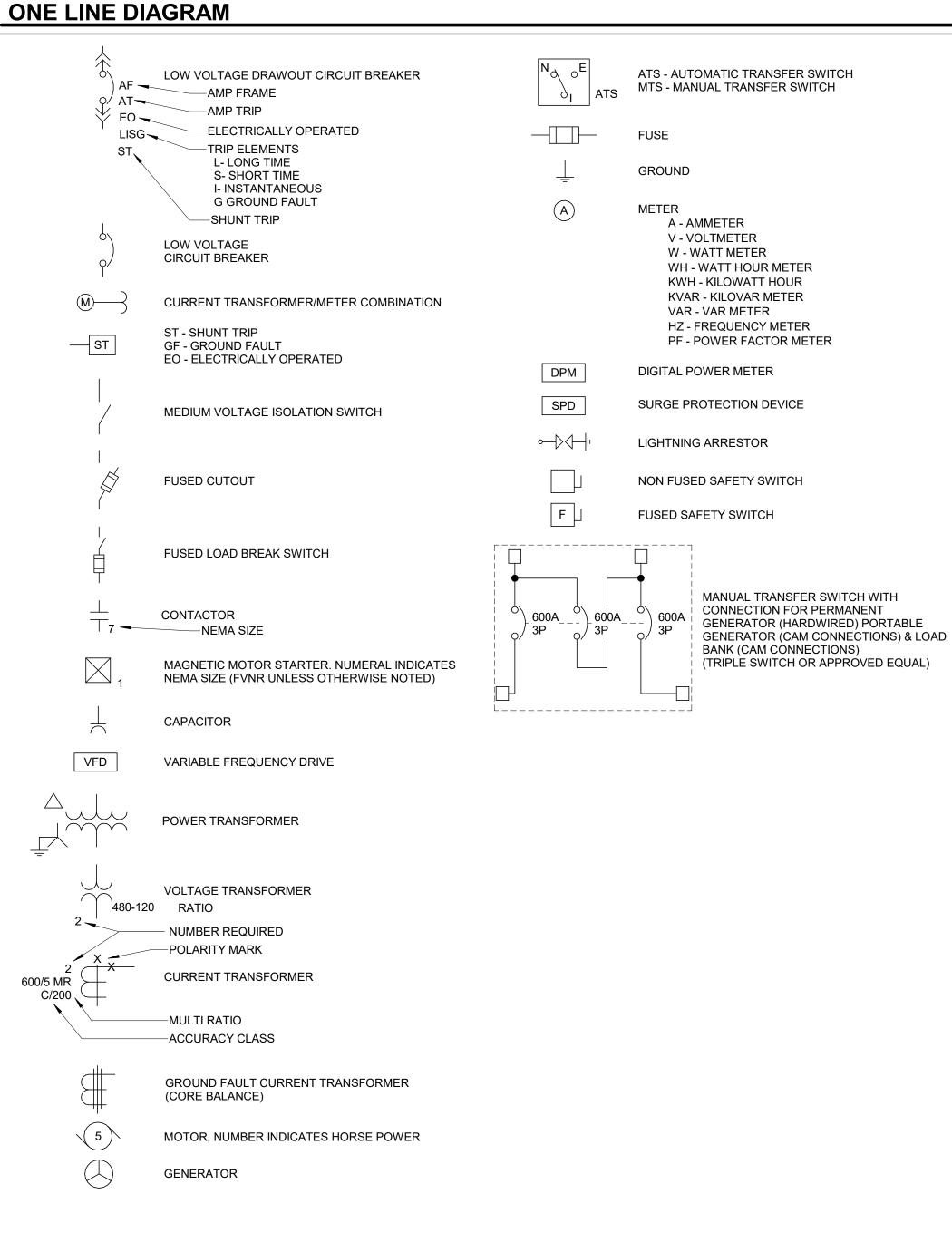


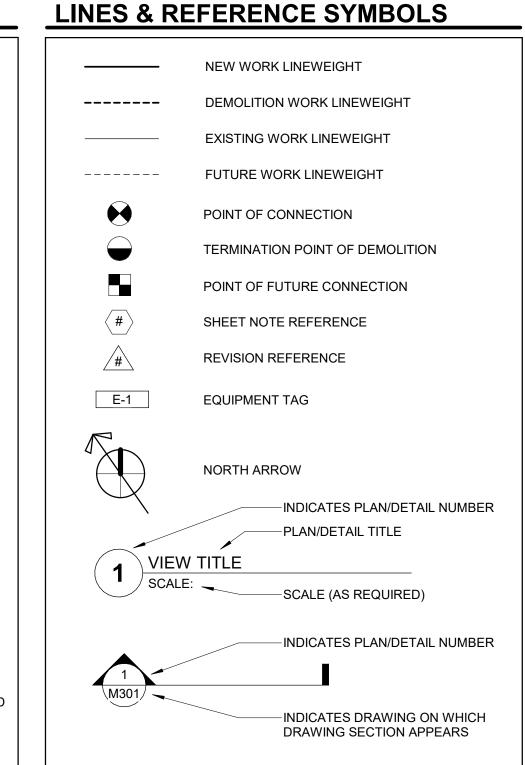


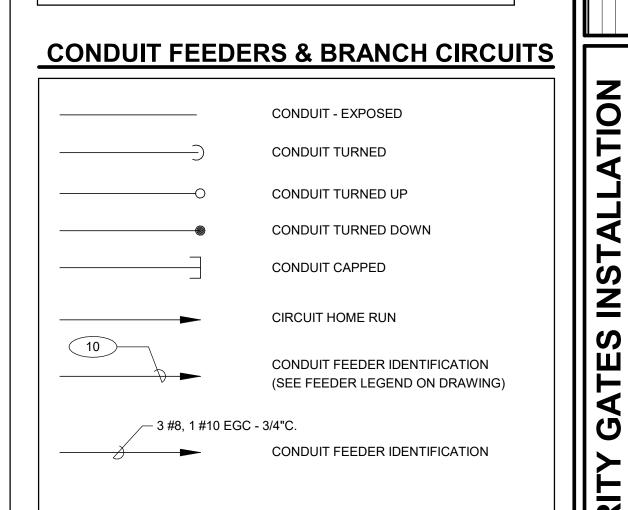


VFD VARIABLE FREQUENCY DRIVE

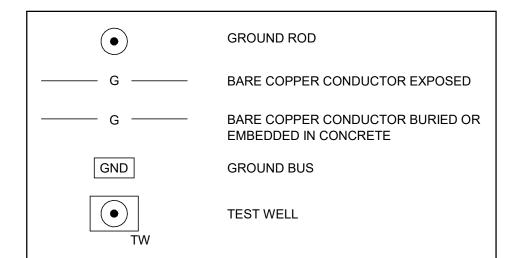


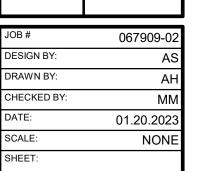












E-GG-001





SCOPE OF WORK

- 1. PROVIDE POWER REQUIREMENT TO SERVE PROPOSED GATES AT GARDEN GROVE BUS BASE.
- a. THIS INCLUDES DEMOLISHING EXISTING FEEDERS, CONDUITS, CIRCUIT BREAKERS AS SHOWN ON PLANS.
- b. PROPOSED DESIGN WILL PROVIDE A DISCONNECT SHWITCHES AS SHOWN ON THE RENOVAION PLANS ON SHEET E-GG-101 AND E-GG-102 AND ON EQUIPMENT/FEEDER SCHEDULE ON SHEET E-SA-601. PROVIDE NEW FEEDERS IN NEW CONDUITS FROM EXISTING PANELS '3C' AND 'MPZ-GG1' TO SERVE THE PROPOSED GATES ASSEMBLY THROUGH A DISCONNECTING MEANS
- 2. PROVIDE POWER REQUIREMENT TO SERVE PROPOSED SECURITY CAMERAS, GUARD HOUSE.
- a. PROPOSED DESIGN INCLUDES PROVIDING NEW FEEDERS, CONDUITS, CIRCUIT BREAKERS AS SHOWN ON THE RENOVAION PLANS ON SHEET E-GG-101 AND E-GG-102 AND ON EQUIPMENT/FEEDER SCHEDULE ON SHEET E-GG-601. PROVIDE NEW FEEDERS IN NEW CONDUITS FROM EXISTING PANELS '3C' AND 'MPZ-GG1' TO SERVE THE PROPOSED SECURITY CAMERAS, GUARD
- 3. PROVIDE NEW 80A, 120/240V, 1P, 3W MINI-POWER CENTER, PROVIDE NEW FEEDERS IN NEW CONDUITS FROM EXISTING 'MCC'.

GENERAL NOTES

- THE SEISMIC BRACING AND ANCHORAGE OF ELECTRICAL CONDUITS, BUS DUCT. WIREWAY, AND CABLE TRAY SHALL BE IN ACCORDANCE WITH CBC 2019, FOR 1.0 IMPORTANCE FACTOR. RESTRAINT SYSTEM SHALL BE DESIGN AND BUILD BY THE CONTRACTOR PER SPECIFICATION SECTION 260549.
- ALL ELECTRICAL MATERIALS AND EQUIPMENT SHALL BE NEW AND SHALL BE LISTED BY UNDERWRITER'S LABORATORIES (UL) AND BEAR THEIR LABEL, OR LISTED AND CERTIFIED BY A NATIONALLY RECOGNIZED TESTING AUTHORITY WHERE UL DOES NOT HAVE A LISTING. CUSTOM MADE EQUIPMENT SHALL HAVE COMPLETE TEST DATA SUBMITTED BY THE MANUFACTURER ATTESTING TO ITS SAFETY. IN ADDITION, THE MATERIALS, EQUIPMENT, AND INSTALLATION SHALL COMPLY WITH THE REQUIREMENTS
- ELECTRICAL EQUIPMENT AND INSTALLATION SHALL COMPLY WITH ALL APPLICABLE REQUIREMENTS OF THE FOLLOWING CODES AND STANDARDS:
 - A. AMERICAN SOCIETY OF TESTING MATERIALS (ASTM)
 - INSULATED POWER CABLE ENGINEERS ASSOCIATION (IPCEA)
 - C. NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA)
 - D. AMERICAN STANDARD ASSOCIATION (ASA) NATIONAL FIRE PROTECTION AGENCY (NFPA)
 - AMERICAN NATIONAL STANDARD INSTITUTE (ANSI) CALIFORNIA ELECTRICAL CODE (CEC) - LATEST EDITION
 - H. CALIFORNIA CODE OF REGULATIONS TITLE 24 (CCR) INSTITUTE OF ELECTRICAL AND ELECTRONIC ENGINEERS (IEEE)
 - ALL LOCAL CODES HAVING JURISDICTION.
 - WHERE THE CODES HAVE DIFFERENT LEVELS OF REQUIREMENTS, L. THE MOST STRINGENT RULE SHALL APPLY.
- THE CONTRACTOR SHALL VISIT THE SITE INCLUDING ALL AREAS INDICATED ON THE DRAWINGS, WITH A FULL KNOWLEDGE THAT SOME OF THE AREAS REQUIRE SPECIAL SECURITY ARRANGEMENT TO GAIN ACCESS. IN SUCH CASE, IT SHALL BE THE CONTRACTOR'S SOLE RESPONSIBILITY TO MAKE ALL ARRANGEMENT TO VISIT THESE AREAS. HE SHALL THOROUGHLY FAMILIARIZE HIMSELF WITH THE EXISTING CONDITIONS AND ACCEPT SUCH CONDITIONS UNDER WHICH HE SHALL BE REQUIRED TO PERFORM
- IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO OBTAIN A COMPLETE SET OF CONTRACT DOCUMENTS, ADDENDA, DRAWINGS AND SPECIFICATIONS. HE SHALL CHECK THE DRAWINGS OF THE OTHER TRADES AND SHALL CAREFULLY READ THE ENTIRE SPECIFICATIONS AND DETERMINE HIS RESPONSIBILITIES. FAILURE TO DO SO SHALL NOT RELEASE THE CONTRACTOR FROM DOING THE WORK IN COMPLETE ACCORDANCE WITH THE DRAWINGS AND SPECIFICATIONS.
- THE CONTRACTOR SHALL SECURE AND PAY FOR ALL PERMITS, FEES, CHARGES, AND INCIDENTAL COSTS NECESSARY FOR EXECUTION AND COMPLETION OF ELECTRICAL FIRE ALARM SYSTEM WORK, INCLUDING ALL CHARGES BY STATE, COUNTY AND LOCAL GOVERNMENTAL AGENCIES.
- THE CONTRACTOR SHALL COORDINATE HIS WORK WITH OTHER TRADES AT THE SITE. ANY DISCREPANCIES, AMBIGUITIES OR CONFLICTS SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT DURING BID TIME FOR CLARIFICATION. ANY SUCH CONFLICTS NOT CLARIFIED PRIOR TO BID SHALL BE SUBJECT TO THE INTERPRETATION OF THE ARCHITECT.
- THE CONTRACTOR SHALL PROVIDE AND KEEP UP-TO-DATE A COMPLETE RECORD SET OF DRAWINGS. THESE PRINTS SHALL BE CORRECTED DAILY AND SHOW EVERY CHANGE FROM THE ORIGINAL DRAWINGS. THIS SET OF DRAWINGS SHALL BE KEPT ON THE JOB SITE AND SHALL BE USED ONLY AS A RECORD SET. THIS SHALL NOT BE CONSTRUED AS AUTHORIZATION FOR THE CONTRACTOR TO MAKE CHANGES IN THE LAYOUT WITHOUT DEFINITE INSTRUCTION IN EACH CASE. UPON COMPLETION OF THE WORK, A SET OF REPRODUCIBLE CONTRACT DRAWINGS SHALL BE OBTAINED FROM THE ARCHITECT, AND ALL CHANGES AS NOTED ON THE RECORD SET OF DRAWINGS SHALL BE INCORPORATED THEREON WITH BLACK INK IN A NEAT, LEGIBLE, UNDERSTANDABLE AND PROFESSIONAL
- IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE TEMPORARY POWER FACILITIES AND CONNECTIONS FOR ALL FEEDERS OR SYSTEMS BEING DISCONNECTED IN ORDER TO MAINTAIN SYSTEMS IN OPERATION OR WHERE SAID FEEDERS OR SYSTEMS REQUIRE EMERGENCY STANDBY POWER.
-). AFTER ALL REQUIREMENTS OF THE SPECIFICATIONS AND/OR THE DRAWINGS HAVE BEEN FULLY COMPLETED. REPRESENTATIVES OF THE UNIVERSITY REPRESENTATIVE WILL INSPECT THE WORK. THE CONTRACTOR SHALL PROVIDE COMPETENT PERSONNEL TO DEMONSTRATE THE OPERATION OF ANY ITEM OR SYSTEM TO THE FULL SATISFACTION OF EACH REPRESENTATIVE. FINAL ACCEPTANCE OF THE WORK WILL BE MADE BY THE UNIVERSITY REPRESENTATIVE AFTER RECEIPT OF APPROVAL AND RECOMMENDATION OF ACCEPTANCE FROM EACH REPRESENTATIVE.
- 1. THE CONTRACTOR SHALL FURNISH A MINIMUM OF ONE YEAR WRITTEN GUARANTEE OF MATERIALS AND WORKMANSHIP FROM THE DATE OF SUBSTANTIAL COMPLETION.
- 2. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO REVIEW AND TO COORDINATE WITH THE MECHANICAL, FIRE PROTECTION AND PLUMBING DRAWINGS FOR DUCTS, LINES AND EQUIPMENT.
- 3. ALL FINAL CONNECTIONS TO, AND INSTALLATION OF UNIVERSITY REPRESENTATIVE FURNISHED EQUIPMENT SHALL BE MADE BY THE CONTRACTOR.
- 14. COORDINATE WITH OTHER TRADES AS TO THE EXACT LOCATION OF THEIR RESPECTIVE EQUIPMENT. SUPPLY POWER AND MAKE CONNECTION TO MOTORS AND EQUIPMENT REQUIRING ELECTRICAL CONNECTIONS AS INDICATED ON THE SINGLE LINE DIAGRAM ELECTRICAL DRAWINGS, AND DRAWINGS OF OTHER TRADES. REVIEW THE DRAWINGS OF OTHER TRADES FOR CONTROL DIAGRAMS, SIZE AND LOCATION OF EQUIPMENT. DISCONNECT SWITCHES, STARTERS, WIRING, CONTROLS, AND CONDUIT FOR ELEVATOR ESCALATOR MECHANICAL, PLUMBING AND FOUNTAIN OPERATION SHALL BE PROVIDED. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING PROVIDE MANUFACTURER'S SHOP DRAWINGS PRIOR TO ROUGHING IN ALL CONDUIT TO THIS EQUIPMENT.
- 5. EXACT METHOD AND LOCATION OF CONDUIT PENETRATION AND OPENINGS IN CONCRETE WALLS OR FLOORS OR STRUCTURAL STEEL MEMBERS SHALL BE AS DIRECTED BY THE STRUCTURAL ENGINEER. PERFORM CORING, SAWCUTTING, PATCHING, AND REFINISHING OF EXISTING WALLS AND SURFACES WHEREVER IT IS NECESSARY TO PENETRATE. OPENINGS SHALL BE SEALED IN AN APPROVED METHOD TO MEET THE FIRE RATING OF THE PARTICULAR WALL, FLOOR OR CEILING. EXACT METHOD AND LOCATIONS OF CONDUIT PENETRATIONS AND OPENINGS IN CONCRETE WALLS OR FLOORS SHALL BE UL APPROVED.
- ROUTE EXPOSED CONDUIT AND CONDUIT ABOVE ACCESSIBLE CEILING SPACES PARALLEL AND PERPENDICULAR TO WALLS AND ADJACENT PIPING. ARRANGE CONDUIT TO MAINTAIN HEADROOM AND TO PRESENT A NEAT APPEARANCE CONDUIT SHALL NOT BE INSTALLED IN ANY FLOOR SLAB. CONDUIT SHALL BE INSTALLED CONCEALED IN THE CEILING SPACE, CONCEALED IN WALLS, OR BELOW SLAB ON GRADE UNLESS NOTED OTHERWISE.
- ROUTE EXPOSED CONDUIT AND CONDUIT ABOVE ACCESSIBLE CEILING SPACES PARALLEL AND PERPENDICULAR TO WALLS AND ADJACENT PIPING. ARRANGE CONDUIT TO MAINTAIN HEADROOM AND TO PRESENT A NEAT APPEARANCE.
- 8. CONDUIT SHALL NOT BE INSTALLED IN ANY FLOOR SLAB. CONDUIT SHALL BE INSTALLED CONCEALED IN THE CEILING SPACE, CONCEALED IN WALLS, OR BELOW SLAB ON GRADE UNLESS NOTED OTHERWISE.
- 9. ATTENTION IS CALLED TO THE FACT THAT THE CEILING SYSTEMS FOR THE MOST PART ARE CONSIDERED TO BE INACCESSIBLE. THE CONTRACTOR SHALL STRATEGICALLY LOCATE BOXES, ETC., IN AN ACCESSIBLE CEILING SPACE. IT IS STRONGLY RECOMMEND THAT THE CONTRACTOR SHALL CONDUCT A SURVEY OF THE CEILING TYPE IN ALL WORK AREAS TO QUANTIFY ACCESSIBLE LOCATIONS FOR PULLBOXES AND JUNCTION BOXES REQUIRED ABOVE EXISTING CEILING.

- 20. WHENEVER A DISCREPANCY IN QUANTITY OR SIZE OF CONDUIT, WIRE, EQUIPMENT DEVICES, CIRCUIT BREAKERS, GROUND FAULT PROTECTION SYSTEMS, ETC. (ALL MATERIALS), ARISES ON THE DRAWINGS OR SPECIFICATIONS, THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING AND INSTALLING ALL MATERIAL AND SERVICES REQUIRED BY THE STRICTEST CONDITIONS NOTED ON THE DRAWINGS OR IN THE SPECIFICATIONS TO ENSURE COMPLETE AND OPERABLE SYSTEMS AS REQUIRED BY THE UNIVERSITY REPRESENTATIVE AND ARCHITECT/ENGINEER.
- 1. UTILITY AND ELECTRICAL OUTLETS OR BOXES SHALL BE SECURELY FASTENED TO THE STUD OF FRAMING OF THE WALL, PARTITION OR CEILING ASSEMBLY. THE OPENING IN THE GYPSUM BOARD FACING SHALL BE CUT SO THAT THE CLEARANCE BETWEEN THE BOX AND THE GYPSUM BOARD DOES NOT EXCEED 1/8 INCH. IN SMOKE WALLS OR PARTITIONS, THE 1/8 INCH CLEARANCE SHALL BE FILLED WITH AN APPROVED FIRE-RATED SEALANT.
- 2. REFER TO SINGLE LINE DIAGRAM AND FEEDER SCHEDULES FOR CONDUIT AND CONDUCTOR SIZE TO PANELS, TRANSFORMERS, MECHANICAL AND PLUMBING EQUIPMENT, ETC. CONDUIT RUNS MAY NOT BE SHOWN ON DRAWINGS, BUT ARE PART OF THIS CONTRACT.
- STRAIGHT FEEDER, BRANCH CIRCUIT, AND CONDUIT RUNS SHALL BE PROVIDED WITH SUFFICIENT PULL BOXES OR JUNCTION BOXES TO LIMIT THE MAXIMUM LENGTH OF ANY SINGLE CABLE PULL TO 100 FEET. PULL BOXES SHALL BE SIZED PER CODE OR AS INDICATED ON DRAWINGS. LOCATIONS SHALL BE DETERMINED IN THE FIELD OR AS INDICATED ON THE DRAWINGS.
- MAXIMUM NUMBER OF CONDUCTORS IN OUTLET OR JUNCTION BOXES SHALL CONFORM TO THE CALIFORNIA ELECTRICAL CODE, ARTICLE 3214-6, BUT IN NO CASE SHALL CONTAIN MORE THAN THE FOLLOWING NUMBER OF #12 AWG CONDUCTORS FOR THE SIZE OF BOX INDICATED. THE MINIMUM SIZE OUTLET OR JUNCTION BOX PERMITTED IN A WALL IS FOR INCHES SQUARE BY 1 1/2 INCHES DEEP.
 - a. 4" SQ. BY 1-1/2" D BOX: 9 CONDUCTORS b. 4" SQ. BY 2-1/8" D BOX: 13 CONDUCTORS
 - c. 4" SQ. BY 1-1/2" D BOX: 11 CONDUCTORS d. 4" SQ. BY 2-1/8" D BOX: 18 CONDUCTORS
- A. ALL OUTLET BOXES CONTAINING MORE THAN ONE DEVICE SHALL BE GANGED. TWO DEVICES DOUBLE GANGED, MINIMUM.
- WHERE MULTI-HOMERUNS ARE INDICATED ON DRAWINGS INDICATING THE SAME PANELBOARD CIRCUIT NUMBER, PROVIDE JUNCTION BOX ABOVE ACCESSIBLE CEILING AND ROUTE ONE SET OF WIRES TO CIRCUIT BREAKERS.
- 26. RECESSED PANELS AND CABINETS SHALL HAVE FIVE SPARE 3/4 INCH CONDUITS STUBBED UP INTO AN ACCESSIBLE CEILING SPACE AND CAPPED UNLESS OTHERWISE NOTED.
- 27. IDENTIFICATION NAMEPLATES SHALL BE MICARTA 1/8 INCH THICK AND OF APPROVED SIZE WITH BEVELED EDGES AND ENGRAVED WHITE LETTERS A MINIMUM OF 1/4 INCH HIGH ON BLACK BACKGROUND. NAMEPLATES SHALL BE PROVIDED FOR ALL CIRCUITS IN THE SERVICE DISTRIBUTION AND POWER DISTRIBUTION SWITCHBOARDS OR PANELBOARDS. MOTOR CONTROL CENTERS, LIGHTING DISTRIBUTION PANELBOARDS, SEPARATELY MOUNTED STARTING SWITCHES, DISCONNECTING SWITCHES, MOTOR CONTROL PUSHBUTTON STATIONS, SELECTOR SWITCHES, TRANSFORMERS, TERMINAL CABINETS, TELEPHONE CABINETS ETC. ALL NAMEPLATES SHALL BE ATTACHED WITH SCREWS. PULL BOXES, JUNCTION BOXES, AND DEVICE BOXES SHALL BE MARKED WITH A PERMANENT
- 28. THE EXACT LOCATION OF ALL ELECTRICAL DEVICES AND EQUIPMENT SHALL BE COORDINATED WITH THE ARCHITECTURAL ELEVATIONS, DETAILS, OR SECTIONS PRIOR TO INSTALLATION. ALL ELECTRICAL DEVICES AND EQUIPMENT SHALL BE RECESSED IN WALLS UNLESS OTHERWISE NOTED. OUTLETS NOT INDICATED ON ARCHITECTURAL ELEVATIONS SHALL BE COORDINATED WITH THE ARCHITECT PRIOR TO ROUGH-IN. UNLESS OTHERWISE NOTED, MOUNT ELECTRICAL DEVICES AT THE FOLLOWING HEIGHTS
- A. WALL SWITCH +4'-0" SET VERTICALLY B. CONVENIENCE RECEPTACLE +1'-6" SET VERTICALLY OR AS NOTED
- OTHERWISE
- +1'-6" SET VERTICALLY. C. TELEPHONE/DATA OUTLETS D. OUTLETS AT COUNTERS +6" ABOVE COUNTERS HORIZONTALLY
- 9. REVIEW ARCHITECTURAL ELEVATIONS OF CASEWORK. OUTLETS MOUNTED ABOVE OR BELOW, OR ADJACENT TO CASEWORK SHALL BE COORDINATED WITH THE ARCHITECTURAL DRAWINGS, PRIOR TO FINAL ROUGH-IN. ELECTRICAL DRAWINGS SHALL GOVERN NUMBER AND TYPE OF OUTLETS. HOWEVER, LOCATIONS SHALL BE AS INDICATED ON ARCHITECTURAL ELEVATIONS. PROVIDE CONDUIT. WIRES. AND OUTLETS. FOR WORK REQUIRED IN CASEWORK INSTALLATIONS. REFERENCE ARCHITECTURAL DETAILS FOR METHOD OF ROUTING CONDUIT WITHIN CASEWORK CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CUT-OUTS IN TILE OR COUNTER SPLASHES WHERE RECEPTACLES, OUTLETS, ETC., OCCUR. PROVIDE BOX EXTENSIONS THROUGH ALL CASEWORK. FINISH FLUSH WITH FACE OF SPLASH, CABINET, ETC.
- 30. MOUNTING HEIGHTS OF ALL DEVICES AND EQUIPMENT ARE FROM FINISHED FLOOR TO CENTER OF DEVICES AND EQUIPMENT UNLESS OTHERWISE NOTED. BOXES INSTALLED IN LOCATIONS NOT APPROVED BY THE ARCHITECT SHALL BE RELOCATED AS DIRECTED BY THE ARCHITECT AT NO ADDITIONAL COST TO THE UNIVERSITY REPRESENTATIVE.
- 1. THE EQUIPMENT GROUNDING CONDUCTOR SHOWN ON CONDUIT RUNS SHALL RUN CONTINUOUS FROM PANEL TO LAST OUTLET. THIS WIRE SHALL BE PIGTAILED IN EACH OUTLET FOR CONNECTION TO BOX AND DEVICE SO THAT IF DEVICE IS REMOVED, GROUND WILL NOT BE INTERRUPTED. ALL EQUIPMENT GROUNDING CONDUCTORS SHALL BE INSULATED GREEN CONDUCTORS - ALTERNATE METHODS OF IDENTIFICATION SHALL NOT BE USED. CONTRACTOR SHALL NOTIFY ELECTRICAL ENGINEER TO EXAMINE CONDUCTOR INSTALLATION PRIOR TO INSTALLATION OF DEVICES.
- 2. FOR SMALL AC MOTORS NOT HAVING BUILT-IN THERMAL OVERLOAD PROTECTION. PROVIDE MANUAL MOTOR STARTERS WITH OVERLOAD HEATER ELEMENTS SIZED TO THE NAMEPLATE CURRENT RATING OF THE MOTOR. SMALL AC MOTORS WITH BUILT-IN THERMAL OVERLOAD PROTECTION. PROVIDE A HORSE- POWER RATED TOGGLE TYPE DISCONNECT SWITCH.
- 33. ALL BRANCH CIRCUITS MULTIPLE HOME RUN WIRING SHALL BE 12 NOS. MINIMUM AND SIZED TO COMPLY WITH NEC DERATING TABLE 310-15(a)2(a) & CONDUIT FILL. NO SHARED NEUTRAL TO BE USED.
- 34. REFER TO ARCHITECTURAL DRAWINGS FOR OCCUPANCY AND OCCUPANT LOAD INFORMATION FOR EACH PROJECT AREA.
- 5. SWITCHES, CIRCUIT BREAKERS, ETC., SHALL BE READILY ACCESSIBLE. FUSES SHALL BE INSTALLED NOT MORE THAN 6'-6" AFF

- 36. NO PIPING, DUCTS OR EQUIPMENT FOREIGN TO ELECTRICAL EQUIPMENT SHALL BE PERMITTED TO BE LOCATED WITHIN THE DEDICATED SPACE ABOVE THE ELECTRICAL EQUIPMENT. (110-26(f))
- 37. ELECTRICAL EQUIPMENT TESTING SHALL BE LISTED BY OCTA RECOGNIZED ELECTRICAL TESTING LABORATORY OR APPROVED BY OCTA.
- 38. PROTECTION DEVICES TYPES, DESIGNATION, SETTINGS AND AIC RATINGS SHALL BE DETERMINED FROM THE SHORT CIRCUIT ANALYSIS AND PROTECTIVE DEVICES COORDINATION STUDY AS PREPARED BY THE CONTRACTOR.
- 39. MINIMUM CONDUIT SIZE INDICATED SHALL SUPERCEDE MINIMUM CONDUIT SIZE CALL OUTS IN PLAN DRAWINGS. MINIMUM SIZE OF POWER AND LIGHTING CONDUITS FOR NON-FIRE/LIFE SAFETY SYSTEM SHALL BE 3/4 INCHES WHERE ALLOWED BY CODE REQUIREMENTS. MINIMUM SIZE OF POWER AND LIGHTING CONDUITS FOR FIRE/LIFE SAFETY SYSTEM SHALL BE 3/4 INCHES.
- 40. BRANCH CIRCUIT CABLE SIZE SHALL BE ADJUSTED BASED ON THE VALUES INDICATED
- A. A. 120/208V CABLING FROM PANEL TO ELECTRICAL LOAD SHALL BE AS FOLLOWS **UNLESS OTHERWISE INDICATED:**
- a. 0'-100' 12 AWG MINIMUM
- b. 101'-200' 10 AWG MINIMUM
- c. 201'-250' 8 AWG MINIMUM
- B. 277/480V CABLING FROM PANEL TO ELECTRICAL LOAD SHALL LOAD SHALL BE AS FOLLOWS UNLESS OTHERWISE:
- a. 0'-150' 12 AWG MINIMUM
- b. 151'-250' 10 AWG MINIMUM
- c. 251'-300' 8 AWG MINIMUM
- C. CONDUCTORS 12 AWG AND SMALLER SHALL BE SOLID. CONDUCTORS 10 AWG AND LARGER SHALL BE STRANDED. CONDUCTORS SHALL BE COPPER, OF THE SIZES NOTED. WITH TYPE THHN OR THWN 600V. INSULATION.
- D. ALL ABANDONED AND NEW PENETRATIONS IN WALLS, FLOORS OR CEILINGS SHALL BE SUITABLE CLOSED UP AND SEALED WITH HILTI CAULK. REFER TO STRUCTURAL DRAWINGS AND SPECIFICATIONS FOR PATCHING METHOD AND REQUIREMENT.
- 41. ELECTRICAL POWER & CONTROL FEEDER REQUIREMENT FOR ALL MECHANICAL & PLUMBING EQUIPMENT SHALL COMPLY WITH MECHANICAL/PLUMBING EQUIPMENT SCHEDULES/DRAWINGS.
- 42. ALL BRACH CIRCUITS REQUIRING ISOLATED GROUND BUS SHALL HAVE ISOLATED GROUND BUS SIZED PER NEC IN THE SOURCE PANELBOARD. MAIN ISOLATED GROUND WIRE SIZED PER NEC SHALL BE RUN FROM THE UPSTREAM SOURCE TRANSFORMER SECONDARY TO THE PANELBOARD.
- 43. WHEN INSTALLING DRILLED-IN ANCHORS IN EXISTING NON-PRESTRESSED/ PRESTRESSED REINFORCED CONCRETE, USE CARE AND CAUTION TO AVOID CUTTING OR DAMAGING THE EXISTING REINFORCING BARS. CONTRACTOR TO LOCATE EXISTING SLAB REBAR VIA PACHOMETER/FERROSCAN AT EQUIPMENT ANCHORS.
- 44. KEY NOTES, GENERAL NOTES AND DETAILS ARE APPLICABLE FOR ALL PHASES OF
- 45. A FINAL REPORT FOR THE TESTING AND ADJUSTING OF ALL NEW SYSTEM SHALL BE COMPLETED AND PROVIDED TO THE FIELD INSPECTOR PRIOR TO FINAL APPROVAL. THIS REPORT SHALL BE SIGNED BY THE INDIVIDUAL RESPONSIBLE FOR PERFORMING
- 46. AN OPERATION & SYSTEMS MANUAL, SHALL BE PROVIDED TO THE FIELD INSPECTOR AT THE TIME OF FINAL INSPECTION.
- 47. SUPPORT CONDUCTORS IN VERTICAL RACEWAYS BASED ON NEC 300.19.
- 48. GENERAL CONTRACTOR TO PROVIDED NECESSARY COLUMN WRAP FINISHES IN EXISTING COLUMNS BEING USED FOR NEW CONDUIT ROUTING.

WIRING METHOD

UNDERGROUND

A. UNLESS OTHERWISE NOTED ON THE DRAWINGS, CONCRETE ENCASED AND DIRECT BURIED CONDUIT SHALL BE SCHEDULE 40 PVC. WHERE CONDUITS PASS THROUGH GRADE. THROUGH CONCRETE PADS. THROUGH BUILDING FOUNDATION WALLS OR FLOOR SLABS, CONDUIT SHALL BE PVC COATED.

- A. UNLESS OTHERWISE NOTED ON THE DRAWINGS, CONDUIT INSTALLED OUTDOORS SHALL BE GALVANIZED RIGID STEEL AND FLEXIBLE CONNECTIONS SHALL BE LIQUIDTIGHT FLEXIBLE METAL CONDUIT.
- A. IN FINISHED AREAS ALL RACEWAY AND WIRING SHALL BE CONCEALED AND BOXES RECESSED. WIRING INSTALLED IN MASONRY WALLS SHALL BE EMT OR GALVANIZED RIGID STEEL. WIRING INSTALLED IN STUD WALL CAVITIES OR ABOVE HUNG CEILINGS MAY BE TYPE EMT.
- B. IN UNFINISHED AREAS SUCH AS MECHANICAL AND ELECTRICAL ROOMS WIRING
- SHALL BE INSTALLED IN RIGID STEEL CONDUIT. C. WIRING IN THE CRAWLSPACE SHALL BE INSTALLED IN RIGID METAL CONDUIT.

GARDEN GROVE, CA 92843 714/560/OCTA

601 SOUTH FIGUEROA ST. SUITE 3800

LOS ANGELES, CA 90017

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E-GG-003

11790 CARDINAL CIRCLE

067909-02

01.20.2023

de Driver 50VF2

SECURE UNI-BODY WELDED CHASSIS constructed with rigid

10 gauge sheet meta

ıltra durable polyeste powder coat over zin

plating for an enduring

-Lock on cover for

INDUSTRIAL GRADE COMPONENTS maintenance and

SlideDriver 50VF 2/3

5,000 lb gates (2,268 kg)

2.2 ft/s (70 cm/s) or 3 ft/s (91 cm/s) Emergency Fast Close 3 ft/s (91 cm/s)

CONTROLLER provides

nfigurability and system

Ultra reliable • 5,000 lb (2,268 kg) gates • Fast • Crash compatible • Low maintenance

- Moves up to 5,000 lb (2,268 kg) gates with ease Longest life and lowest maintenance. SlideDriver 50VF2/3
- reliably secures sites worldwide and lasts decades ■ Fast, smooth travel, 2.2 ft/s
- (70 cm/s) or 3 ft/s (91 cm/s)
- **■** Emergency Fast Close 3 ft/s (91 cm/s)
- Two 8 inch (20 cm) AdvanceDrive wheels for longer life and increased reliability
- Seamless synchronization with all HySecurity operators for dual gate, sally port or sequenced gate integration









* UL LABEL FOR COMPLIANCE WITH THE N.E.C.





EXTREMELY RELIABLE HYDRAULICS contain only one gallon of high performance hydraulic fluid. Operates without fail in hottest and coldest climates.



High Security

See the latest from HySecurity at www.hysecurity.com

HySecurity operators secure the world's critical infrastructure and key assets where ultimate reliability is vital. SlideDriver delivers uncompromising quality to industrial customers worldwide, where ease of use, consistent operation, low maintenance, long life and high reliability is expected.



Operating Functions

STC Keypad

STC Board

31 SlideDriver™ Models

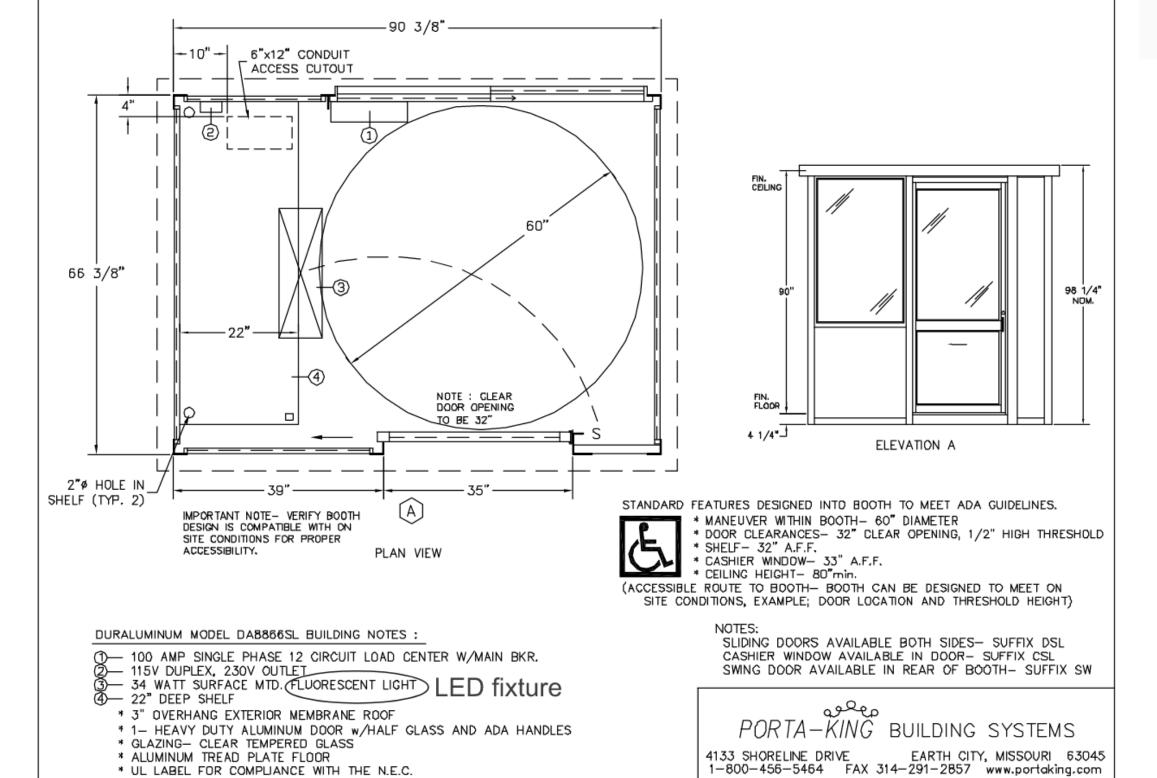
		FASI		FASI				
	1,500 lb (680 kg) gates 1 ft/s (30 cm/s)	3,000 lb (1,361 kg) gates 1.7 ft/s (50 cm/s)	4,000 lb (1,814 kg) gates 1 ft/s (30 cm/s)	5,000 lb (2,268 kg) gates 2.2 ft/s (70 cm/s) or 3 ft/s (91 cm/s)	8,000 lb (3,629 kg) gates 1 ft/s (30 cm/s)	20,000 lb (9,072 kg) gates 1 ft/s (30 cm/s)		
Model	SlideDriver 15	SlideDriver 30F	SlideDriver 40	SlideDriver 50VF2/3	SlideDriver 80	SlideDriver 200		
Part #	222 SS ST	222 EX 1.7 ST	222 E ST	222 X3 ST	222 X1 ST	444 XS ST		
Duty Cycle				Continuous				
Horsepower	1 hp	2 hp	1 hp	2 hp	2 hp	5 hp		
Drive				Hydraulic				
Drive Wheels	Two 6" (15 cm) AdvanceDrive wheels	Two 6" (15 cm) AdvanceDrive wheels	Two 6" (15 cm) AdvanceDrive wheels	Two 8" (20 cm) AdvanceDrive wheels	One 8" (20 cm) AdvanceDrive wheel, One 8" XtremeDrive wheel and 27 ft (8 m) of rack	Two 8" (20 cm) AdvanceDrive wheels, Two 8" XtremeDrive wheels and 52 ft (16 m) of rac		
Gate Weight Max.	1,500 lb (680 kg)	3,000 lb (1,361 kg)	8,000 lb (3,629 kg)	20,000 lb (9,072 kg)				
Gate Length Max.			Limi	ted only by weight				
Drawbar Pull	300 lb (136 kg)	300 lb (136 kg)	300 lb (136 kg)	300 lb (136 kg)	600 lb (272 kg)	1,200 lb (544 kg)		
Rate of Travel	1 ft/s (30 cm/s)	1.7 ft/s (50 cm/s)	1 ft/s (30 cm/s)	Field adjustable, 2.2 ft/s (70 cm/s) or 3 ft/s (91 cm/s) Emergency Fast Close 3 ft/s (91 cm/s)	1 ft/s (30 cm/s)	1 ft/s (30 cm/s)		
Temperature Rating			-40° F to 158° F (-40	°C to 70°C) No heater necessa	ry			
1 Phase Power	115/208/230V 60 Hz 110/220V 50 Hz	208/230V 60 Hz 220V 50 Hz	115/208/230V 60 Hz 110/220V 50 Hz	208/230V 60 Hz 220V 50 Hz	208/230V 60 Hz 220V 50 Hz	230V 60 Hz		
3 Phase Power	208/2	30/460/575V 60 Hz , 220/38	OV 50 Hz	208/230/460V 60 Hz 220/380V 50 Hz	208/230/460/575V 60 Hz , 220/380V 50 Hz			
Communication			RS-232, RS-485, Ethernet/fiber	using optional HyNet™ Gatew	ray accessory			
User Controls		Smart Touch Controller	r with 70+ configurable setting:	s. Smart Touch keypad and displ	lay or a PC using S.T.A.R.T. softwa	are.		
Relays		Three configurable use	er relays: one 30VDC, 3A solid s	state and two 250VAC, 10A elec	tromechanical; Optional Hy8Rela	у™		
Listed to UL325	Usage Class I, II, III, IV	Usage Class III, IV	Usage Class I, II, III, IV	Usage Class III, IV	Usage Class III, IV	Usage Class III, IV		
Warranty				5 year				
UPS Backup Power C	Options and Additional Mo	odels						
DC Power Supply*	SlideDriver 15 UPS	SlideDriver 30F UPS	SlideDriver 40 UPS	-	SlideDriver 80 UPS	SlideDriver 200 UPS**		
AC Power Supply with Hylnverter*	SlideDriver 15 with Hylnverter	-	SlideDriver 40 with Hylnverter	SlideDriver 50VF2/3 with Hylnverter	-	-		
Correctional Facility	-	SlideDriver 30F-C	SlideDriver 40-C	SlideDriver 50VF2/3-C	SlideDriver 80-C	SlideDriver 200-C		
Modular	SlideDriver 15-M	SlideDriver 30F-M	SlideDriver 40-M	SlideDriver 50VF2/3-M	SlideDriver 80-M	SlideDriver 200-M		

* 3,000 ft/hr expected duty cycle. ** 2,000 ft/hr expected duty cycle. Actual duty cycle depends on site specific conditions and gate configuration. OPTIONAL ACCESSORIES: HY-5A intelligent vehicle detectors, 12 in (30 cm) base extension, tamper proof heavy gauge cover, cabinet lock, solenoid lock, Fire and Emergency Access Lock Box, heater, strobe light, photo eye, snowbrush and blade kit, XtremeDrive rack kit, custom colors and more. SYSTEM DESIGN SUPPORT: Contact HySecurity for CAD drawings, tech manuals, help with custom site requirements or other specifications support. Download operator specifications online at www.hysecurity.com or call to speak with a HySecurity representative today.



EHySecurity Contact HySecurity for an operator/parts distributor mear you phone 800-321-9947 | 253-867-3700 fax 888-321-9946 Contact HySecurity for an operator/parts distributor near you. Simple. Reliable. Secure. www.hysecurity.com • info@hysecurity.com





Product data sheet

Width

Product Weight

DURALUMINUM MODEL DA8866SL



Mini Power Zone unit substation. plug on branch, 1 phase, 15kVA, 480V primary, 120/240V secondary, Type 3R

MPU15S40F

Product availability: Stock - Normally stocked in distribution

Product	Sealed Transformer
Certifications	UL Listed
Туре	Mini Power-Zone
Enclosure Code	В
Insulation Temperature	365 °F (185 °C)
Phase	1 phase
Primary Voltage	480 V
Secondary Voltage	120/240 V
Full Capacity Taps	2 5 % FCBN
Power Rating	15 kVA
Temperature Rise	115 °C
Winding Material	Copper
Interrupt Rating	18 kA
Circuit Breaker Type	Primary main breaker Secondary main breaker Feeder breaker
Interior Type	QO Load Center interior
Number of Spaces Available	10
Number of Circuits	10
Enclosure Type	NEMA 3R hot-rolled steel
Complementary	
Height	43.20 in (1097.28 mm)

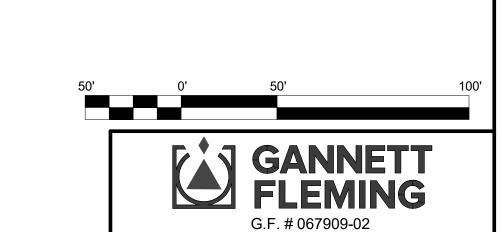
21.00 in (533.40 mm) 13.50 in (342.90 mm)

350.01 lb(US) (158.76 kg)

Ordering and shipping details 16275-MPZ PLUG ON BRANCH CB Discount Schedule GTIN 785901699187 Returnability Packing Units PCE Unit Type of Package 1 Number of Units in Package 1 43.19 in (109.7 cm) Package 1 Height 20.98 in (53.3 cm) Package 1 Width Package 1 Length 13.50 in (34.3 cm) 365.00 lb(US) (165.561 kg) Package 1 Weight Offer Sustainability WARNING: This product can expose you to chemicals including: Nickel (Metallic), which is known to the California proposition 65 State of California to cause cancer, and Bisphenol A (BPA), which is known to the State of California to **EU RoHS Directive**

Recommended replacement(s)

Contractual warranty



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E-GG-004

11790 CARDINAL CIRCLE

GARDEN GROVE, CA 92843

714/560/OCTA

067909-02

01.20.2023

As indicated

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URITY

CHECKED BY

GENERAL NOTES 1. CONTRACTOR TO COORDINATE WITH PORTA-KING BUILDING SYSTEM MANUFACTURE. STANDARD CUTSHEET IS PROVIDED FOR

REFERENCE ONLY. REFER TO SHEET E-GG-101 ENLARGED PLANS-

RENOVATION FOR LOCATION OF PROPOSED GUARD HOUSE AND

SHEET E-GG-601 ELECTRICAL FEEDER SCHEDULE FOR CONDUIT

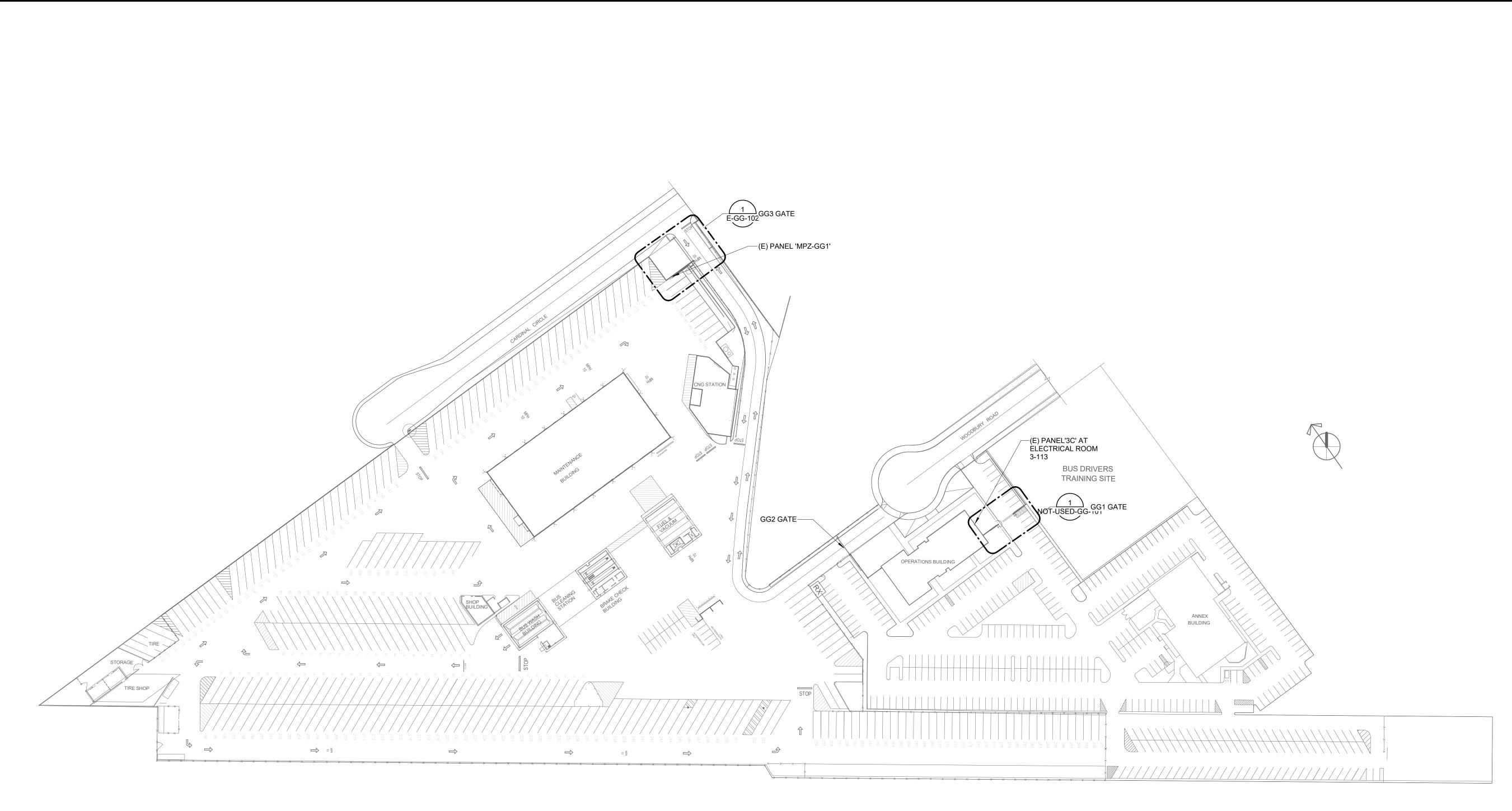
AND FEEDER SIZE.



E-GG-010

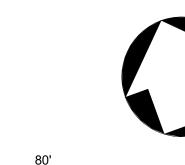
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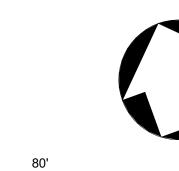




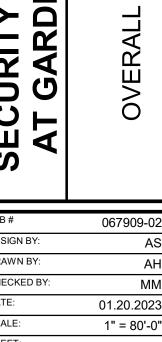
OVERALL SITE PLAN - DEMOLITION

SCALE: 1" = 80'-0"









E-GG-011

714/560/OCTA

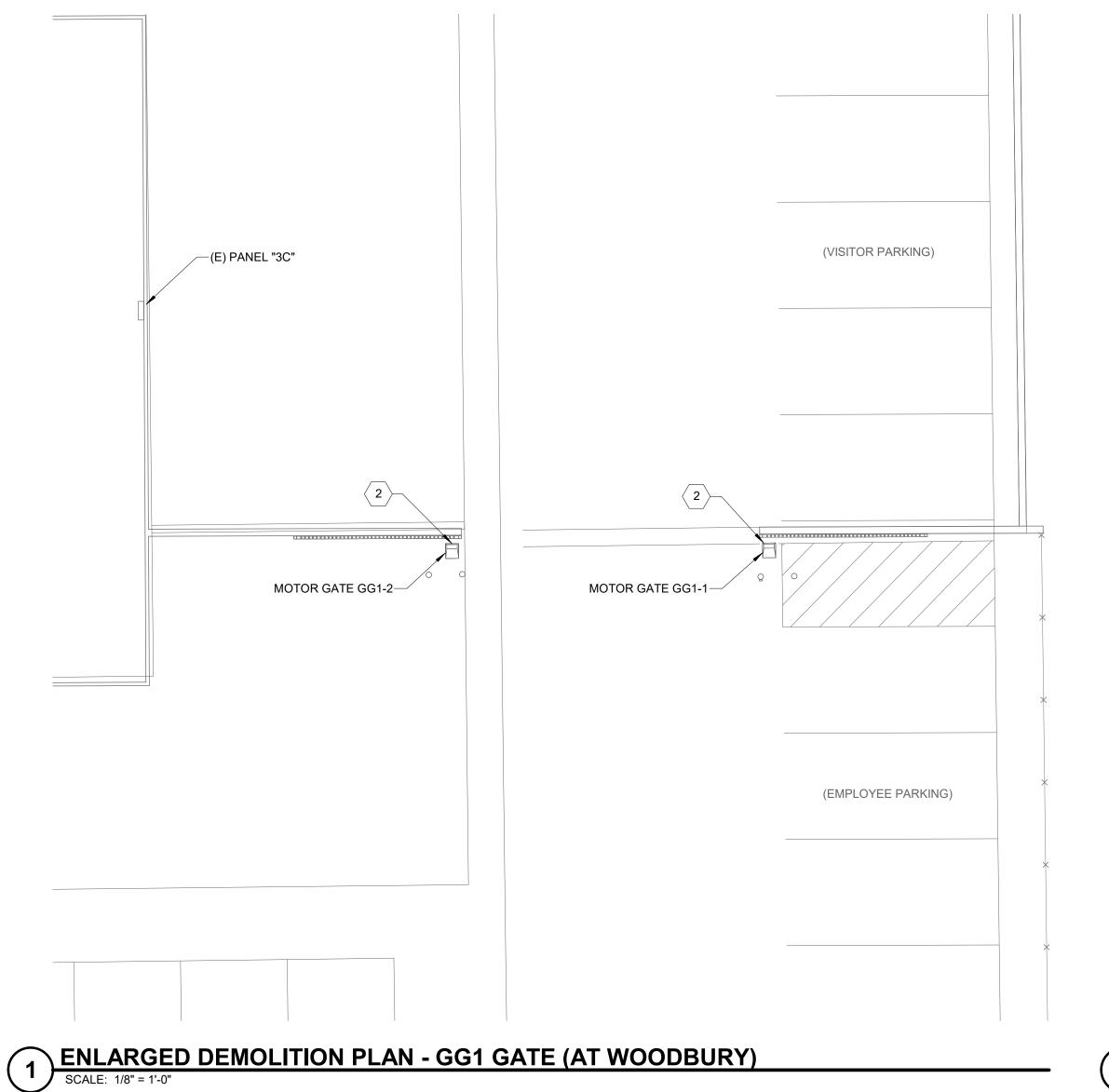


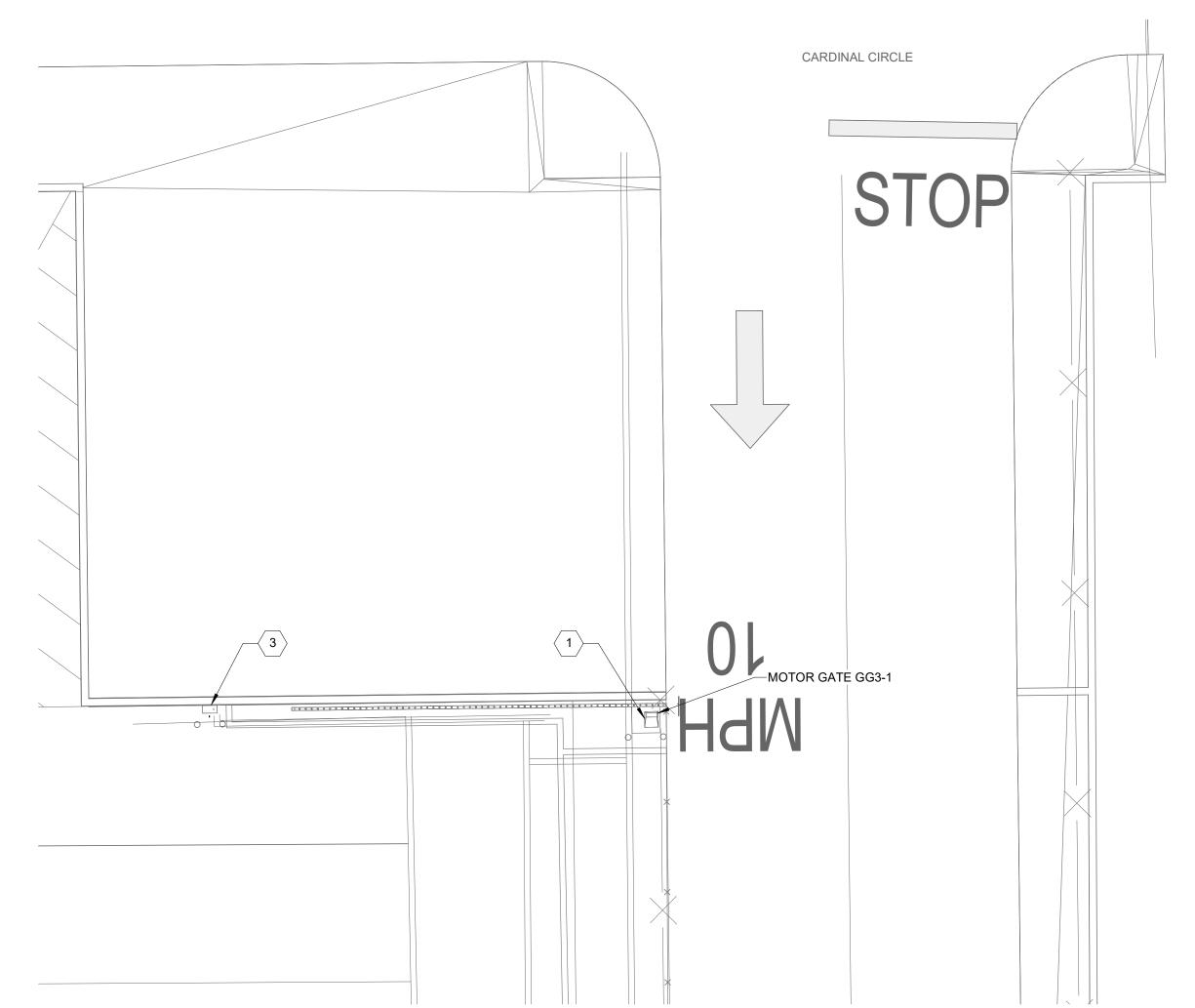
GENERAL NOTES

- 1. DE-ENERGIZE, MAKE SAFE AND REMOVE BACK TO SOURCE EXISTING EQUIPMENT AS SHOWN. EXISTING ELECTRICAL EQUIPMENT AND MOTOR GATE CONTROLS TO BE DEMOLISHED ALONG WITH ALL OTHER ASSOCIATED ACCESSORIES SHOWN.
- 2. CONTRACTOR SHALL REMOVE EXISTING BREAKER AT EXISTING PANELS '3C' AND 'MPZ-GG1', CLEAN AND RETURN TO CLIENT.
- 3. EXISTING EQUIPMENT TO REMAIN IN PLACE UNLESS OTHERWISE



- 1. CONTRACTOR SHALL DISCONNECT AND DEMOLISH EXISTING MOTOR GATE CONTROLS GG3-1 SERVING GATE GG3 WITH ALL OTHER ASSOCIATED ACCESSORIES. EXISTING CONDUIT AND CONDUCTORS TO BE DEMOLISHED ALONG WITH ALL OTHER ASSOCIATED ACCESSORIES BACK TO THE SOURCE PANEL.
- 2. CONTRACTOR SHALL DISCONNECT AND DEMOLISH EXISTING MOTOR GATE CONTROLS GG1-1 AND GG1-2 SERVING GATE GG1 WITH ALL OTHER ASSOCIATED ACCESSORIES. EXISTING CONDUIT AND CONDUCTORS TO BE DEMOLISHED ALONG WITH ALL OTHER ASSOCIATED ACCESSORIES BACK TO THE SOURCE PANEL.
- 3. EXISTING 'MPZ-GG1' TO BE DEMOLISHED AND REPLACE IN PLACE. REFER TO PANEL SCHEDULE AND SINGLE LINE DIAGRAM ON SHEET E-GG-601 FOR FEEDER SIZES AND QUANTITIES.

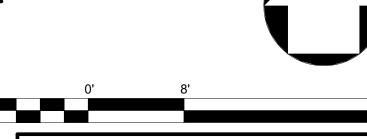




ENLARGED DEMOLITION PLAN - GG3 GATE (AT CARDINAL CIRCLE)

SCALE: 1/8" = 1'-0"





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E-GG-100

AS INDICATED

TO DATA CLOSET -LOCATION 1

 \langle 5 \rangle (N) PULLBOX-

/—(E) PNL '3C'

TO PULLBOX

(E) PANEL 3C-4,6

1 (N) DISCONNECT _ SWITCH GG1

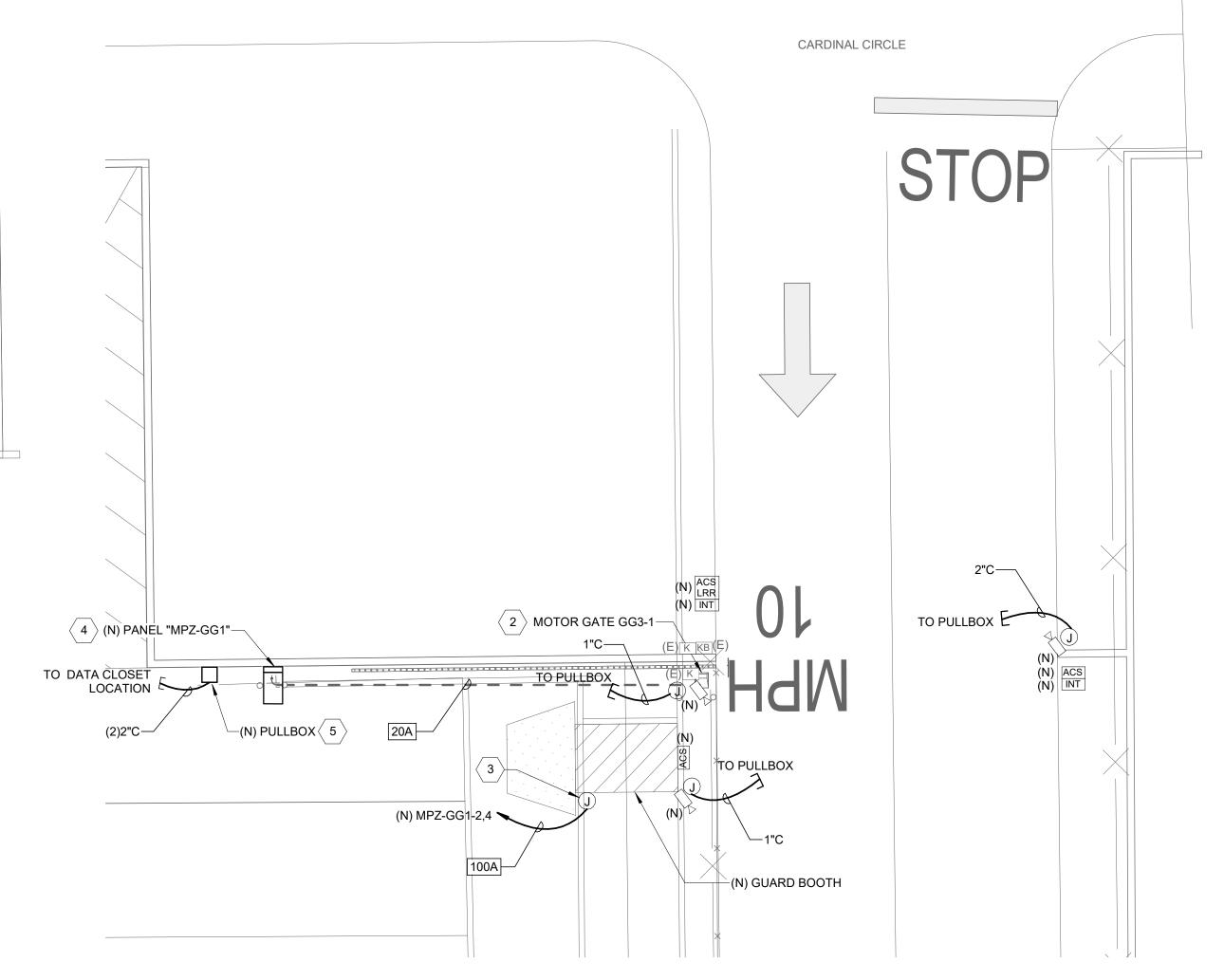
MOTOR GATE GG1-2

GENERAL NOTES

- 1. PRIOR TO DE-ENERGIZE ANY CIRCUIT, CONTRACTOR SHALL FIELD VERIFY, TRACE, IDENTIFY, LOCKOUT/TAGOUT ALL LOAD CALCULATIONS OF ANY CIRCUIT TO BE USED IN NEW WORK.
- 2. THE CONTRACT DRAWINGS ARE DIAGRAMMATIC IN NATURE AND NOT EVERY DETAIL OR EXACT LOCATION OF EQUIPMENT AND/OR CONDUIT IS SHOWN. EXISTING CONDITIONS SHALL BE VERIFIED IN THE FIELD COMMENCING ANY FABRICATION, ORDERING ANY MATERIAL, OR PERFORMING ANY WORK.
- 3. ALL FIELD DIMENSIONS ARE APPROXIMATE, CONTRACTOR TO FIELD VERIFIED ALL DIMENSIONS.

SHEET NOTES

- 1. CONTRACTOR SHALL INSTALL NEW MOTOR GATE CONTROLS GG1-1 AND GG1-2 SERVING GATE GG1 WITH ALL OTHER ASSOCIATED ACCESSORIES. REFER TO FEEDER SIZE AND QUANTITY AND FEEDER SCHEDULE ON SHEET E601. PROVIDE NEW CONDUIT FROM EXISTING PANEL '3C' TO SERVE PROPOSED GATE GG1. REFER TO PANEL SCHEDULE ON SHEET E-GG-601 FOR CIRCUIT BREAKER.
- 2. CONTRACTOR SHALL INSTALL NEW MOTOR GATE CONTROL GG3-1 SERVING GATE GG3 WITH ALL OTHER ASSOCIATED ACCESSORIES. REFER TO FEEDER SIZE AND QUANTITY AND FEEDER SCHEDULE ON SHEET E601. PROVIDE NEW CONDUIT FROM PROPOSE PANEL 'MPZ-GG1' TO SERVE PROPOSE GATE GG3. REFER TO PANEL SCHEDULE ON SHEET E-GG-601 FOR CIRCUIT BREAKER.
- 3. CONTRACTOR SHALL PROVIDE A POINT OF CONNECTION AS REQUIRED PER MANUFACTURE CUTSHEET. REFER TO SHEET E-GG-004 FOR ADDITIONAL INFORMATION. VERIFY EXACT LOCATION IN THE FIELD PRIOR TO INSTALLATION. ELECTRICAL MAIN LOAD PANEL WILL SERVE AS A DISCONNECTING MEANS PROVIDED BY MANUFACTURE. REFER TO FEEDER SIZE AND QUANTITY IN FEEDER SCHEDULE ON SHEET E-GG-601.
- 4. CONTRACTOR SHALL INSTALL NEW MINI-POWER 'MPZ-GG1' 80A, 120/240V, 1-PH, 3W IN NEMA-3R ENCLOSURE. REFER TO SHEET E-GG-601 ELECTRICAL SCHEDULE FOR FEEDER SIZES AND
- 5. CONTRACTOR SHALL PROVIDE A 18"x18"x18" PULLBOX AS SHOWN. CONTRACTOR TO VERIFY WITH OCTA SECURITY MANAGEMENT THE LOCATION OF THE DATA CLOSET IN THE BUILDING PRIOR TO INSTALL PROPOSED CAMERAS. FIBER CONDUITS ROUTING TO BE VERIFIED IN THE FIELD.



\ ENLARGED RENOVATION PLAN - GG1 GATE (AT WOODBURY VISITOR PARKING)

MOTOR GATE GG1-1-

TO PULLBOX F

(VISITOR PARKING)

(EMPLOYEE PARKING)

ENLARGED RENOVATION PLAN - GG3 GATE (AT CARDINAL CIRCLE)



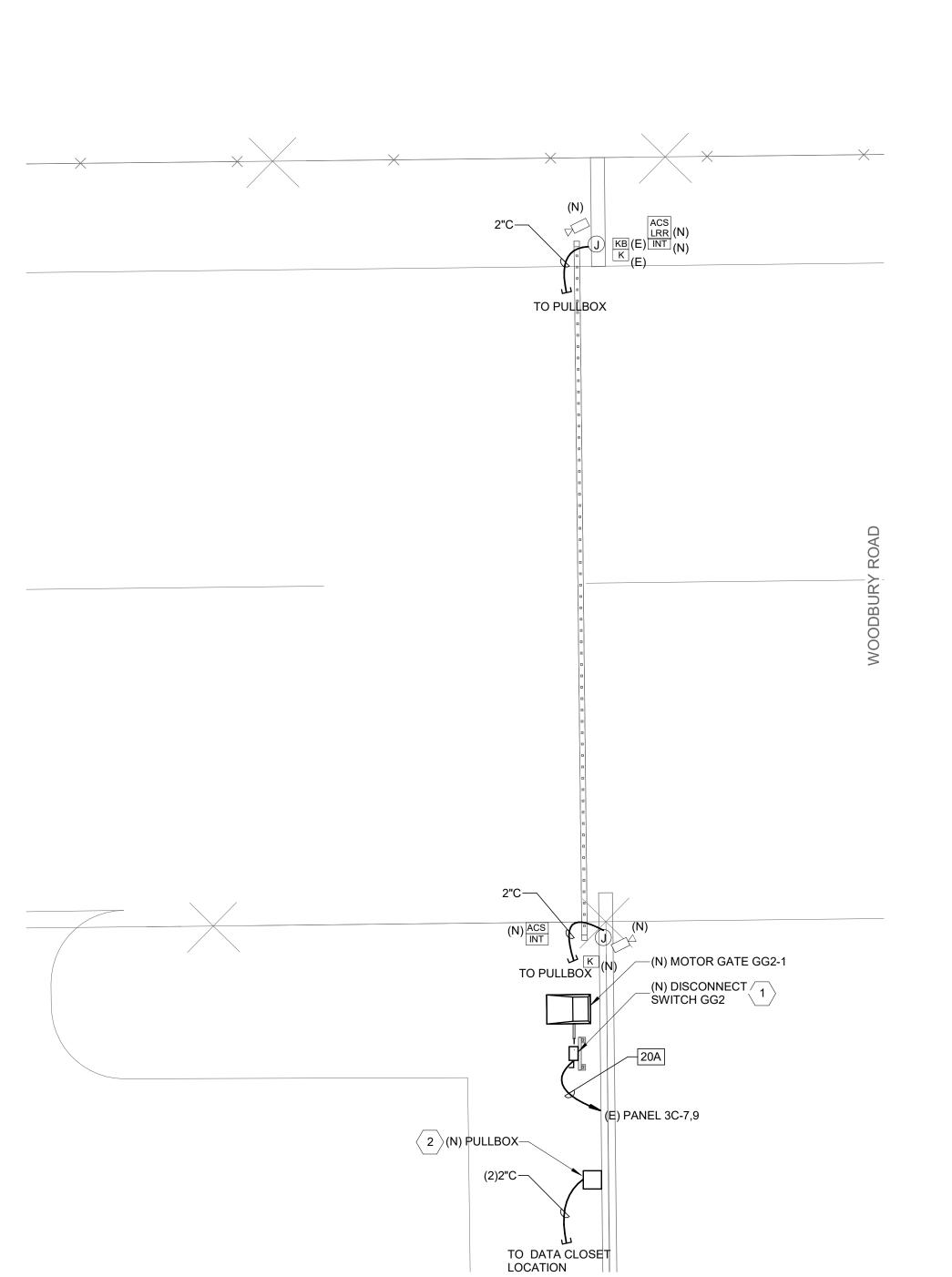


GARDEN GROVE, CA 92843 714/560/OCTA

01.20.2023

AS INDICATED





1 ENLARGED RENOVATION PLAN - GG2 GATE (AT WOODBURY)

SCALE: 1/4" = 1'-0"

GENERAL NOTES

- PRIOR TO DE-ENERGIZE ANY CIRCUIT, CONTRACTOR SHALL FIELD VERIFY, TRACE, IDENTIFY, LOCKOUT/TAGOUT ALL LOAD CALCULATIONS OF ANY CIRCUIT TO BE USED IN NEW WORK.
- 2. THE CONTRACT DRAWINGS ARE DIAGRAMMATIC IN NATURE AND NOT EVERY DETAIL OR EXACT LOCATION OF EQUIPMENT AND/OR CONDUIT IS SHOWN. EXISTING CONDITIONS SHALL BE VERIFIED IN THE FIELD COMMENCING ANY FABRICATION, ORDERING ANY MATERIAL, OR PERFORMING ANY WORK.
- 3. ALL FIELD DIMENSIONS ARE APPROXIMATE, CONTRACTOR TO FIELD VERIFIED ALL DIMENSIONS.

SHEET NOTES

- CONTRACTOR SHALL INSTALL NEW DISCONNECT SWITCH TO SERVE PROPOSE MOTOR GATE CONTROL GG2-1 SERVING GATE GG2 WITH ALL OTHER ASSOCIATED ACCESSORIES. REFER TO FEEDER SIZE AND QUANTITY AND FEEDER SCHEDULE ON SHEET E601. PROVIDE NEW CONDUIT FROM EXISTING PANEL '3C' TO SERVE PROPOSED GATE GG2. REFER TO PANEL SCHEDULE ON SHEET E-GG-601 FOR CIRCUIT BREAKER.
- 2. CONTRACTOR SHALL PROVIDE A 18"x18"x18" PULLBOX AS SHOWN. CONTRACTOR TO VERIFY WITH OCTA SECURITY MANAGEMENT THE LOCATION OF THE DATA CLOSET IN THE BUILDING PRIOR TO INSTALL PROPOSED CAMERAS. FIBER CONDUITS ROUTING TO BE VERIFIED IN THE FIELD.



Author 01.20.2023 As indicated

E-GG-102

GARDEN GROVE, CA 92843

714/560/OCTA



PANEL L1A 120/208V, 3PH, 4W FED FROM T1A 10KAIC, 1-20-2011

CABLE COLOR CODE: PHASE A: BLACK PHASE B: RED PHASE C: BLUE **NEUTRAL: WHITE GROUND: GREEN**

SWITCHBOARD, DISTRIBUTION PANEL AND PANELBOARD EXAMPLE.

> 120/208V, 3PH, 4W FED FROM T1A FEEDS PANEL L1A

SAFETY SWITCH OR ENCLOSED CIRCUIT BREAKER EXAMPLE.

LABELING DETAIL NOTES:

- LABEL SHALL BE BLACK OR WHITE LAMINATED ACRYLIC OR MELAMINE WITH ENGRAVED LETTERING AND SELF-ADHESIVE BACK.
- LETTERING SHALL BE WHITE ON BLACK OR BLACK ON WHITE BACKGROUND AND 3/8-INCH HIGH

3. PROVIDE THE FOLLOWING INFORMATION ON SWITCHBOARD LABELS: SWITCHBOARD TAG

SYSTEM VOLTAGE, PHASE, WIRE SHORT CIRCUIT RATING, DATE CONDUCTOR COLORS

4. PROVIDE THE FOLLOWING INFORMATION ON DISTRIBUTION PANELBOARD AND PANELBOARD LABELS:

DISTRIBUTION PANELBOARD OR PANELBOARD TAG SYSTEM VOLTAGE, PHASE, WIRE FED FROM SHORT CIRCUIT RATING, DATE CONDUCTOR COLORS

5. PROVIDE THE FOLLOWING INFORMATION ON SWITCHBOARD AND DISTRIBUTION PANELBOARD BRANCH SWITCHES:

BRANCH SWITCH TAG (LOAD BEING SERVED)

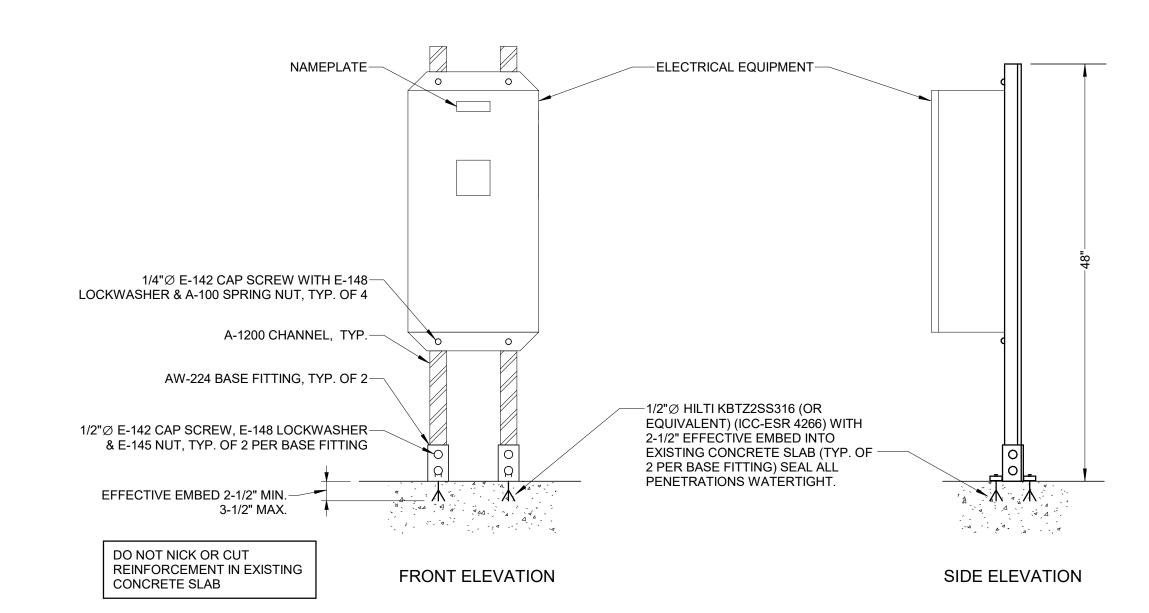
6. PROVIDE THE FOLLOWING INFORMATION ON TRANSFORMER LABELS: TRANSFORMER TAG

SYSTEM PRIMARY AND SECONDARY VOLTAGE, WYE, DELTA, OR SINGLE PHASE

7. PROVIDE THE FOLLOWING INFORMATION ON SAFETY SWITCH OR CIRCUIT BREAKER ENCLOSURE LABELS:

SYSTEM VOLTAGE, PHASE, WIRE FED FROM FEEDS (LOAD BEING SERVED)

8. CONDUCTOR COLORS SHALL ALSO FOLLOW REQUIREMENTS LISTED IN SPECIFICATIONS SECTION



NOTES:

PART NUMBERS INDICATED ARE UNISTRUT OR EQUAL MANUFACTURER IS THOMAS & BETTS "SUPERSTRUT". CHANNELS, BASE FITTING AND FASTENERS SHALL BE STAINLESS STEEL.

1 ELECTRICAL EQUIPMENT UNISTRUT MOUNTING SCALE: NONE





067909-02 CHECKED BY 01.20.2023

E-GG-501

Project Number: 067909-02 1/20/2023 9:47:51 AM	

PANEL DESIGNATION: (E) PANEL 3C						TYPE: NUMBER OF POLE			NEMA 1 OLES: 42			VOLTAGE: PANEL MOU	JNTING:		120/208V SURFACE		
(<i>C)</i> I	MIN	IEL 3C				MAIN B	SUS RAT	INGS:	200.0			PANEL ENC	LOSURE	: N	IEMA 1		
OCATI	ON: FI	ECTRICAL ROOM 3-113				ł	RATING		200			PANEL MIN			0,000		
							IVATII10	•	200			I AILL WIII	. A.I.O. IV	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	0,000		
EDFR	OW: DIS	STRIBUTION BOARD "DBS"															
						L	OAD KV	/A	L	OAD KV	'A	7					
CIR. No.	CIR. BKR.	DESCRIPTION	COND.	GRND.	WIRE SIZE		BØ	cø	AØ	BØ	cø	WIRE SIZE	GRND.	COND.	DESCRIPTION	CIR. BKR.	CIR. No.
1						0.17			0.00						SPARE	20	2
3	90	PANEL B	(E)	(E)	(E)		0.17			0.78		2#12	1#12	3/4"	(N) MOTOR GATE GG1	20	4
5								0.17			0.78	2#12	1#12	3/4	<u> ` </u>	20	6
7	20	(N) MOTOR GATE GG2	3/4"	1#12	2#12	0.78			0.50			(E)	(E)	(E)	EXHAUST FAN 131, 132	20	8
9		<u> </u> ` '	3/7	11712	2#12		0.78			0.50		(E)	(E)	(E)	DRINKING FOUNTAIN	20	10
11	20	SPARE		-	-			0.00			0.50	(E)	(E)	(E)	C1-C2	20	12
13	20	RM 117, 118	(E)	(E)	(E)	0.50			0.50			(E)	(E)	(E)	RM 103	20	14
15	20	RM 117, 118, 119	(E)	(E)	(E)		0.50	0.50		0.50	0.50	(E)	(E)	(E)	RM 103	20	16
17	20	RM 119, 120, 121	(E)	(E)	(E)	0.50		0.50	0.50		0.50	(E)	(E)	(E)	RM 103 IN CEILING 101	20	18
19	20	RM 119, 120, 121 INSTA HOT	(E)	(E)	(E)	0.50	0.50		0.50	0.50		(E)	(E)	(E)	RM 127	20	20
21 23	20 20	RM 117, 118, 127, 129	(E)	(E) (E)	(E)		0.50	0.50		0.50	0.50	(E) (E)	(E) (E)	(E)	RM 127	20	24
25	20	RM 128	(E)	(E)	(E)	0.50		0.50	0.50		0.50	(E)	(E)	(E) (E)	RM 123	20	26
27	20	RM 128, 118	(E)	(E)	(E)	0.50	0.50		0.50	0.50		(E)	(E)	(E)	RM 123	20	28
29	20	RM 100	(E)	(E)	(E)		0.00	0.50		0.00	0.50	(E)	(E)	(E)	RM 123	20	30
31	20	RM 127, 125	(E)	(E)	(E)	0.50		0.00	0.50		0.00	(E)	(E)	(E)	RM 124, 135, 122	20	32
33	20	RM 125	(E)	(E)	(E)		0.50			0.50		(E)	(E)	(E)	RM 123	20	34
35	20	RM 122, 130, 132, SE HALL	(E)	(E)	(E)			0.50			0.50	(E)	(E)	(E)	RM 103	20	36
37	20	RM 130, 131	(E)	(E)	(E)	0.50			0.50			(E)	(E)	(E)	SODA MACHINE	20	38
39	20	RM 122	(E)	(E)	(E)		0.50			0.50		(E)	(E)	(E)	SNACK MACHINE	20	40
41	20	SPARE						0.00			0.50	(E)	(E)	(E)	COFFEE AND ICE MAKER	20	42
ONNE AØ BØ CØ	6.45 7.23 5.95 19.62	LOAD - KVA						X	EQUIPM INTERN DIGITAL	L POWE	ROUND ERNAL R METE	SURGE PRO	TECTION	DEVICE			
IOTES		TOTAL ESTIMATED DEMAND															
NOTES:				ID DEMA	NICHED AND	ADDEE	10400										
. KE	rek IC) LOAD SUMMARY FOR OVERALL EX	NOTING DEMAI	אט, טבואוכ	IND AND	ADDEL	LUADS										
2.																	
3.																	

PANEL D	ESIGNA	TION:			TYPE	:		NEMA 3F	₹	VOLTA	AGE:		120/240V		
/NI\ N	/D7_	·GG1			NUM	BER OF F	POLES:	12		PANEL	_ MOUNTIN	IG:	SURFACE		
(14) 14	/11	-001			MAIN	BUS RA	TINGS:	0.08		PANEL	- ENCLOSI	JRE:	NEMA 3R		
LOCATIO	N: OUT	SIDE BY GATE 3			MAIN	S RATING	G:	80		PANEL	MIN. A.I.C	. RATING:	14,000		
FED FRO	М : мот	OR CONTROL CENTER "MCCA" 2ND	FL												
			-		i										
						LOAD K	VA	LC	DAD KVA						
CIR. No.	CIR. BKR.	DESCRIPTION	COND.	GRND.	WIRE SIZE	AØ	ВØ	AØ	ВØ	WIRE SIZE	GRND.	COND.	DESCRIPTION	CIR. BKR.	CIR. No
1		AN MOTOR CATE COS	0/411	4#40	0#40	1.44		3.50		0#4	440	4.4/0!!	AN OLIABO DOCTU	400	2
3		(N) MOTOR GATE GG3	3/4"	1#12	2#12		1.44		3.50	2#1	1#8	1 1/2"	(N) GUARD BOOTH	100	4
5	20	SPARE				0.00		0.00					SPARE	20	6
7	20	SPACE					0.00		0.00				SPACE	20	8
9 11	<u></u>	SPACE SPACE											SPACE SPACE		10 12
CONNEC AØ BØ CØ	4.94 4.94 0.00 9.88	AD - KVA KVA TOTAL						EQUIPM	AL/EXTER POWER IROUGH	OUND BUS RNAL SURGE METER	PROTECT	ION			
NOTES:	9.88	TOTAL ESTIMATED DEMAND													
1.															
2															
 3.															
4.															
 . 5.															
<i>-</i> .															

- INFORMATION ON THE CIRCUIT NUMBERS OF EXISTING LOADS WERE OBTAINED FROM AVAILABLE AS-BUILTS AND MAY NOT BE ENTIRELY ACCURATE. CONTRACTOR SHALL REARRANGE THE NUMBERING
 OF CIRCUITS IN THE PANELBOARD TO MATCH CLOSELY THE PANEL SCHEDULE ON THIS SHEET. CONTRACTOR TO VERIFY THE CIRCUIT NUMBERS IN THE FIELD PRIOR TO INSTALLATION. INCLUDE ALL
 COSTS IN THE BID.
- 2. CONTRACTOR TO VERIFY CIRCUIT AND PANEL INFORMATION IN THE FIELD PRIOR TO INSTALLATION.

ELECTRICAL FEEDER SCHEDULE												
(LABEL) NO.	FROM	то	WIRE SIZE	NO. & SIZE	GND	NOTE						
20A	(E) PANEL '3C'	(N) DISCONNECT SWITCH 'GG1'	3/4"	2#12	1#12	30AS, 20AT, 2P, 250VAC DISCONNECT SWITCH						
20A	(E) PANEL '3C'	(N) DISCONNECT SWITCH 'GG2'	3/4"	2#12	1#12	30AS, 20AT, 2P, 250VAC DISCONNECT SWITCH						
20A	(N) PANEL 'MPZ-GG1'	(N) DISCONNECT SWITCH 'GG3'	3/4"	2#12	1#12	30AS, 20AT, 2P, 250VAC DISCONNECT SWITCH						
100A	(N) PANEL 'MPZ-GG1'	(N) GUARD BOOTH	1 1/2"	2#1	1#8	100A, 120V/240, SINGLE PHASE MAIN LOAD						

GATES INSTALLATION EN GROVE BUS BASE	JA;	
ATES IN I GROVE	ELECTRICAL	

CHECKED BY:

E-GG-601

11790 CARDINAL CIRCLE

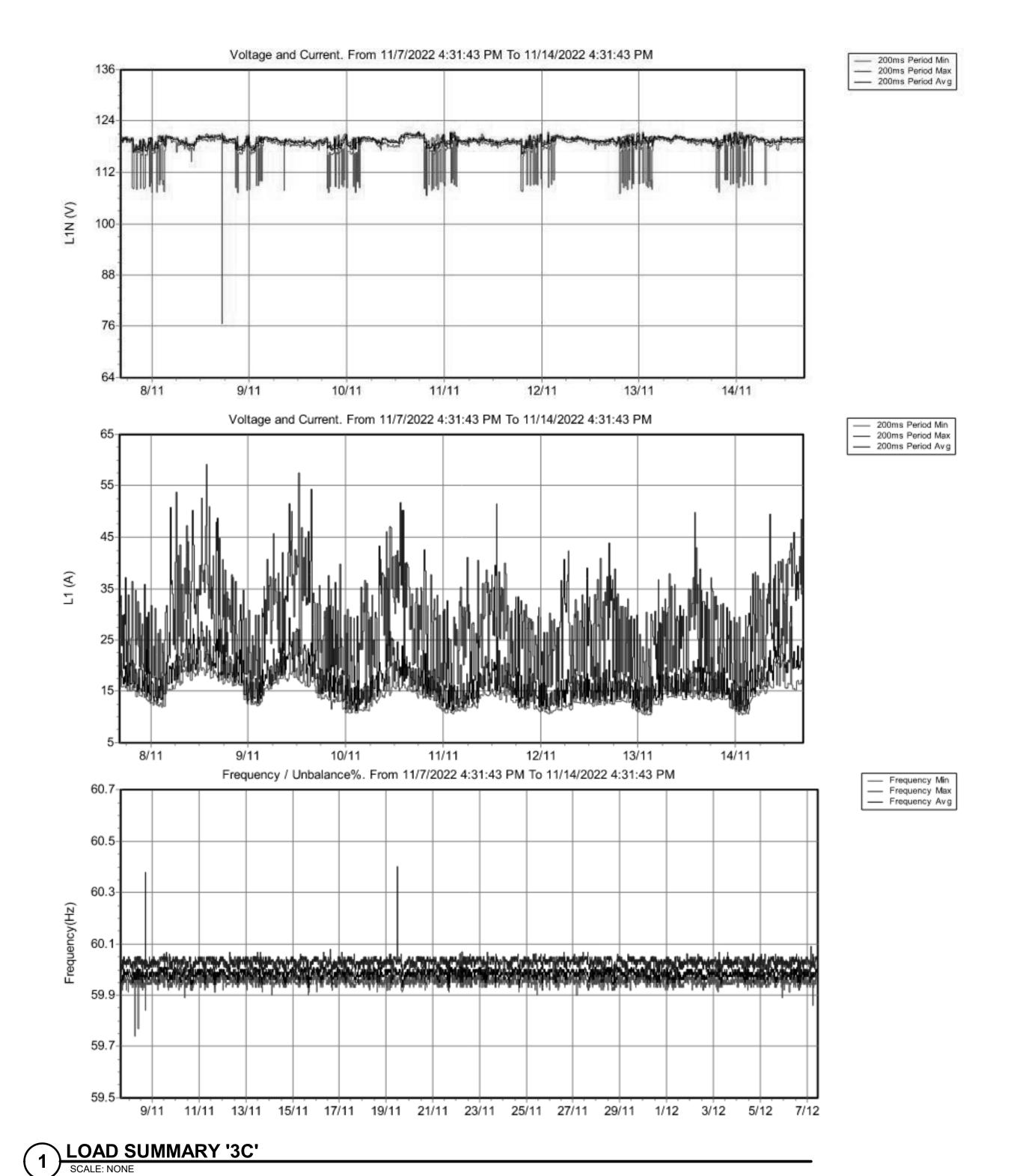
GARDEN GROVE, CA 92843

714/560/OCTA



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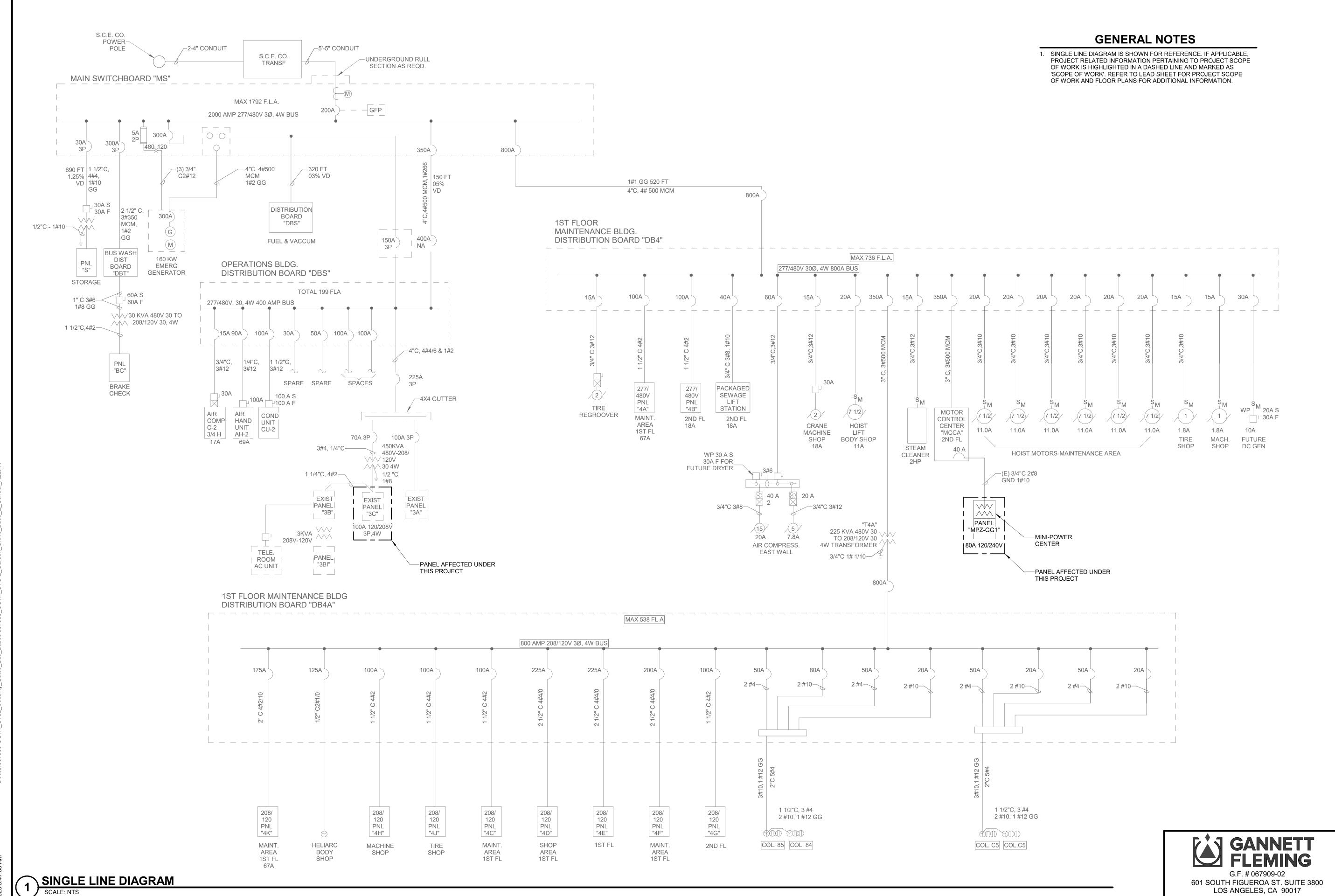
	LOAD SUMMARY VERIFICATION '3C'							
PANEL	MIN REQ. MEASUREMENT	MEASUREMENT DATES	FEEDER	BUS RATING	METERED LOAD X 1.25	DELETED LOAD	ADDED LOAD	TOTAL LOAD
'3C'	30 DAYS	11/7/2022 - 12/08/2022	30A	100A	40.6A	7.5A	7.5A	40.6A



GANNETT FLEMING G.F. # 067909-02 601 SOUTH FIGUEROA ST. SUITE 3800 LOS ANGELES, CA 90017 T: 213 624 0347 www.gannettfleming.com

067909-02 CHECKED BY: 01.20.2023 E-GG-602 11790 CARDINAL CIRCLE GARDEN GROVE, CA 92843





|| S SECURITY GATES INS
AT GARDEN GROVE

ELECTRICAL

SINGLE LINE DIAG

> 067909-02 CHECKED BY 01.20.2023 NONE

E-GG-701

11790 CARDINAL CIRCLE GARDEN GROVE, CA 92843

714/560/OCTA

T: 213 624 0347 www.gannettfleming.com



SYMBOLS

SECURITY SYSTEM CLOSED CIRCUIT TELEVISION (CCTV) CAMERA ACS ACCESS CONTROL SYSTEM KNOX BOX KEY CONTROL

INTERCOM ACS LRR ACCESS CONTROL NEDAP LONG RANGE READER VEHICULAR EXIT LOOP/ SAFETY LOOP

<u>LIGHTING</u>

MCB

MDF

MISC

MM

MUX

MAIN CIRCUIT BREAKER MAIN DISTRIBUTION FRAME

MULTIMODE (FIBER OPTIC CABLE)

MANHOLE

MISCELLANEOUS

MULTIPLEXER

POLE MOUNTED LIGHT FIXTURE (SINGLE) POLE MOUNTED LIGHT FIXTURE (DOUBLE)

MISCELLANEOUS:



KEYNOTE OR EQUIPMENT IDENTIFICATION



SECTION IDENTIFICATION SECTION NOMENCLATURE

-SHEET NUMBER ON WHICH SECTION IS SHOWN

-DETAIL IDENTIFICATION DETAIL NOMENCLATURE -SHEET NUMBER ON WHICH DETAIL IS SHOWN

HANDHOLE

'C' DENOTES COMMUNICATIONS HANDHOLE 'P' DENOTES POWER HANDHOLE

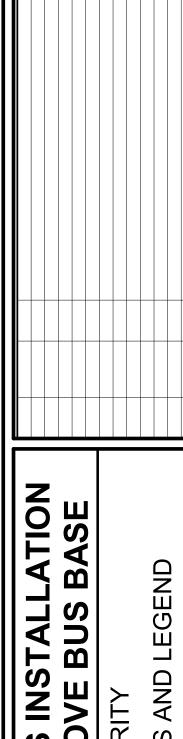
----- UNDERGROUND ELECTRICAL/COMMUNICATION CONDUITS

ABBREVIATIONS

@	AT	N	NEUTRAL
AC	ALTERNATING CURRENT	NC	NORMALLY CLOSED CONTACT
ACM	ASBESTOS CONTAINING MATERIAL	NEC	NATIONAL ELECTRICAL CODE
AFF			
	ABOVE FINISHED FLOOR	NIC	NOT IN CONTRACT
AFG	ABOVE FINISHED GRADE	NO or #	NUMBER
APPROX	APPROXIMATELY	NTS	NOT TO SCALE
ASPH	ASPHALT	NVR	NETWORK VIDEO RECORDER
AWG	AMERICAN WIRE GAUGE	N/A	NOT APPLICABLE
BATT	BATTERY	ОН	OVERHEAD
BMS	BALANCED MAGNETIC SWITCH		
BR	BRICK	PIDS	PASSENGER INFORMATION DISPLAY SYSTEM
BR	BRIDGE	PLATF	PLATFORM
BLDG	BUILDING	PNL	PANEL
		PROP	PROPOSED
С	CENTER	PAVT	PAVEMENT
C, CND	CONDUIT	PTZ	PAN TILT AND ZOOM
CAT	CATENARY	PWR	POWER
CB	CIRCUIT BREAKER	LAAL	FOWLK
CCTV	CLOSED CIRCUIT TELEVISION	OLIANITITY/	OLIANITITY/
		QUANTITY	QUANTITY
CKT, CCT	CIRCUIT		
CP	CATENARY POLE	ROW	RIGHT OF WAY
COM	COMMUNICATION	RR	RAILROAD
CT	CATENARY TOWER	RTE	ROUTE
		RTU	REMOTE TERMINAL UNIT
DC	DIRECT CURRENT		
DEG	DEGREE	SF	SQUARE FEET
DIA, Ø	DIAMETER	SP	SPARE
DIS. SW.	DISCONNECT SWITCH	SS	STAINLESS STEEL
DVR	DIGITIAL VIDEO RECORDER		
DVK	DIGITIAL VIDEO RECORDER	STA	STATION
	F40U	STD	STANDARD
EA	EACH	SW	SWITCH
EG	EQUIPMENT GROUND	SMH	SEWER MANHOLE
EHH	ELECTRICAL HANDHOLE	SM	SINGLE MODE (FIBER OPTIC CABLE)
EOCC	EMERGENCY OPERATIONS CONTROL CENTER	SMFOPP	SINGLE MODE FIBER OPTIC PATCH PANEL
ER	EQUIPMENT RACK/CABINET	STMH	STEAM MANHOLE
ELEC	ELECTRICAL	STOMH	STORM MANHOLE
ELEV	ELEVATION	SWBD	SWITCHBOARD
EQUIP	EQUIPMENT	OWBB	OWIT OTTEO/ IT D
EX	EXISTING TO REMAIN	Т	THERMOSTAT
EXIST	EXISTING		TO BE REMOVED
EVIOL	EXISTING	TBR	
	FIRED ORTIO	TEMP	TEMPORARY
FO	FIBER OPTIC	T/R	TOP OF RAIL
FOMC	FIBER OPTIC MEDIA CONVERTOR	TYP	TYPICAL
FOPP	FIBER OPTIC PATCH PANEL	TK	TRACK
		TEL	TELEPHONE
GEN	GENERAL	TMH	TELEPHONE MANHOLE
GA	GAUGE		
GRV			
	GRAVEL	UP	UTILITY POLE
GALV			
	GRAVEL GALVANIZED	U/G	UNDERGROUND
G, GND	GRAVEL GALVANIZED GROUND		
	GRAVEL GALVANIZED	U/G UTP	UNDERGROUND UNSHIELDED TWISTED PAIR
G, GND GRD	GRAVEL GALVANIZED GROUND GRADE	U/G	UNDERGROUND
g, gnd grd In	GRAVEL GALVANIZED GROUND GRADE	U/G UTP V	UNDERGROUND UNSHIELDED TWISTED PAIR VOLT
G, GND GRD IN INFO	GRAVEL GALVANIZED GROUND GRADE INCH INFORMATION	U/G UTP V W	UNDERGROUND UNSHIELDED TWISTED PAIR VOLT WIRE
G, GND GRD IN INFO INV	GRAVEL GALVANIZED GROUND GRADE INCH INFORMATION INVERT	U/G UTP V W W/	UNDERGROUND UNSHIELDED TWISTED PAIR VOLT WIRE WITH
G, GND GRD IN INFO	GRAVEL GALVANIZED GROUND GRADE INCH INFORMATION	U/G UTP V W W/ W/O	UNDERGROUND UNSHIELDED TWISTED PAIR VOLT WIRE WITH WITHOUT
G, GND GRD IN INFO INV IJ	GRAVEL GALVANIZED GROUND GRADE INCH INFORMATION INVERT INSULATED JOINT	U/G UTP V W W/	UNDERGROUND UNSHIELDED TWISTED PAIR VOLT WIRE WITH
G, GND GRD IN INFO INV IJ	GRAVEL GALVANIZED GROUND GRADE INCH INFORMATION INVERT INSULATED JOINT JOINT	U/G UTP V W W/ W/O	UNDERGROUND UNSHIELDED TWISTED PAIR VOLT WIRE WITH WITHOUT
G, GND GRD IN INFO INV IJ	GRAVEL GALVANIZED GROUND GRADE INCH INFORMATION INVERT INSULATED JOINT	U/G UTP V W W/ W/O WP	UNDERGROUND UNSHIELDED TWISTED PAIR VOLT WIRE WITH WITHOUT WEATHERPROOF
G, GND GRD IN INFO INV IJ	GRAVEL GALVANIZED GROUND GRADE INCH INFORMATION INVERT INSULATED JOINT JOINT	U/G UTP V W W/ W/O WP	UNDERGROUND UNSHIELDED TWISTED PAIR VOLT WIRE WITH WITHOUT WEATHERPROOF
G, GND GRD IN INFO INV IJ	GRAVEL GALVANIZED GROUND GRADE INCH INFORMATION INVERT INSULATED JOINT JOINT	U/G UTP V W W/ W/O WP WH	UNDERGROUND UNSHIELDED TWISTED PAIR VOLT WIRE WITH WITHOUT WEATHERPROOF WATER HYDRANT
G, GND GRD IN INFO INV IJ JT JB	GRAVEL GALVANIZED GROUND GRADE INCH INFORMATION INVERT INSULATED JOINT JOINT JUNCTION BOX	U/G UTP V W W/ W/O WP WH	UNDERGROUND UNSHIELDED TWISTED PAIR VOLT WIRE WITH WITHOUT WEATHERPROOF WATER HYDRANT TRANSFORMER
G, GND GRD IN INFO INV IJ JT JB	GRAVEL GALVANIZED GROUND GRADE INCH INFORMATION INVERT INSULATED JOINT JOINT JUNCTION BOX KILOVOLT AMPERE	U/G UTP V W W/ W/O WP WH	UNDERGROUND UNSHIELDED TWISTED PAIR VOLT WIRE WITH WITHOUT WEATHERPROOF WATER HYDRANT TRANSFORMER
G, GND GRD IN INFO INV IJ JT JB KVA LP	GRAVEL GALVANIZED GROUND GRADE INCH INFORMATION INVERT INSULATED JOINT JOINT JUNCTION BOX KILOVOLT AMPERE LIGHT POLE	U/G UTP V W W/ W/O WP WH	UNDERGROUND UNSHIELDED TWISTED PAIR VOLT WIRE WITH WITHOUT WEATHERPROOF WATER HYDRANT TRANSFORMER
G, GND GRD IN INFO INV IJ JT JB	GRAVEL GALVANIZED GROUND GRADE INCH INFORMATION INVERT INSULATED JOINT JOINT JUNCTION BOX KILOVOLT AMPERE	U/G UTP V W W/ W/O WP WH	UNDERGROUND UNSHIELDED TWISTED PAIR VOLT WIRE WITH WITHOUT WEATHERPROOF WATER HYDRANT TRANSFORMER
G, GND GRD IN INFO INV IJ JT JB KVA LP	GRAVEL GALVANIZED GROUND GRADE INCH INFORMATION INVERT INSULATED JOINT JOINT JUNCTION BOX KILOVOLT AMPERE LIGHT POLE	U/G UTP V W W/ W/O WP WH	UNDERGROUND UNSHIELDED TWISTED PAIR VOLT WIRE WITH WITHOUT WEATHERPROOF WATER HYDRANT TRANSFORMER

GENERAL NOTES

- 1. ALL MATERIALS PROVIDED SHALL BE NEW, UL LISTED AND CONFORM TO CONTRACT SPECIFICATIONS, DRAWINGS AND THE 2014 EDITION OF NATIONAL ELECTRICAL CODE.
- 2. ALL WORK SHALL COMPLY WITH THE 2014 EDITION OF NATIONAL ELECTRICAL CODE AND THE REQUIREMENTS OF ALL LOCAL CODES AND REGULATIONS OF AUTHORITIES HAVING JURISDICTION OVER THE WORK.
- 3. PROVIDE FIRESTOP TO ALL PENETRATIONS (I.E. WALL, FLOOR, ETC.)
- 4. ALL CABLING & TERMINATION SHALL COMPLY WITH EIA/TIA STANDARDS.
- 5. THE DRAWINGS SCALES AND DIMENSIONS ARE FOR REFERENCE ONLY. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS, FLOOR PLANS, AND ADJUST ACCORDINGLY.
- 6. FIELD MOUNT ALL LOW-PROFILE PANELS WITH UNISTRUT AS REQUIRED AND FIELD LOCATE; P-1000 GALVANIZED, FURNISH AND INSTALL. COMM CABINETS LOCATE 18" AFF TO BOTTOM OF
- 7. PROVIDE ALL APPURTENANCES FOR A COMPLETE AND OPERATIONAL INSTALLATION; WHETHER OR NOT SHOWN IN THE DRAWINGS OR CALLED OUT IN THE SPECIFICATIONS.
- 8. CONDUITS INSTALLED UNDER ROADWAYS OR DRIVE AREAS SHALL BE CONCRETE ENCASED AND EXTEND 3' BEYOND. CONDUIT IN GRASS AREAS SHALL BE DIRECT BURIED.
- 9. PROVIDE GROUND ROD AT EVERY NEW GATE CONTROLLER LOCATION, NEW SWING GATE, NEW VEHICLE GATE, NEW WEDGE BARRIER LOCATION, NEW SITE LIGHTING POLE LOCATION, AND NEW SITE COMMUNICATIONS ENCLOSURE.
- 10. ALL MATERIALS PROVIDED SHALL BE NEW, UL LISTED AND CONFORM TO CONTRACT SPECIFICATIONS, DRAWINGS AND THE LATEST EDITION OF NATIONAL ELECTRICAL CODE.
- 11. ALL WORK SHALL COMPLY WITH THE LATEST EDITION OF NATIONAL ELECTRICAL CODE AND THE REQUIREMENTS OF ALL LOCAL CODES AND REGULATIONS OF AUTHORITIES HAVING JURISDICTION OVER THE WORK.
- 12. PROVIDE FIRESTOP TO ALL PENETRATIONS (I.E. WALL, FLOOR, ETC.)
- 13. ALL CABLING & TERMINATION SHALL COMPLY WITH EIA/TIA STANDARDS.
- 14. THE DRAWINGS SCALES AND DIMENSIONS ARE FOR REFERENCE ONLY. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS, FLOOR PLANS, AND ADJUST ACCORDINGLY.
- 15. FIELD MOUNT ALL LOW-PROFILE PANELS WITH UNISTRUT AS REQUIRED AND FIELD LOCATED: P-100 GALVANIZED, FURNISH AND INSTALL. COMM CABINETS LOCATE 18" AFF TO BOTTOM OF
- 16. PROVIDE ALL APPURTENANCES FOR A COMPLETE AND OPERATIONAL INSTALLATION: WHETHER OR NOT SHOWN IN THE DRAWING OR CALLED OUT IN THE SPECIFICATIONS.



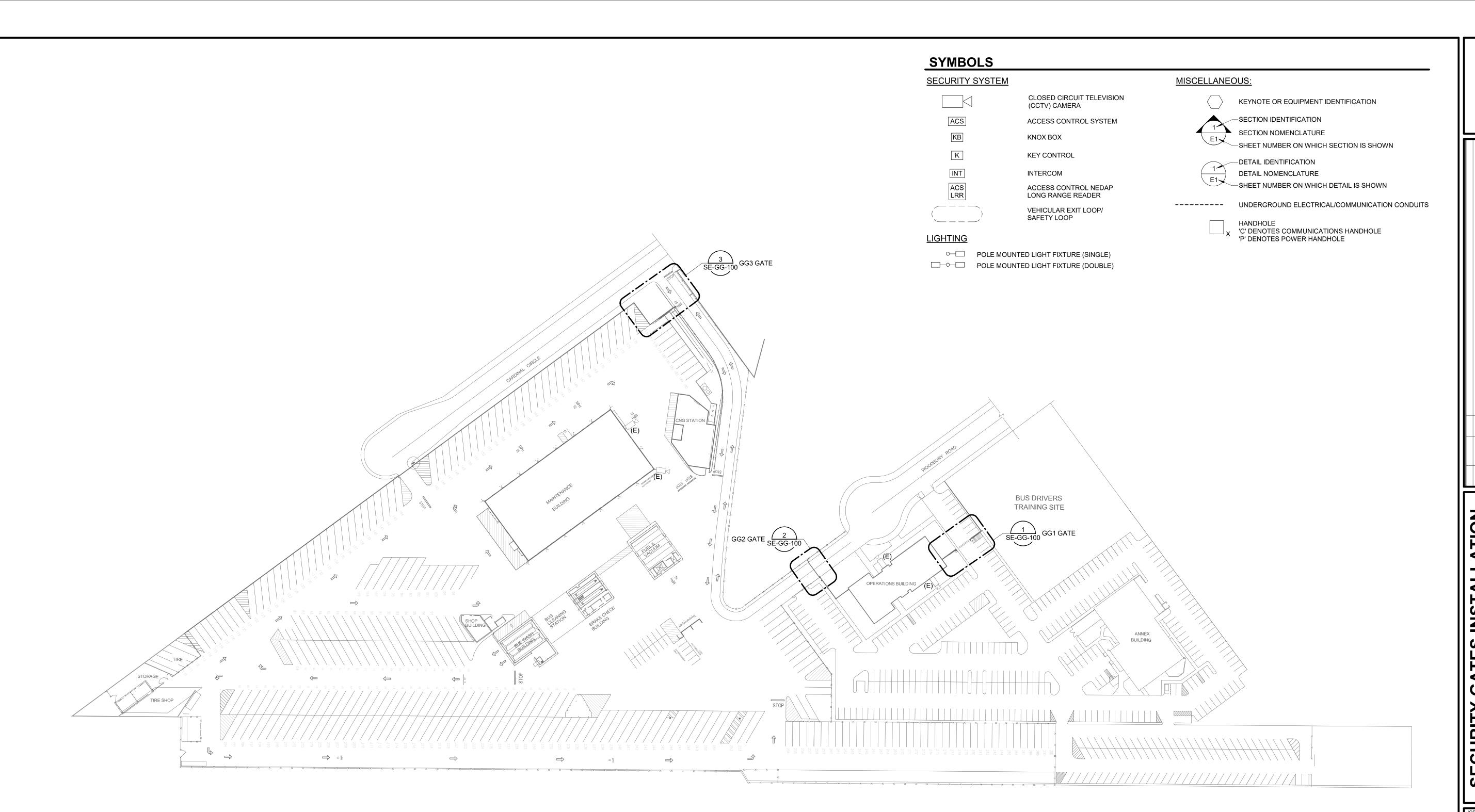
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11790 CARDINAL CIRCLE GARDEN GROVE, CA 92843 714/560/OCTA

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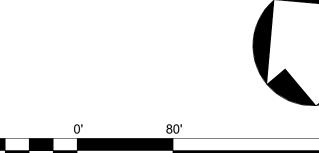




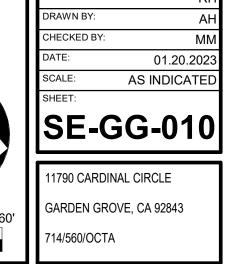


OVERALL SITE PLAN - DEMOLITION

SCALE: 1" = 80'-0"

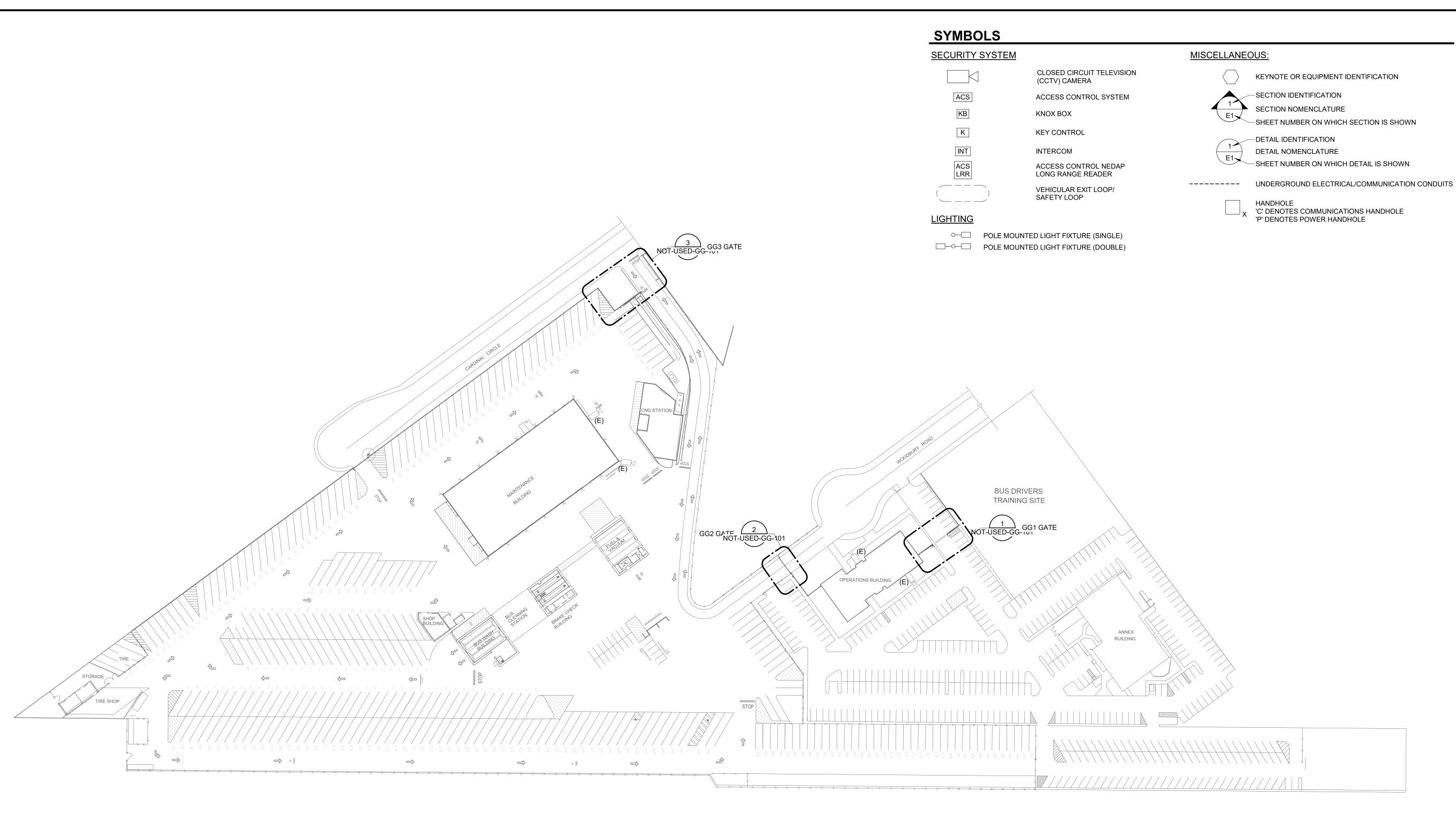












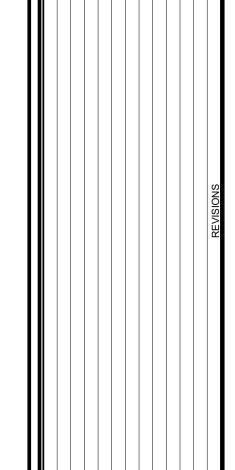
OVERALL SITE PLAN - NEW

SCALE: 1" = 80'-0"



GANNETT FLEMING



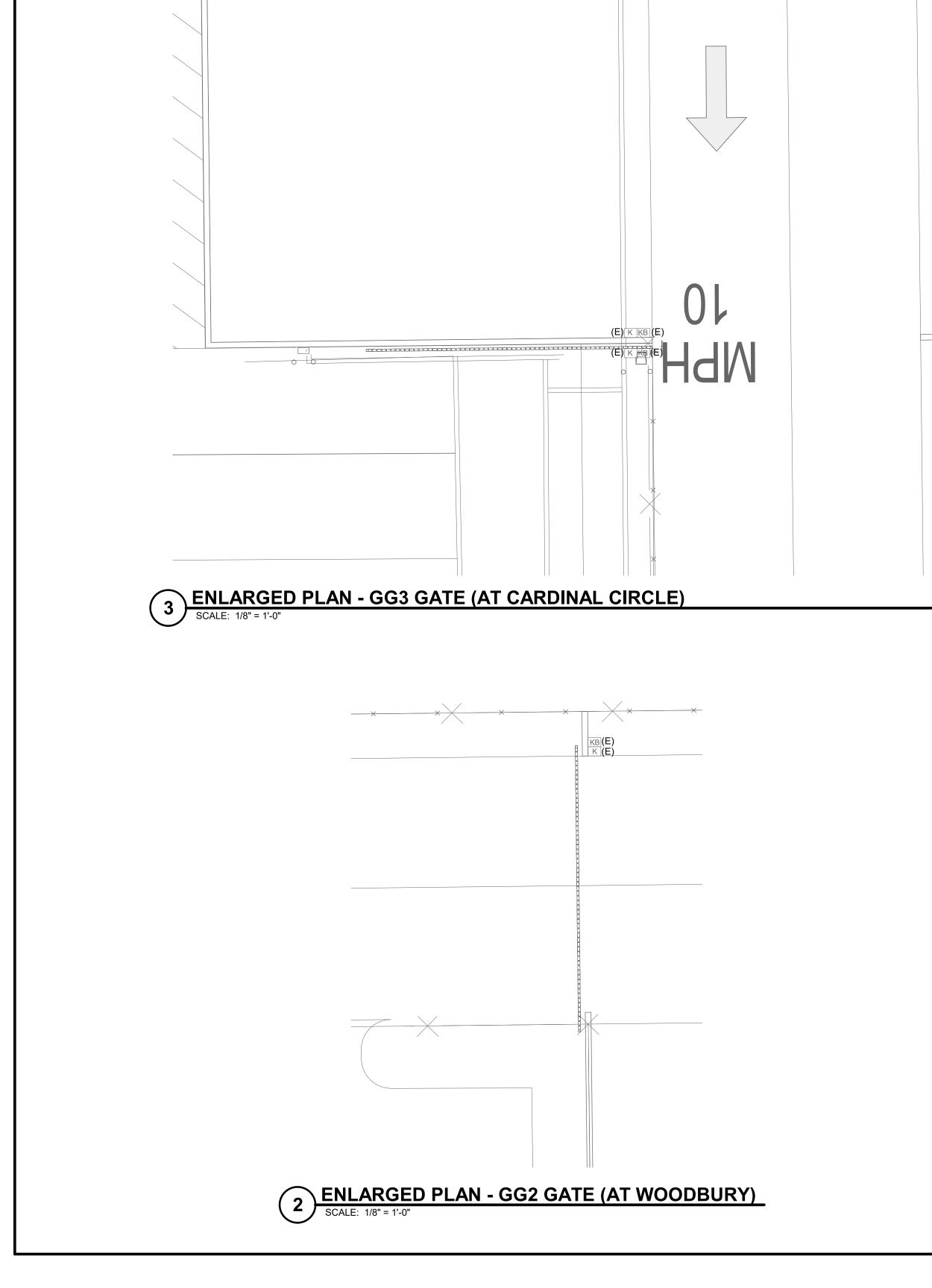


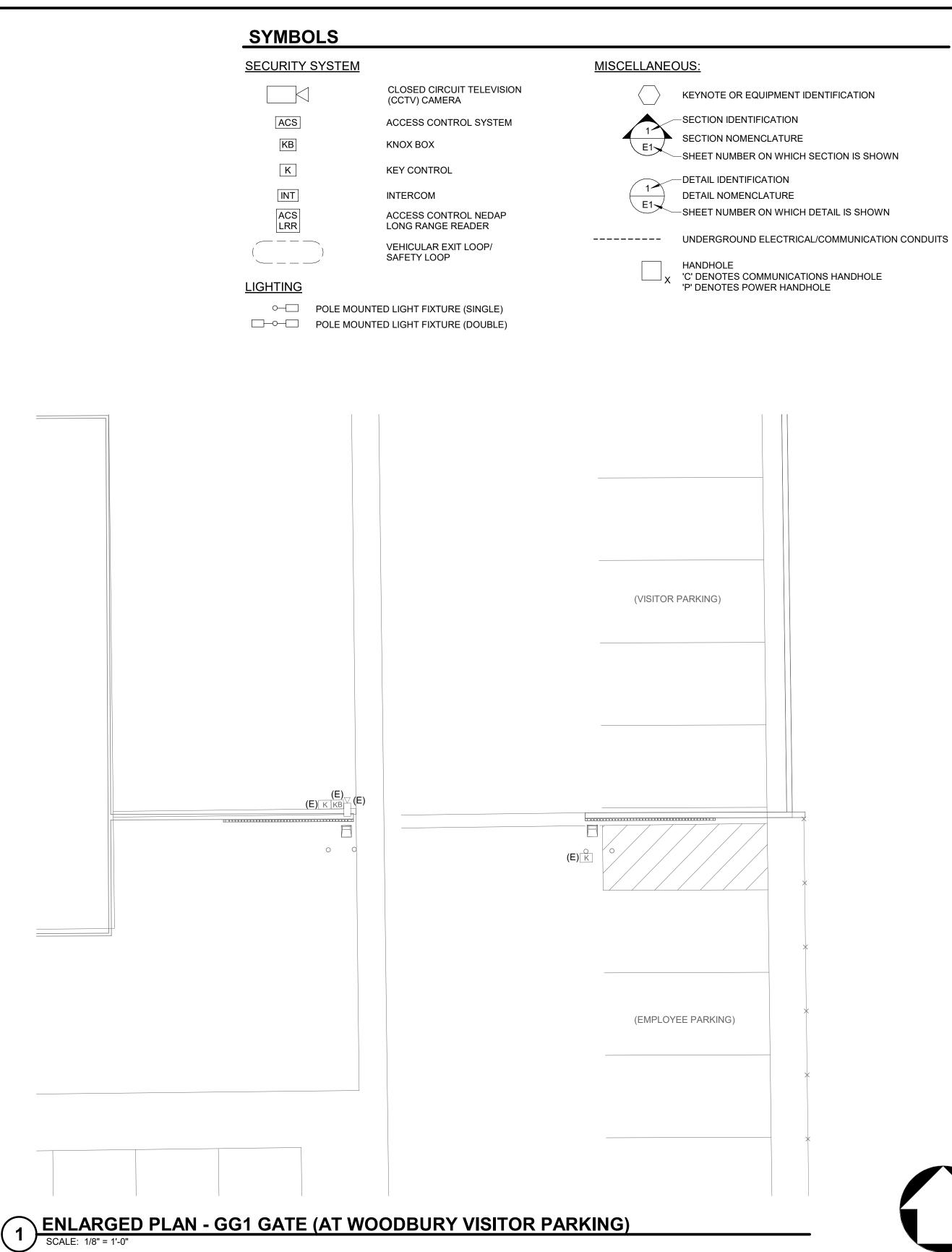
01.20.2023 AS INDICATED

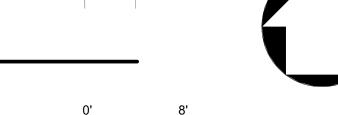
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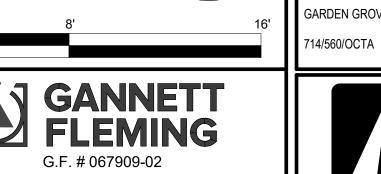








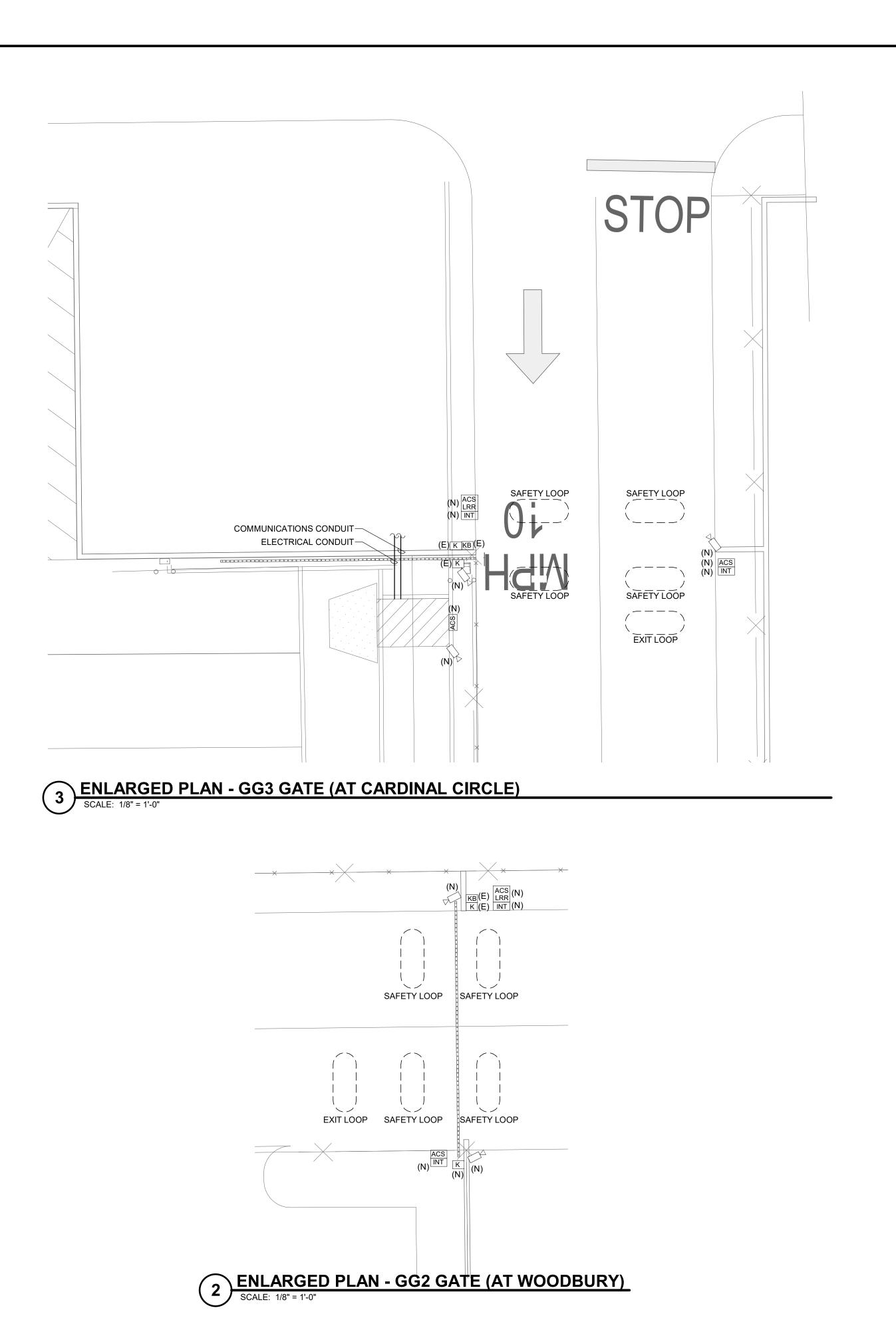
GANNETT FLEMING G.F. # 067909-02 601 SOUTH FIGUEROA ST. SUITE 3800 LOS ANGELES, CA 90017 T: 213 624 0347 www.gannettfleming.com

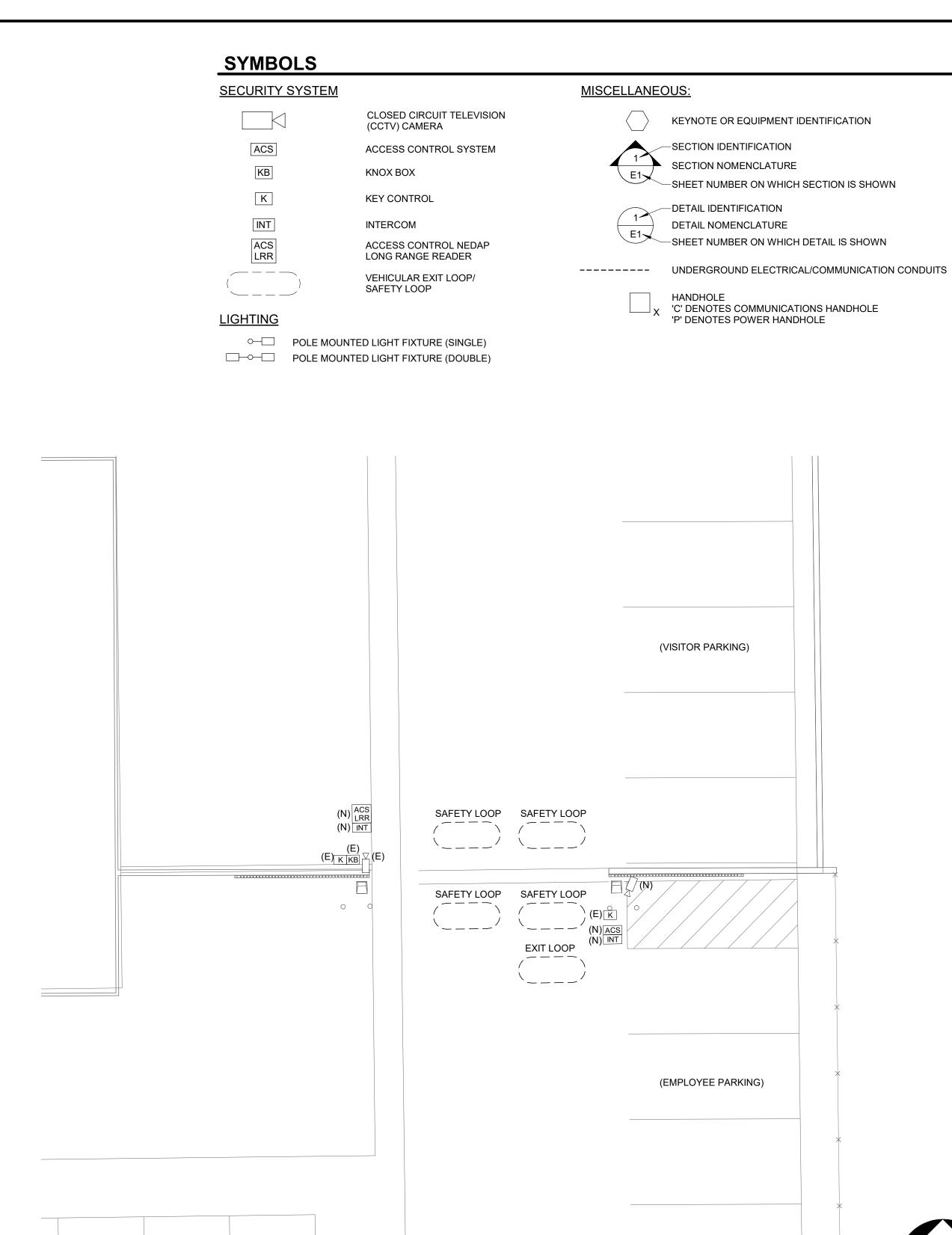




||SE-GG-100|

01.20.2023 AS INDICATED





1 ENLARGED PLAN - GG1 GATE (AT WOODBURY VISITOR PARKING)

SCALE: 1/8" = 1'-0"





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601 SOUTH FIGUEROA ST. SUITE 3800
LOS ANGELES, CA 90017
T: 213 624 0347
www.gannettfleming.com

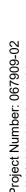


SE-GG-101

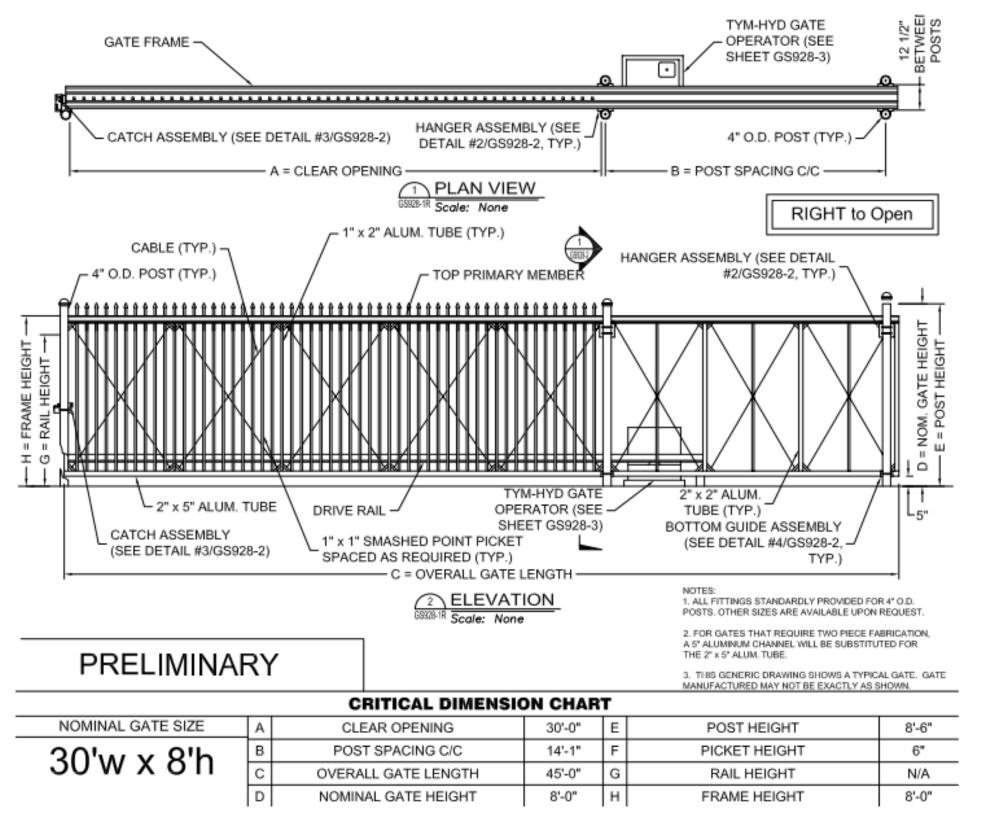
GARDEN GROVE, CA 92843

714/560/OCTA

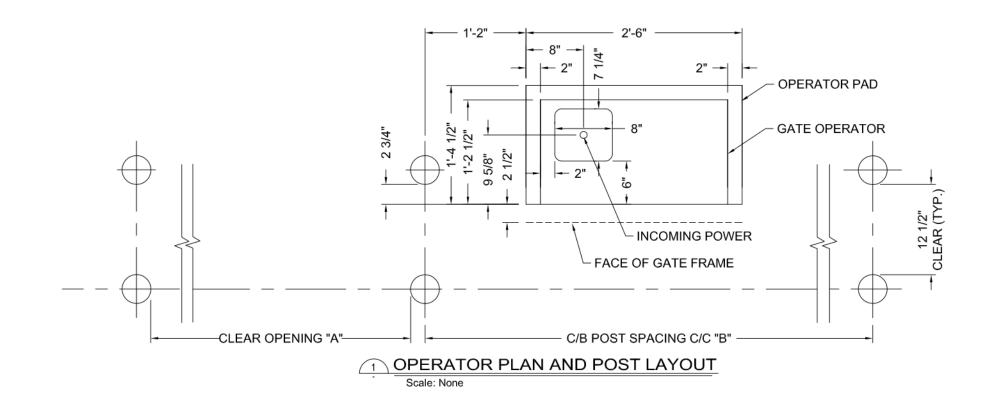
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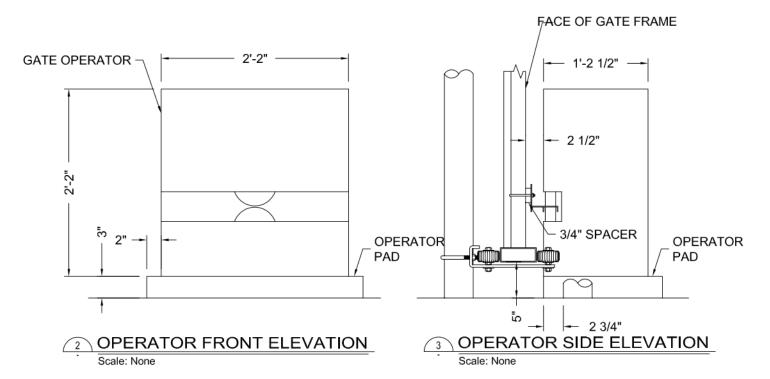




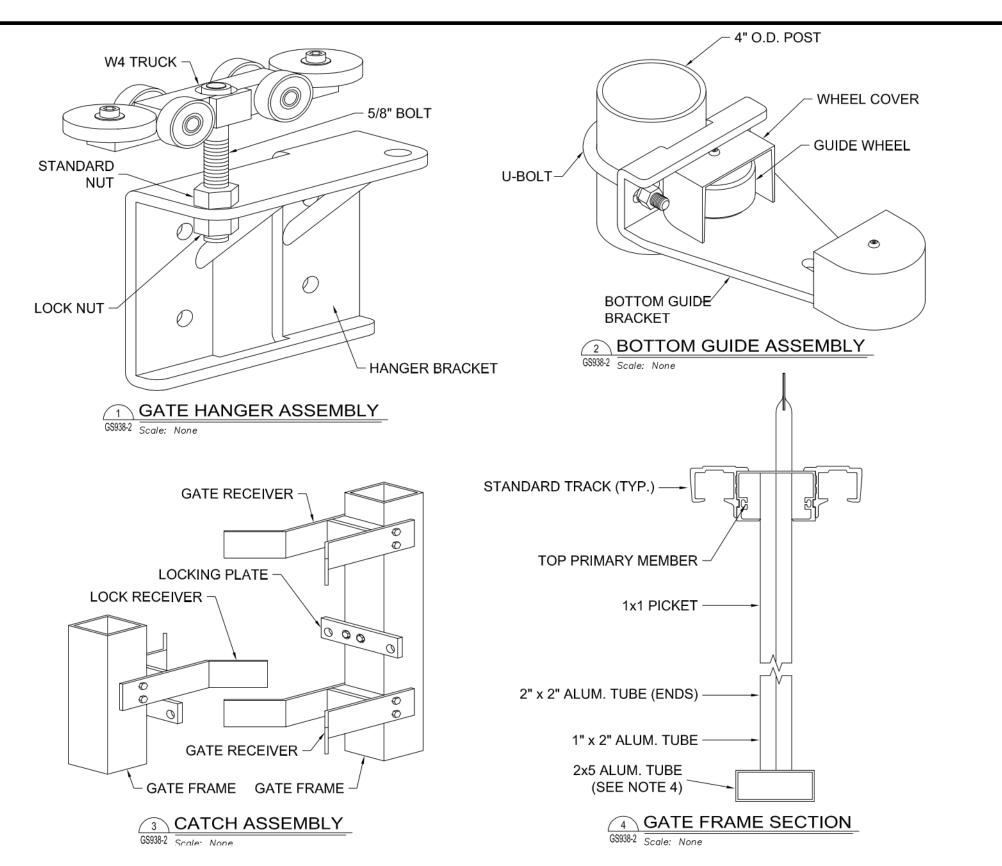


STRUCTURAL CANTILEVER SLIDE GATE WITH TYM-HYD OPERATOR RH GG2 &

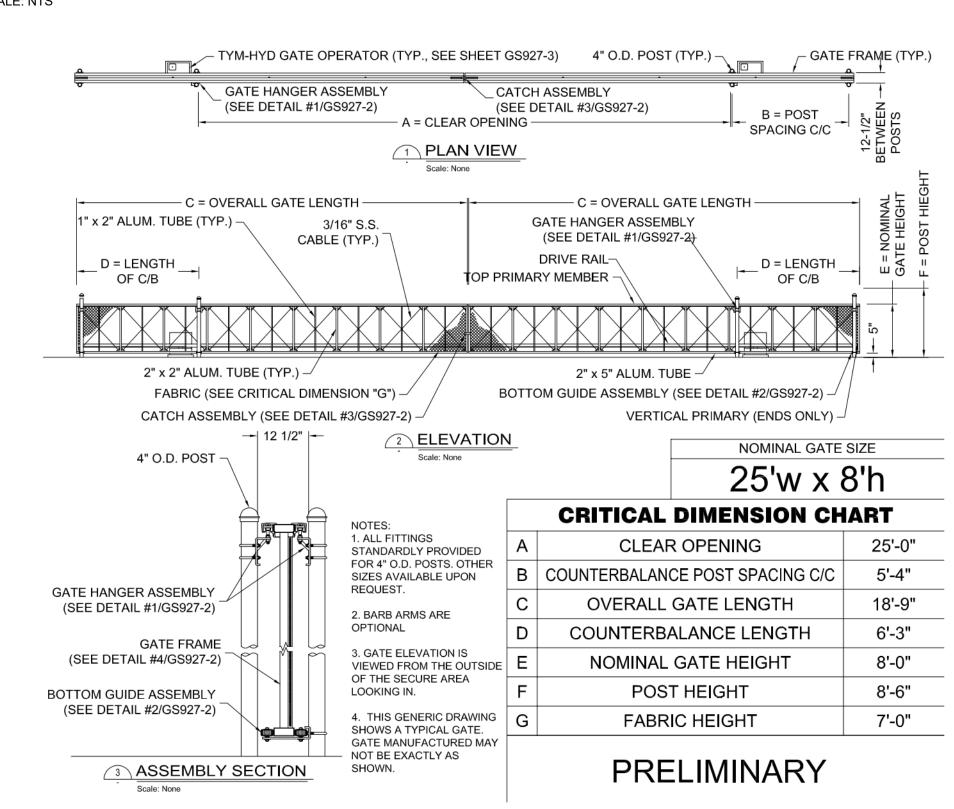




↑ STRUCTURAL CANTILEVER SLIDE GATE DETAILS GG1



STRUCTURAL CANTILEVER SLIDE GATE DETAILS GG1 SCALE: NTS



DOUBLE STRUCTURAL CANTILEVER SLIDE GATE WITH TYM-HYD HYDRAULIC GATE OPERATOR GG1





067909-02

01.20.2023

AS INDICATE

SE-GG-501

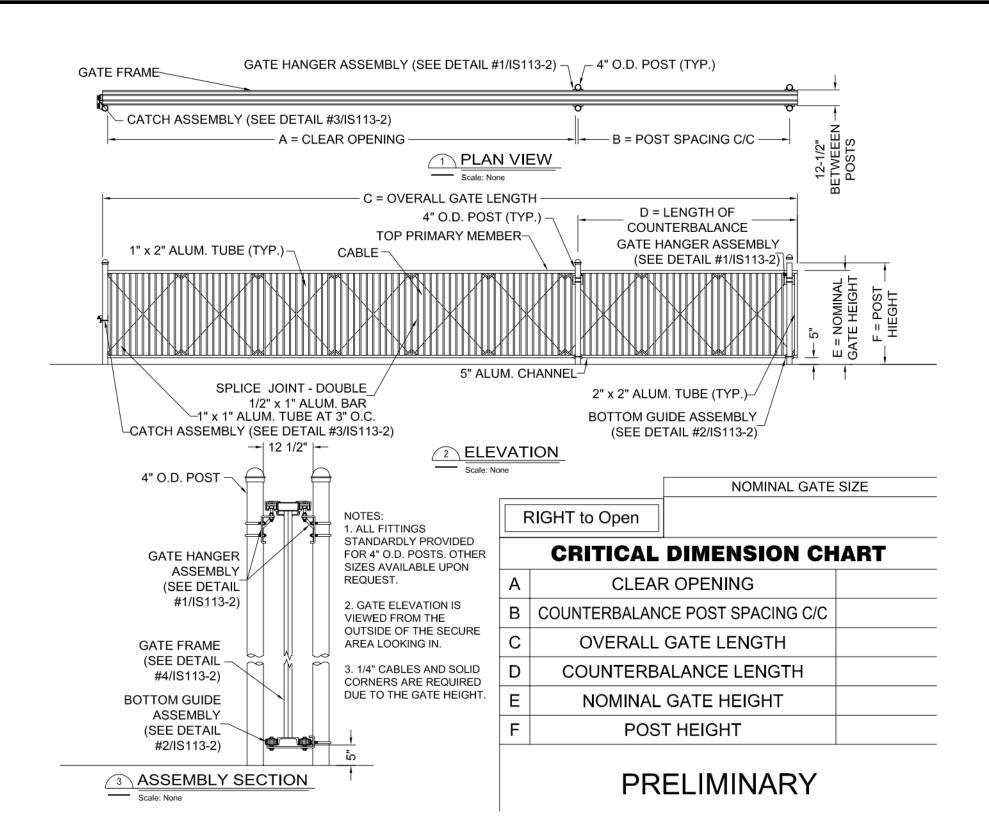
11790 CARDINAL CIRCLE

GARDEN GROVE, CA 92843

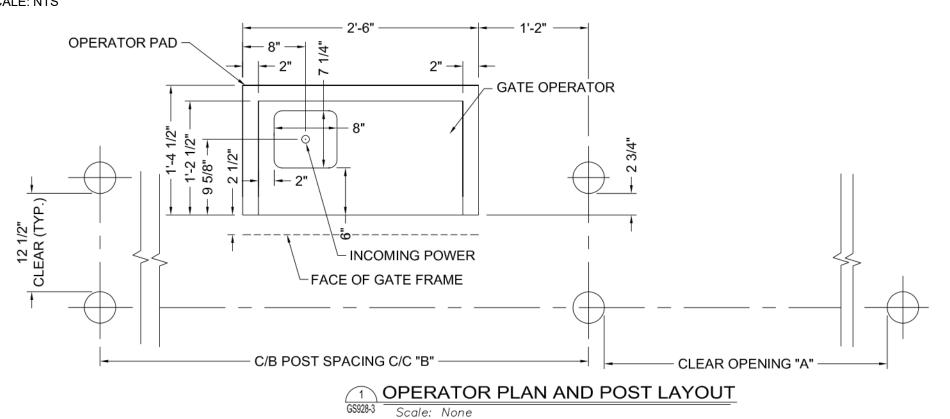
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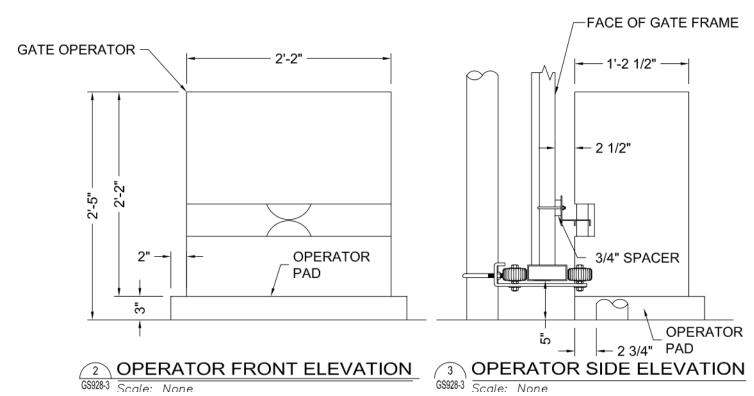
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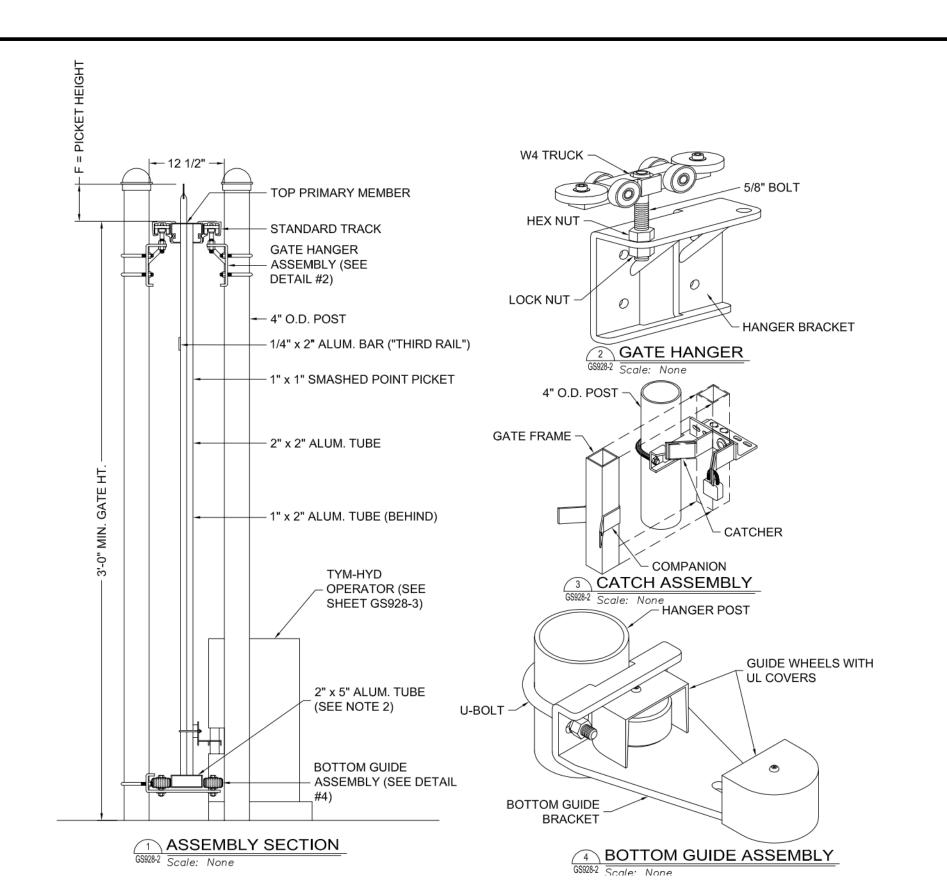




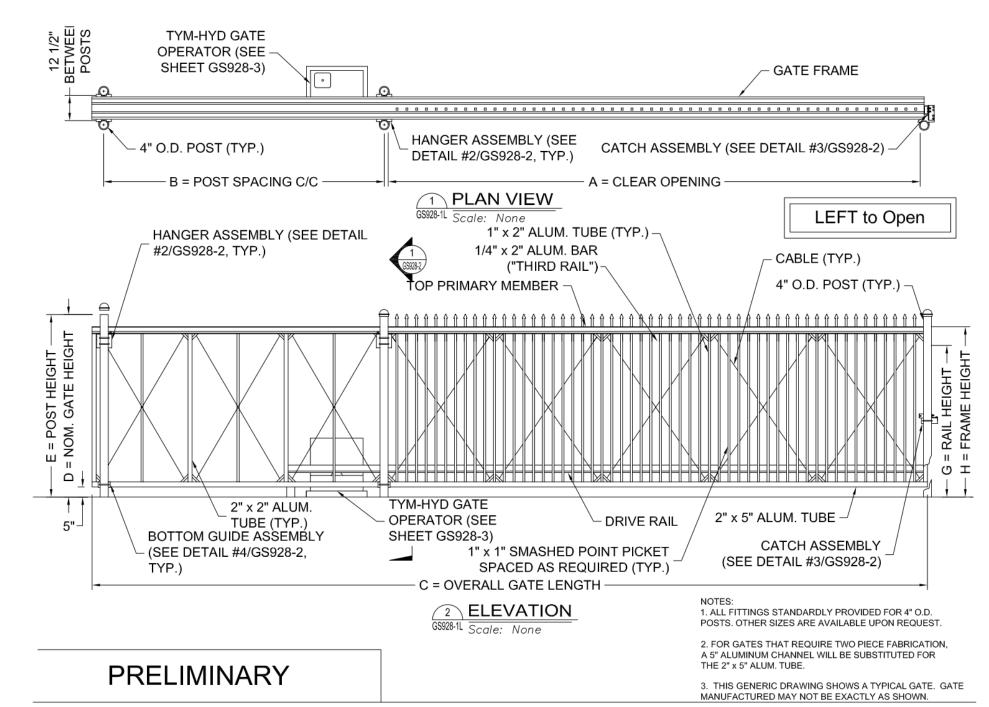




STRUCTURAL CANTILEVER SLIDE GATE DETAILS GG2 & GG3



STRUCTURAL CANTILEVER SLIDE GATE DETAILS GG2 & GG3



CRITICAL DIMENSION CHART NOMINAL GATE SIZE 30'-0" E POST HEIGHT 8'-6" **CLEAR OPENING** 14'-1" F 30'w x 8'h POST SPACING C/C PICKET HEIGHT OVERALL GATE LENGTH 45'-0" G RAIL HEIGHT N/A NOMINAL GATE HEIGHT 8'-0" H FRAME HEIGHT

STRUCTURAL CANTILEVER SLIDE GATE WITH TYM-HYD OPERATOR LH GG2 & GG3





|| W

GATES IN

SECURITY AT GARDE

CHECKED BY



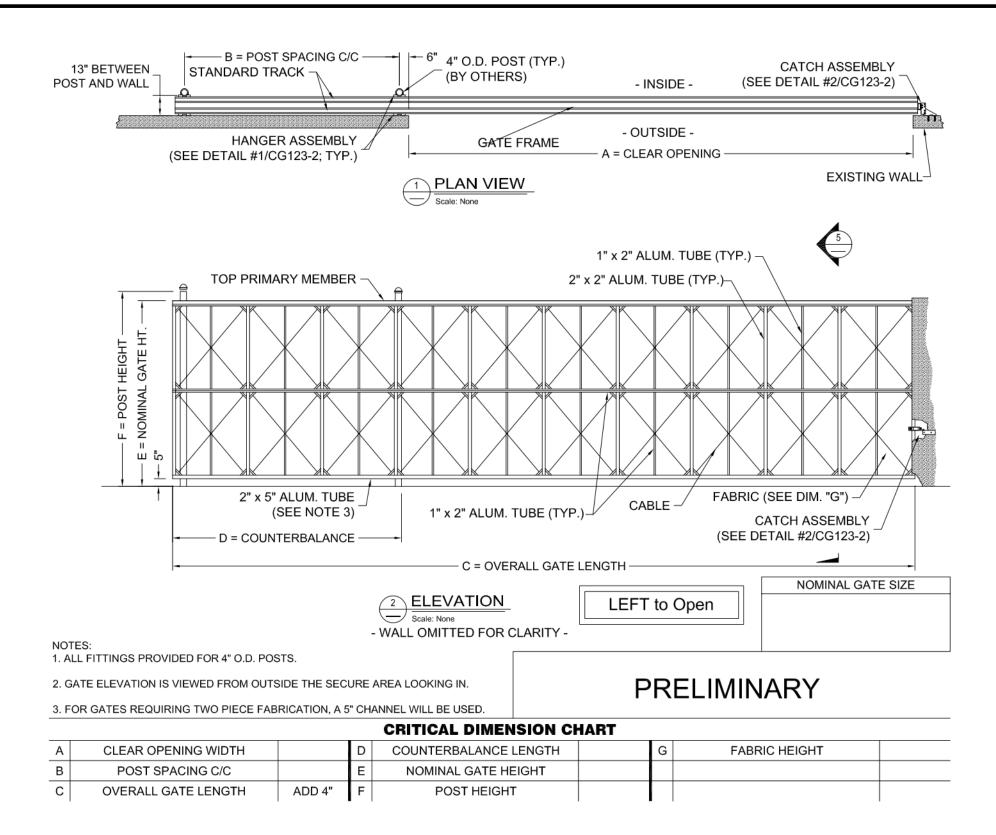
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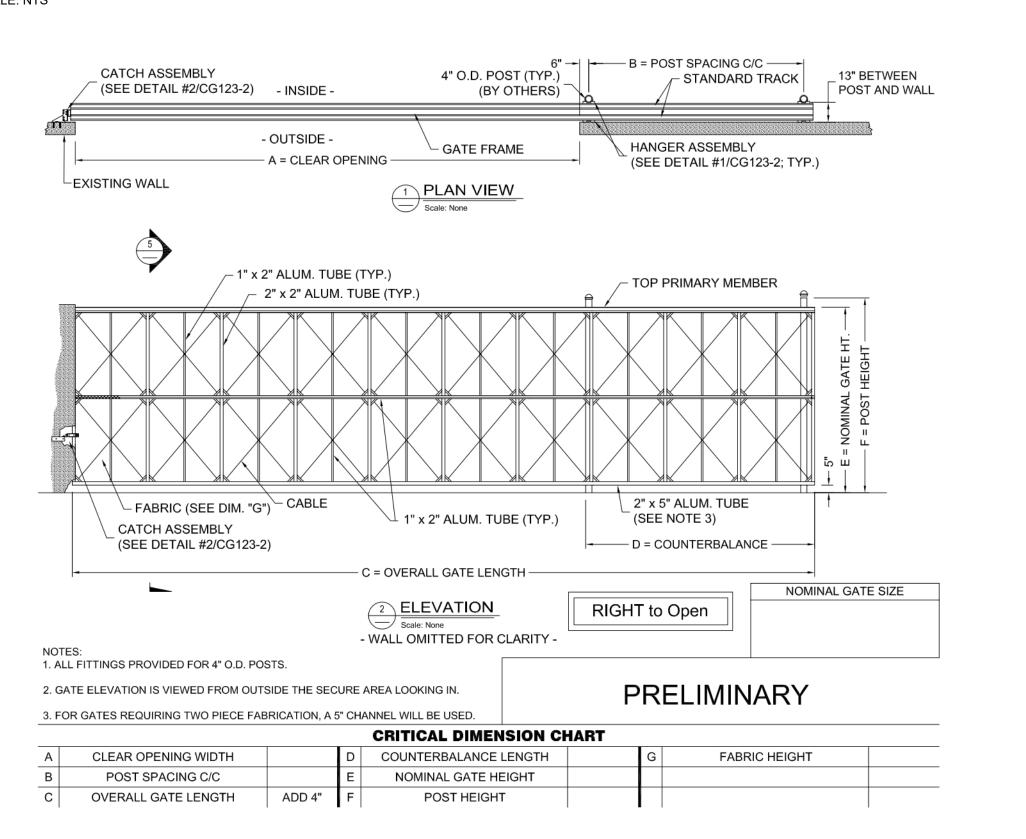
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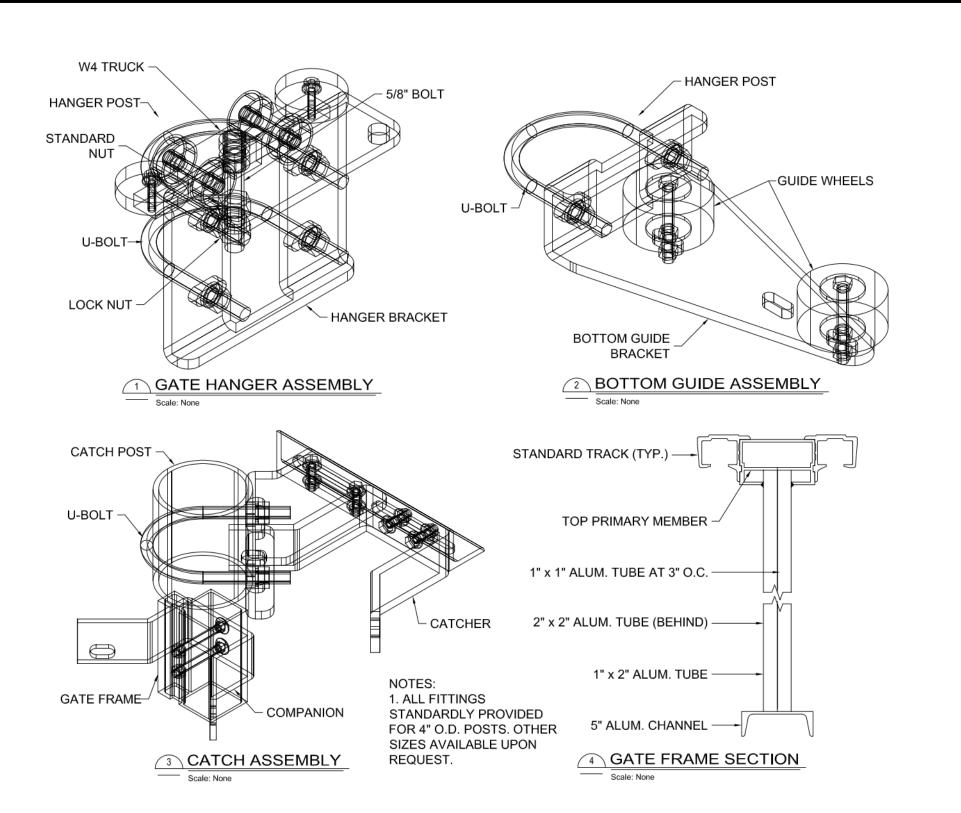
11790 CARDINAL CIRCLE



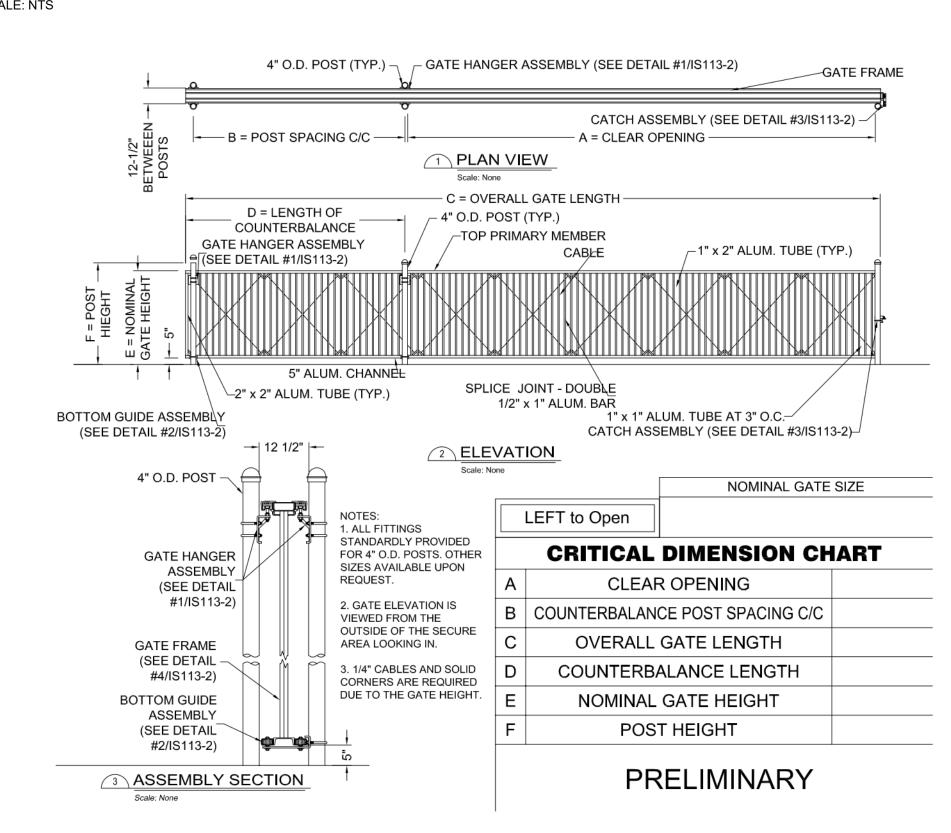
WALL MOUNTED STRUCTURAL CANTILEVER SLIDE GATE LEFT OPEN SCALE: NTS



WALL MOUNTED STRUCTURAL CANTILEVER SLIDE GATE RIGHT OPEN



2 INTERNAL PICKET STRUCTURAL CANTILEVER SLIDE GATE SCALE: NTS



1) INTERNAL PICKET STRUCTURAL CANTILEVER SLIDE GATE LEFT OPEN SCALE: NTS





067909-02

01.20.2023

AS INDICATE

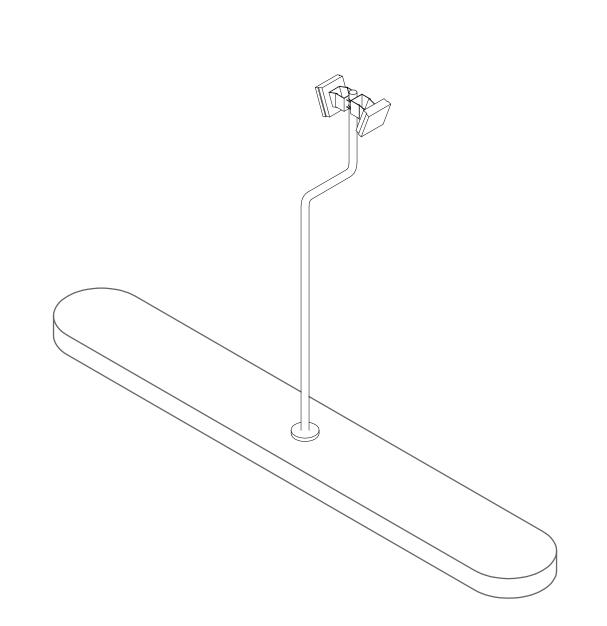
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11790 CARDINAL CIRCLE

GARDEN GROVE, CA 92843

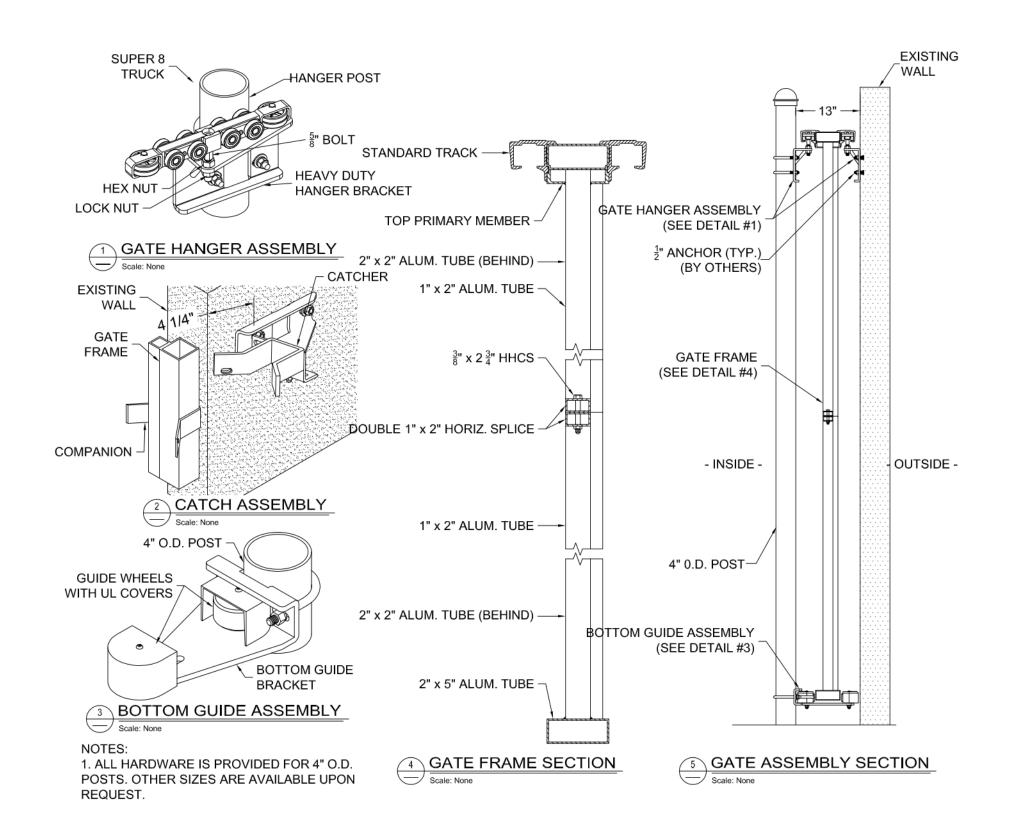
URITY

CHECKED BY



VEHICLE READER TYPICAL

SCALE:



1 WALL MOUNTED STRUCTURAL CANTILEVER SLIDE GATE DETAILS
SCALE: NTS





CHECKED BY:

067909-02

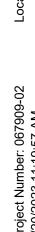
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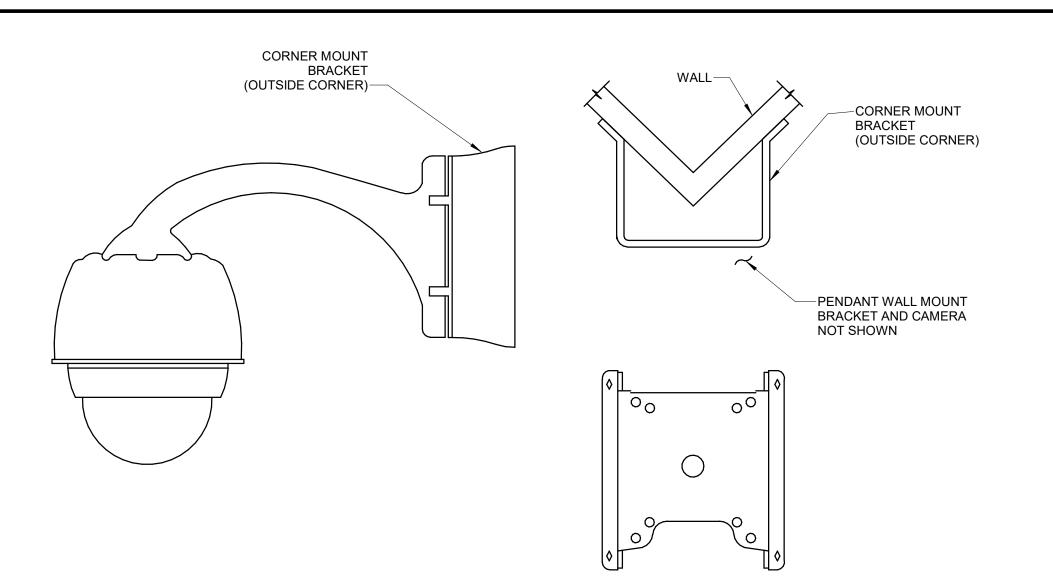
AS INDICATED

||SE-GG-504|

11790 CARDINAL CIRCLE

GARDEN GROVE, CA 92843





CAMERA OUTLET BOX (WEATHERTITE)

CAMERA OUTLET BOX (WEATHERTITE)

CEILING ACCESSIBLE

AXIS T91B47
POLE MOUNT

WEATHER PROOF BOX

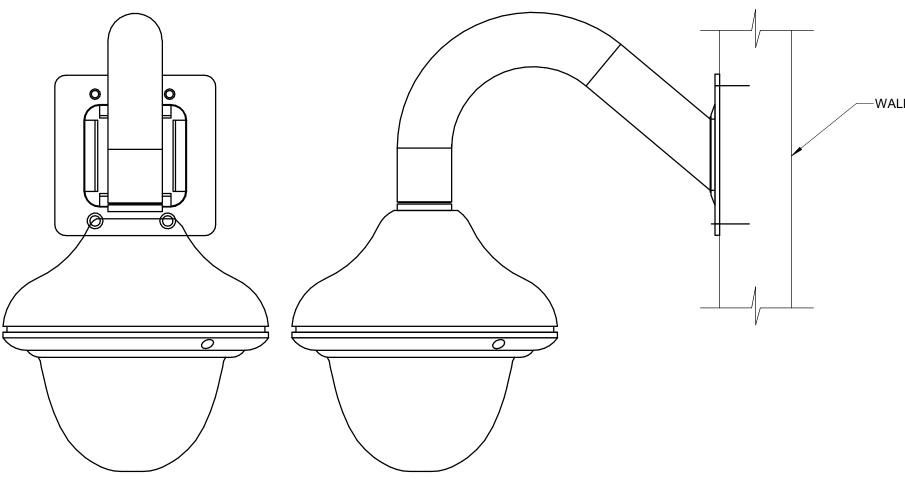
4 ADMIN BUILDING CAMERA/CONDUIT PENETRATION DETAIL

-SURFACE MOUNT BOX

DETAIL NOTES

7 CCTV POLE MOUNTING DETAIL
SCALE: NTS

1 SECURITY CAMERA CORNER MOUNTING DETAIL
SCALE: NTS

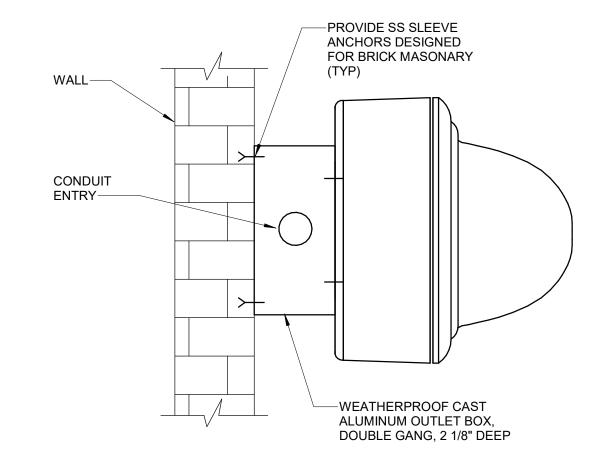


SECURITY CAMERA WALL MOUNTED DETAIL

SCALE: NTS

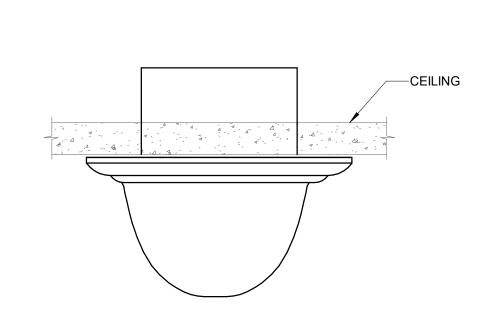
5 CEILING-SURFACE MOUNTING DETAIL
SCALE: NTS

1. IF PENETRATING AT OTHER THAN CAMERA LOCATION, PROVIDE LIQUIDTITE FLEXIBLE METALLIC FROM PENETRATION TO CAMERA OUTLET BOX.



FIXED WALL MOUNTING DETAIL

6 CEILING FLUSH MOUNTING DETAIL
SCALE: NTS



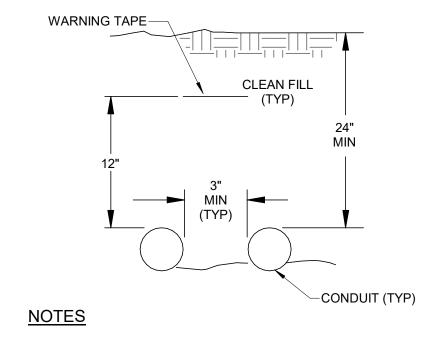
JOB # 067909-02
DESIGN BY: RH
DRAWN BY: AH
CHECKED BY: MM
DATE: 01.20.2023
SCALE: AS INDICATED
SHEET:

SE-GG-505

11790 CARDINAL CIRCLE
GARDEN GROVE, CA 92843
714/560/OCTA

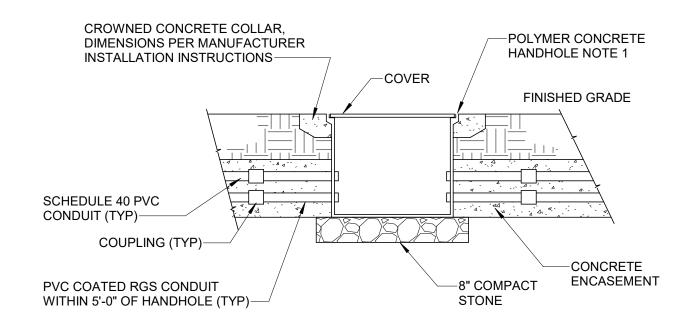






- 1. NUMBER OF CONDUITS SHOWN FOR ILLUSTRATION PURPOSES ONLY. PROVIDE ACTUAL NUMBER AND SIZES OF CONDUITS AS INDICATED IN THE DUCTBANK DETAILS.
- 2. ALLOWABLE CONDUIT TYPES PER SPECS.

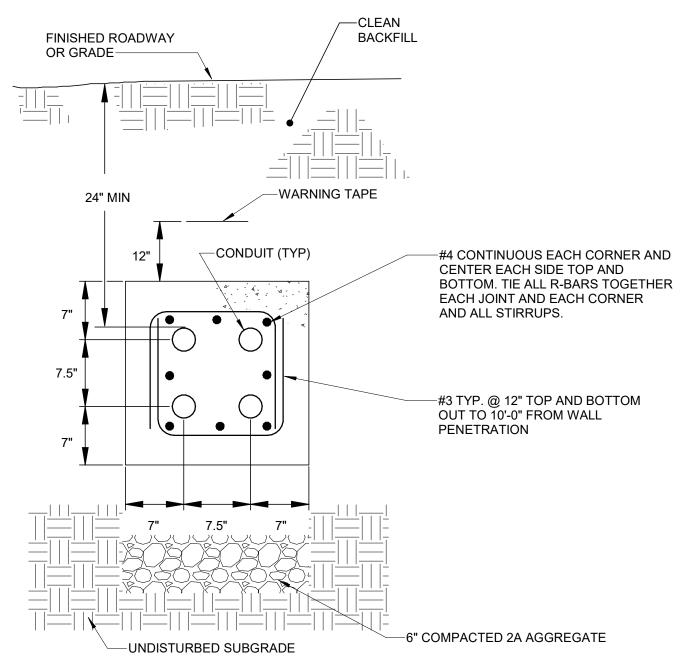




<u>NOTES</u>

1. STACK BOXES AS REQUIRED TO MATCH CONDUIT DEPTH.





<u>NOTES</u>

- 1. NUMBER OF CONDUITS SHOWN FOR ILLUSTRATION PURPOSES ONLY. PROVIDE ACTUAL NUMBER AND SIZES OF CONDUITS AS INDICATED IN THE DUCTBANK
- 2. ALLOWABLE CONDUIT TYPES PER SPECS.



JOB#	067909-02
DESIGN BY:	RH
DRAWN BY:	AH
CHECKED BY:	MM
DATE:	01.20.2023
SCALE:	AS INDICATED
SHEET:	

||SE-GG-506|

11790 CARDINAL CIRCLE GARDEN GROVE, CA 92843 714/560/OCTA





SECURITY GATES INSTALLATION OCTA - SANTA ANA BUS BASE

4301 W. MACARTHUR BLVD. SANTA ANA, CA 92704

CONTRACT NO. C-3-2279

GANNETT FLEMING

CONTACT: FREDRICK CROOKS, AIA

601 SOUTH FIGUEROA STREET, SUITE 3800 LOS ANGELES, CALIFORNIA 90017

PHONE: 213.409.6632 FAX: 213.559.9508

VICINITY MAP

GENERAL NOTES

- CONTRACTOR SHALL COORDINATE AND SCHEDULE WORK OF ALL TRADES WITH THE OWNER'S REPRESENTATIVE. EACH SUBCONTRACTOR SHALL START HIS WORK PROMPTLY, PURSUE IT IN ACCORDANCE WITH CONTRACTOR'S PROGRESS SCHEDULE. NORMALLY EXPECTED RAINFALL CONDITIONS SHALL NOT BE CAUSE FOR AUTHORIZED EXTENSION.
- 2. PROVIDE TEMPORARY SAFETY BARRIERS AS REQUIRED BY CODE AND TAKE ALL NECESSARY PRECAUTIONS TO ENSURE PUBLIC SAFETY AND WELFARE.
- 3. ALL DEBRIS SHALL BE REMOVED AND LEGALLY DISPOSED OF OFF SITE DAILY AND MAINTAINED IN CLEAN ROOM CONDITION AT ALL TIMES.
- 4. AGENCY APPROVED PLANS SHALL BE KEPT IN A PLAN RACK AND SHALL NOT BE MARKED OR USED BY ANY WORKMEN. ALL CONSTRUCTION SETS SHALL REFLECT THE SAME LATEST INFORMATION. THE CONTRACTOR SHALL ALSO MAINTAIN IN GOOD CONDITION, ONE COMPLETE SET OF PLANS WITH ALL REVISIONS, ADDENDA, AND CHANGE ORDERS ON THE PREMISES AT ALL TIMES, AND IT IS TO BE UNDER THE CARE OF THE JOB SUPERINTENDENT.
- 5. PROVIDE TEMPORARY UTILITIES AS NECESSARY FOR THE CONSTRUCTION.
- CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS AND COORDINATE WITH ALL TRADES. NOTIFY THE ARCHITECT IMMEDIATELY OF ANY DISCREPANCIES OR CONFLICT PRIOR TO PROCEEDING WITH ANY WORK.
- 7. CONTRACTOR SHALL PROTECT ALL WORK FROM INCLEMENT WEATHER AND
- 8. ALL WORK PERTAINING TO THIS PROJECT SHALL CONFORM TO THE PLANS AND SPECIFICATIONS AND CITY OF ANAHEIM BUILDING CODE REQUIREMENTS. FURTHER THE CONTRACTOR SHALL COMPLY WITH THE STATE DEPARTMENT OF INDUSTRIAL RELATIONS, DIVISION OF INDUSTRIAL SAFETY (O.S.H.A.).
- 9. THE CONTRACTOR SHALL OBTAIN ALL PERMITS, LICENSES, AND INSPECTIONS FROM THE CITY OF ANAHEIM TO COMPLETE THE WORK.
- 10. THE PROTECTION OF ALL STRUCTURES AND UTILITIES ON THE SITE IS THE RESPONSIBILITY OF CONTRACTOR.
- 11. INFORM OCTA 72 HOURS PRIOR TO BEGINNING OF WORK.
- 12. INTENT OF THE DOCUMENTS:
- THE EXTENT OF THE WORK IS ONLY INDICATED GENERALLY ON THE DRAWINGS AND SHALL NOT BE CONSIDERED AS THE COMPLETE SCOPE. CONDITIONS INDICATED ARE BASED ON LIMITED SURVEYS OF EXISTING CONDITIONS AND
- 13. IT IS THE INTENT OF THESE CONSTRUCTION DOCUMENTS TO INCLUDE ITEMS AND COMPONENTS OF THE PROPER EXECUTION OF THE WORK, AND THE PROVISIONS FOR A COMPLETE AND FUNCTIONAL FACILITY. IN THAT REGARD ALL APPURTENANT AND ACCESSORY ITEMS AND COMPONENTS REQUIRED FOR CONSTRUCTION OF COMPLETE AND FUNCTIONAL SYSTEMS WITHIN THE CONSTRUCTION SHALL BE PROVIDED WHETHER SPECIFICALLY IDENTIFIED IN THESE CONSTRUCTION DOCUMENTS OR NOT.
- 14. DEVIATIONS AND CONDITIONS WHICH COULD NOT BE REASONABLY ANTICIPATED SHALL BE GOVERNED BY PROVISION IN THE CONDITIONS OF THE CONTRACT PERTAINING TO UNFORESEEN CONDITIONS.
- 15. INSPECTION OF SITE:

BEFORE SUBMITTING BID, CONTRACTOR SHALL VISIT THE SITE, VERIFY ALL EXISTING ITEMS SHOWN ON THE PLANS OR SPECIFIED AND BE FAMILIAR WITH THE WORKING CONDITIONS, HAZARDS, EXISTING ELEVATIONS AND THE LOCAL REQUIREMENTS INVOLVED; SUBMISSION OF BIDS SHALL BE DEEMED EVIDENCE OF SUCH VISIT. ALL PROPOSALS SHALL TAKE THESE EXISTING CONDITIONS INTO CONSIDERATIONS AND THE LACK OF SPECIFIC INFORMATION ON THE DRAWINGS SHALL NOT RELIEVE THE CONTRACTOR OF ANY RESPONSIBILITY. NO REQUEST FOR ADDITIONAL PAYMENT SHALL BE CONSIDERED AS VALID, DUE TO FAILURE TO ALLOW FOR CONDITIONS WHICH CURRENTLY EXIST.

16. EXISTING LOCATIONS:

LOCATIONS AND ELEVATIONS OF THE VARIOUS ITEMS INCLUDED WITHIN THIS SCOPE OF THIS WORK HAVE BEEN OBTAINED FROM EXISTING AND LIMITED SURVEYS. EXAMINATION OF THE SITE, VERIFY LOCATIONS, ELEVATIONS AND QUANTITIES OF THE SITE, VERIFY LOCATIONS, ELEVATIONS AND QUANTITIES OF ALL ITEMS, UTILITIES AND SERVICES REQUIRED AND BE ADEQUATELY INFORMED AS TO THEIR RELATION TO THE WORK. THE SUBMISSION OF SUCH BID SHALL DEEMED EVIDENCE OF SUCH A VISIT.

17. ONGOING OCTA OPERATIONS:

OCTA WILL CONTINUE TO USE THE FACILITIES THROUGH OUT THE CONSTRUCTION ACTIVITIES. CONSTRUCTION ACTIVITIES SHALL NOT INTERFERE WITH ONGOING OPERATIONS AT THE FACILITIES. THE CONTRACTOR SHALL COORDINATE AND SEQUENCE WORK WITH OCTA PROJECT MANAGER TO MINIMIZE DISRUPTIONS TO OWNER'S CONTINUING OPERATIONS. CONTRACTOR SHALL ARRANGE HIS WORK TO OFFER LEAST INTERFERENCE WITH OCTA DAILY WORK OPERATIONS AND MAINTENANCE. OCTA PROJECT MANAGER WILL COORDINATE WORK ACTIVITIES, AND TEMPORARY CHANGES IN FACILITY ACTIVITY WHICH ARE NECESSARY FOR CONTRACTOR'S WORK.

- 18. EXISTING SYSTEMS. EQUIPMENT AND SERVICES: CONTRACTOR SHALL MAKE ARRANGEMENTS FOR TEMPORARY DEACTIVATION OR RELOCATION OF EXISTING SYSTEMS, EQUIPMENT, UTILITIES AND SERVICES REQUIRED TO FACILITATE THE SCOPE OF WORK. KEEP DEACTIVATION PERIODS TO A MINIMUM. USE INTERMITTENT PERIODS AS DIRECTED. SCHEDULE WITH OWNER DEACTIVATION PERIODS TO MINIMUM. USE INTERMITTENT PERIODS AS DIRECTED. SCHEDULE WITH OWNER DEACTIVATION PERIODS FOR SYSTEMS TO REMAIN IN SERVICE. ALL UTILITIES SHALL BE OPERATIONAL AT END OF WORK
- 19. WORK UNDER THIS CONTRACT SHALL BE DONE SO THAT EXISTING BUS OPERATIONS AND MAINTENANCE FACILITIES SHALL REMAIN IN FULL OPERATIONS DURING CONSTRUCTION. CONTRACTOR SHALL ARRANGE HIS WORK TO OFFER LEAST INTERFERENCE WITH OCTA DAILY WORK OPERATIONS AND MAINTENANCE. OCTA PROJECT MANAGER WILL COORDINATE WORK ACTIVITIES, AND TEMPORARY CHANGES IN FACILITY WHICH ARE NECESSARY FOR CONTRACTOR'S WORK. CONTRACTOR SHALL COORDINATE HIS WORK
- 20. CONTRACTOR WILL BE REQUIRED TO COVER ALL OCTA EQUIPMENT, MATERIAL, AND ACCESSORIES DURING CONSTRUCTION WORK TO PREVENT DAMAGE.
- 21. CONTRACTOR SHALL TAKE ALL PREVENTIVE MEASURES DURING CONSTRUCTION WORK BELOW. OCTA FACILITY WILL BE OPERATIONAL DURING CONSTRUCTION. THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR AND SHALL REPLACE OR REMEDY ANY FAULTY. IMPROPER OR INFERIOR MATERIAL OR WORKMANSHIP OR ANY DAMAGE TO WORK OR ADJACENT STRUCTURES.
- 22. THE CONTRACTOR SHALL REPORT TO THE ARCHITECT / ENGINEER THROUGH PROJECT MANAGER ANY ERROR, INCONSISTENCY, OR OMISSION HE MAY DISCOVER. THE CONTRACTOR IS RESPONSIBLE FOR CORRECTING ANY ERROR AFTER THE START OF CONSTRUCTION WHICH HAS NOT BEEN BROUGHT TO THE ATTENTION OF THE ARCHITECT. THE CONTRACTOR IS RESPONSIBLE FOR CORRECTING ANY ERROR AT NO COST TO THE AUTHORITY AFTER THE START OF CONSTRUCTION.
- 23. DO NOT SCALE DRAWINGS: ON SITE VERIFICATION OF ALL DIMENSIONS AND CONDITIONS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. NOTIFY ARCHITECT OF ANY DISCREPANCY.
- 24. THE ARCHITECT'S REVIEW OF SHOP DRAWINGS SHALL NOT RELIEVE THE CONTRACTOR FROM RESPONSIBILITY FOR DEVIATION FROM DRAWINGS OR SPECIFICATIONS UNLESS HE HAS (IN WRITING) CALLED THE ARCHITECT'S ATTENTION TO SUCH DEVIATIONS AT THE TIME OF SUBMISSION AND RECEIVED FURTHER CLARIFICATION FROM THE ARCHITECT; NOR SHALL IT RELIEVE HIM OF RESPONSIBILITY FOR ERRORS IN THE SHOP DRAWINGS.
- 25. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO LOCATE ALL EXISTING UTILITIES, WHETHER SHOWN HEREON OR NOTE, AND TO PROTECT THEM FROM DAMAGE. THE CONTRACTOR SHALL BEAR ALL EXPENSE OF REPAIR OR REPLACEMENT OF UTILITIES OR OTHER PROPERTY DAMAGED BY OPERATIONS IN CONJUNCTION WITH THE EXECUTION OF THE WORK.
- 26. EXISTING ELEVATIONS AND LOCATIONS TO BE JOINED SHALL BE VERIFIED BY THE CONTRACTOR BEFORE CONSTRUCTION. IF THEY DIFFER FROM THOSE SHOWN ON THE DRAWINGS, THE CONTRACTOR SHALL NOTIFY THE ARCHITECT SO THAT MODIFICATIONS CAN BE MADE BEFORE PROCEEDING WITH THE WORK.
- 27. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COMPLETE SECURITY OF HIS WORK AND MATERIAL AND EQUIPMENT WHILE JOB IS IN PROGRESS AND UNTIL JOB IS COMPLETED.
- 28. THE STRUCTURE IS DESIGNED AS A STABLE UNIT AFTER ALL COMPONENTS ARE IN PLACE. THE CONTRACTOR SHALL BE RESPONSIBLE TO PROVIDE TEMPORARY BRACING AS REQUIRED OR PORTION THEREOF DURING CONSTRUCTION.
- 29. PROVIDE ALL NECESSARY BLOCKING, BACKING, SLEEVES, AND FRAMING FOR A
- 30. ALL TRADES SHALL DO THEIR OWN CUTTING, FITTING, PATCHING, ETC. TO MAKE THE WORK OF ALL TRADES COME TOGETHER PROPERLY AND FIT TO RECEIVE WORK OF OTHER TRADES.
- 31. CONTRACTOR SHALL NOT BREAK SETS FOR TRADE BIDDING. THE CONTRACTOR DOES SO AT HIS OWN RESPONSIBILITY AND THE OWNER AND / OR ARCHITECT TAKES NO RESPONSIBILITY IF HE DOES SO.
- 32. CONSTRUCTION HOURS 7:00 AM TO 3:30 PM. ALL EXISTING FACILITIES SHALL BE OPERATIONAL AT THE END OF THE WORK DAY. (3:30 PM).
- 33. ALL MATERIALS SHALL BE NEW, UNLESS NOTED OTHERWISE.
- 34. THE CONTRACTOR SHALL PROVIDE ALL BARRICADES, WARNING SIGNS, AND PROTECTIVE DEVICES AND SHALL TAKE ALL PRECAUTIONARY MEASURES TO PROTECT ALL PERSONNEL, PROPERTY, AND WORK SITE.
- 35. THE CONTRACTOR SHALL POST IN ADVANCE CONSTRUCTION WARNING SIGNS, AND SHALL INFORM THE AUTHORITY PROJECT ENGINEER 72 HOURS BEFORE STARTING CONSTRUCTION WORK.

SUMMARY OF WORK

THE FOLLOWING SUMMARY OF WORK DESCRIPTIONS ARE GENERAL IN NATURE AND NOT INTENDED TO CAPTURE EVERY ITEM REQUIRED TO ACHIEVE THE INTENDED WORK RESULTS ENCOMPASSED BY THE CONTRACT DOCUMENTS.

- 1. DEMOLISH THE INDICATED EXISTING ROLLING VEHICULAR SECURITY GATES AND REPLACE WITH NEW CANTILEVERED SLIDE GATES, INCLUDING POSTS. FOUNDATIONS. AND OPERATORS. PROVIDE RELATED ELECTRICAL DEMOLITION AND NEW ELECTRICAL WIRING, CONDUITS, BOXES, DISCONNECTS, AND CONNECTIONS UNLESS EXISTING ARE INDICATED TO BE REUSED.
- 2. FURNISH AND INSTALL NEW GUARD BOOTH WHERE INDICATED. PROVIDE CONNECTION FOR ELECTRICAL POWER TO BOOTH PANEL. FURNISH AND INSTALL ELECTRICAL WIRING, CONDUITS, AND BOXES BETWEEN BOOTH AND INDICATED POWER SOURCE. FURNISH AND INSTALL RACEWAY SYSTEM FOR COMMUNICATIONS CABLING BETWEEN BOOTH AND EXISTING BUILDING AS
- 3. FURNISH AND INSTALL PEDESTRIAN CROSSWALK IN-ROADWAY WARNING LIGHT (IRWL) SYSTEMS WHERE INDICATED, INCLUDING POST-MOUNTED ACTIVATION SWITCHES AND ELECTRICAL WIRING, CONDUITS, BOXES, DISCONNECTS, AND CONNECTIONS BETWEEN IRWL DEVICES AND INDICATED POWER SOURCES.
- 4. MODIFY BUS BASE SITE AND PARKING CONFIGURATIONS TO ACCOMMODATE NEW VEHICULAR SECURITY GATES, CROSSWALK WARNING LIGHT SYSTEMS, AND GUARD BOOTH. CONSTRUCT NEW MEDIAN ISLANDS WHERE INDICATED. CUT AND PATCH ASPHALT AND CONCRETE PAVING, PROVIDE ALL NECESSARY EARTHWORK AND UTILITY TRENCHING. UPON COMPLETION OF EARTHWORK, RESTORE FINISHED GRADE AND PAVING TO MATCH EXISTING EXCEPT WHERE NEW FINISHED GRADE SURFACE IS INDICATED.
- 5. PROVIDE THE INDICATED PAINTED PAVEMENT STRIPING AND OTHER PAVEMENT MARKINGS. PROVIDE SEALED CONSTRUCTION JOINTS.

- NEW VEHICULAR SECURITY GATES SHALL BE INTEGRATED WITH EXISTING BUS BASE GATE CONTROL SYSTEM AND SHALL HAVE THE ABILITY TO BE OPERATED MANUALLY BY AUTHORIZED OCTA STAFF IN THE EVENT OF AN EMERGENCY AND/OR POWER OUTAGE.
- 7. INTEGRATE NEW SECURITY GATE CONTROL SYSTEMS, INCLUDING INTERCOMS WITH EXISTING BUS BASE SECURITY SYSTEM AND BUS OPERATIONS. ENTRANCE GATES SHALL BE ACCESS CONTROLLED. GATE CONTROL FOR BUSES SHALL USE THE TRANSPONDER SYSTEM ON THE BUS, CARD READER SYSTEM (EMPLOYEE BADGES READER), AND INTERCOM SYSTEM, AS APPLICABLE. EMBED SENSOR LOOPS IN THE PAVEMENT AT VEHICULAR EXIT GATES TO OPEN THE GATES AUTOMATICALLY UPON PRESENCE OF AN EXITING VEHICLE. FURNISH AND INSTALL EMBEDDED SAFETY LOOPS ON EACH SIDE OF EACH VEHICULAR GATE TO PREVENT GATE FROM CLOSING PREMATURELY.
- 8. AT EACH INTERCOM, AN INTEGRATED SURVEILLANCE CAMERA SHALL BE PROVIDED TO RECOGNIZE THE DRIVER WHO IS ASKING FOR ACCESS TO THE BUS BASES. EXISTING SURVEILLANCE CAMERAS SHALL REMAIN AND BE UTILIZED UNLESS INDICATED TO BE REMOVED. NEW SURVEILLANCE CAMERAS SHALL BE INSTALLED TO RECOGNIZE THE LICENSE PLATE NUMBER OF THE VEHICLE REQUESTING ACCESS. NEW SURVEILLANCE CAMERAS SHALL BE COMPATIBLE AND INTEGRATED INTO THE OCTA BUS BASE EXISTING VIDEO SURVEILLANCE SYSTEM (VSS) MILESTONE VSS PLATFORM.
- 9. FURNISH AND INSTALL NEW GALVANIZED STEEL BOLLARDS WHERE INDICATED. PAINT NEW BOLLARDS
- 10. FURNISH AND INSTALL INDICATED SIGNAGE

SHEET INDEX

GENERAL

G-SA-001 TITLE SHEET

<u>CIVIL</u>

SANTA ANA BUS BASE CIVIL NOTES CG-SA-100 SANTA ANA BUS BASE CIVIL NOTES CD-SA-101 SANTA ANA GATE 1 CIVIL DEMOLITION SANTA ANA GATE 2 CIVIL DEMOLITION CD-SA-103 SANTA ANA GATE 3 CIVIL DEMOLITION CD-SA-104 CP-SA-101 SANTA ANA GATE 1 CIVIL SITE LAYOUT CP-SA-102 SANTA ANA GATE 1 CIVIL SITE LAYOUT CP-SA-103 SANTA ANA GATE 2 CIVIL SITE LAYOUT CP-SA-104 SANTA ANA GATE 3 CIVIL SITE LAYOUT CP-SA-105 SANTA ANA BUS BASE CIVIL DETAILS CP-SA-106 CIVIL/STRUCTURAL ENLARGED GATE PLANS CIVIL/STRUCTURAL SECTIONS AND DETAILS CP-SA-107

ELECTRICAL

E-SA-001 ELECTRICAL LEGEND E-SA-002 ELECTRICAL LEGEND CONTINUED E-SA-003 **ELECTRICAL GENERAL NOTES & ABBREVIATIONS** E-SA-004 **ELECTRICAL CUT SHEETS** E-SA-010 ELECTRICAL OVERALL SITE PLAN E-SA-100 **ELECTRICAL ENLARGED PLANS - DEMOLITION** E-SA-101 ELECTRICAL ENLARGED PLANS - RENOVATION ELECTRICAL ENLARGED PLANS - RENOVATION E-SA-102 E-SA-501 **ELECTRICAL DETAILS**

ELECTRICAL PANEL AND ELECTRICAL SCHEDULES E-SA-601 E-SA-602 **ELECTRICAL LOAD SUMMARY**

ELECTRICAL SINGLE LINE DIAGRAM

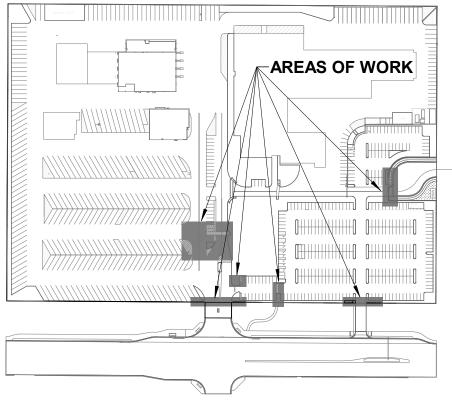
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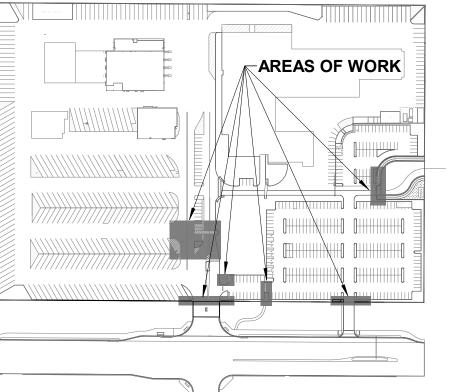
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SITE PLAN







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EDITION.

- CONTRACTOR SHALL MEET ALL STANDARDS IN THE COUNTY OF ORANGE -ORANGE COUNTY PUBLIC WORKS DEPARTMENT - SEPTEMBER 2018
- THE STANDARD PLANS FOR PUBLIC WORKS CONSTRUCTION OF PUBLIC WORKS STANDARDS, INC. ARE HERINAFTER CALLED SPPWC. THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION OF PUBLIC WORKS STANDARDS, INC. ARE HERINAFTER CALLED SSPWC.
- THE 2021 EDITION OF THE SPPWC STANDARD PLANS AND STANARD SPECIFICATIONS SHALL BE USED. WHEN OCPW HAS MADE CONDITIONS TO THE SPPWC STANDARD PLANS OR SPECIFICATIONS, THOSE CONDITIONS SHALL BE FOLLOWED.
- 4. DEVELOPER SHALL MEAN THE SUBDIVISION DEVELOPER, PERMITTEE, OR SHALL MEAN CONTRACTOR IN THE CASE OF A PUBLIC WORKS CONTRACT WITH THE COUNTY OF ORANGE
- THE DEVELOPER SHALL OBTAIN AN ENCROACHMENT PERMIT FROM OCPW PRIOR TO WORK WITHIN PUBLIC RIGHT-OF-WAY.
- 6. THE DEVELOPER SHALL TELEPHONE OCPW AT LEAST 48 HOURS PRIOR TO STARTING CONSTRUCTION WORK SUBJECT TO OCPW INSPECTION.
- CORRESPONDING STATE OF CALIFORNIA TEST METHODS MAY BE SUBSTITUTED FOR DESIGNATED ASTM TEST METHODS FOR WORK SUBJECT TO OCPW INSPECTION. RELATIVE COMPACTION: FOR WORK SUBJECT TO OCPW INSPECTION, IN-PLACE DENSITY SHALL BE DETERMINED BY CALIFORNIA TEST METHOD 231, PART I. LABORATORY MAXIMUM DENSITY SHALL BE DETERMINED BY CALIFORNIA TEST METHOD 216, PART II. PRIVATE LABORATORIES PERFORMING RELATIVE COMPACTION TESTING FOR OCPW SHALL PROVIDE A CALTRANS LABORATORY CERTIFICATION AND CERTIFICATION(S) FOR EACH TECHNICIAN PERFORMING THESE COMPACTION TEST PRIOR TO THE START OF WORK.
- JOINTS BETWEEN NEW PAVEMENT AND EXISTING PAVEMENT SHALL BE MADE BY SAWCUTTING OR COLD PLANING (MINIMUM 1 1/2 INCHES) EXISTING PAVEMENT TO EFFECT A NEAT JOINT. OR AS DIRECTED BY THE ENGINEER.
- WITH CONTRACTOR'S REQUEST FOR USE OF MATERIALS, CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CONSTRUCTION MATERIALS TESTING VERIFYING COMPLIANCE WITH SPECIFICATIONS AND SHALL SUBMIT TEST RESULTS. COUNTY WILL PERFORM QUALITY ACCEPTANCE TESTING AS DETERMINED NECESSARY. ACCEPTANCE OF MATERIALS WILL BE BASED ON GRADE SAMPLES.
- 10. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COSTS ASSOCIATED WITH RETESTING OF FAILED MATERIALS TESTS OR COMPACTION TESTS.
- 11. PORTLAND CEMENT CONCRETE SHALL CONFORM TO OCPW 1803. 12. ASPHALT CONCRETE SHALL CONFORM TO OCPW 1805.
- 13. NEW SIDEWALK JOINTS SHALL CONFORM TO OCPW 112-2-OC
- 14. NEW SIDWALK IS ASSUMED TO BE CONSTRUCTED ON EXPANSIVE SOILS AND SHALL CONFORM TO OCPW 1204.
- 15. REMOVAL AND REPLACEMENT OF ASPHALT CONCRETE SHALL CONFORM TO OCPW 133-3-OC.
- 16. REMOVAL AND REPLACEMENT OF CONCRETE PAVEMENT SHALL CONFORM TO SPPWC 132-4.
- 17. ALL EXISTING TOPOGRAPHIC FEATURES AND UTILITIES SHOWN ARE GENERATED BY COMPUTER AIDED DRAFTING SOFTWARE FROM PREVIOUS PROJECTS AND HAND MEASUREMENTS TAKEN IN THE FIELD. TOPOGRAPHIC SURVEY INCLUDING ESTABLISHING HORIZONTAL AND VERTICAL CONTROL POINTS WERE NOT INCLUDED IN THIS PROJECT.
- 18. DO NOT SCALE OFF DRAWINGS TO LOCATE EXISTING SITE FEATURES OR UTILITIES. ANY UTILITIES SHOWN ARE APPROXIMATE.
- 19. CONTRACTOR SHALL VERIFY CLEARANCE TO ALL UTILITIES PRIOR TO CONSTRUCTION. IF CONFLICTS EXIST, CONTRACTOR SHALL NOTIFY THE ENGINEER.
- 20. CONTRACTOR SHALL FOLLOW ALL BLUESTAKE LAW FOR THE PROJECT AREAS.
- 21. NEW APPLICATIONS OF PAINT SHALL BE APPLIED IN TWO EQUAL THICKNESSES AND SHALL INCLUDE 50 PERCENT OF THE REQUIRED BEADS WITH EACH APPLICATION.
- 22. ALL PROPOSED PAVEMENT MARKINGS, WITH THE EXCEPTION OF THE PEDESTRIAN PATHWAY, SHALL BE YELLOW ACETONE BASED OR THERMOPLASTIC AND BE IN ACCORDANCE WITH SSPWC SECTION 214. THE PAINTED PEDESTRIAN PATHWAY SHALL BE GREEN WATERBORNE TRAFFIC LINE PAINT IN ACCORDANCE WITH SSPWC SECTION 214.
- 23. THE GALVANIZED METAL OF THE BOLLARDS SHALL BE PAINTED BASE YELLOW IN ACCORDANCE WITH SSPWC SECTION 210, WITH A VINYL WASH, PRIMER. AND FINISH COAT PER TABLE 210-1.5.
- 24. REMOVAL OF EXISTING STRIPING SHALL BE IN ACCORDANCE WITH SSPWC **SECTION 314-2.**
- 25. INSTALLATION OF NEW PAVEMENT MARKINGS SHALL BE IN ACCORDANCE WITH SSPWC SECTION 314-4.
- 26. SHOULD THE CONTRACTOR SELECT AND RECEIVE APPROVAL FOR A GATE SYSTEM THAT REQUIRES A GROUND MOUNTED TRACK, THE REMOVAL OF THE EXISTING TRACK SHALL CONFORM TO SPPWC REQUIREMENTS LISTED ABOVE.

GENERAL STRUCTURAL NOTES

- 1.01 GENERAL
- A. THE STRUCTURAL DRAWINGS SHOW THE COMPLETED PROJECT THEY DO NOT INCLUDE COMPONENTS THAT MAY BE NECESSARY FOR CONSTRUCTION SAFETY. THE CONTRACTOR IS RESPONSIBLE FOR SAFETY IN AND AROUND THE JOB SITE DURING CONSTRUCTION.
- 1.02 COORDINATION
- A. VERIFY ALL SITE DIMENSIONS, ELEVATIONS, AND SLOPES WITH DRAWINGS BY OTHERS. DIMENSIONS CONTROLLED BY OR RELATED TO MECHANICAL OR ELECTRICAL EQUIPMENT SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION.
- B. ENGINEERING DESIGN PROVIDED BY OTHERS AND SUBMITTED FOR REVIEW SHALL BEAR THE SEAL AND SIGNATURE OF AN INSURED PROFESSIONAL STRUCTURAL OR CIVIL ENGINEER REGISTERED IN THE STATE IN WHICH THE SUBMITTED ITEMS WILL BE INSTALLED WHO IS A RECOGNIZED EXPERT IN THE TYPE OF WORK SHOWN AND
- C. ANY CHANGES PROPOSED BY THE CONTRACTOR TO THE DESIGN OF THE STRUCTURE DURING CONSTRUCTION SHALL BE SUBMITTED FOR REVIEW TO THE STRUCTURAL ENGINEER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COORDINATION OF STRUCTURAL AND NON-STRUCTURAL ELEMENTS AFFECTED BY PROPOSED CHANGES. THE COST OF DESIGN EFFORT NECESSITATED BY PROPOSED CHANGES SHALL BE BORNE BY THE CONTRACTOR.
- D. THE COST OF DESIGN EFFORT RESULTING FROM ERRORS OR OMISSIONS IN CONSTRUCTION SHALL BE BORNE BY THE CONTRACTOR.
- E. IN CASE OF CONFLICTS, THE MORE COSTLY REQUIREMENTS GOVERN SUBMIT CLARIFICATION REQUEST PRIOR TO PROCEEDING WITH
- F. VERIFY NEW AND EXISTING DIMENSIONS AND CONDITIONS PRIOR TO STARTING WORK. NOTIFY THE ENGINEER OF ANY DISCREPANCIES OR INCONSISTENCIES.
- 2.01 FIELD EXECUTION
- A. STRUCTURES HAVE BEEN DESIGNED FOR OPERATIONAL LOADS ON THE COMPLETED STRUCTURES. THE CONTRACTOR SHALL PROVIDE TEMPORARY BRACING, SHORING, GUYING AND OTHER MEANS TO AVOID EXCESSIVE STRESSES AND HOLD STRUCTURAL ELEMENTS IN PLACE DURING CONSTRUCTION
- B. CONTRACTOR SHALL EXERCISE EXTREME CARE TO AVOID DAMAGE TO EXISTING STRUCTURES. CONTRACTOR IS RESPONSIBLE FOR ALL MEANS AND METHODS REQUIRED TO FACILITATE CONSTRUCTION OF THE WORK AND FOR ENSURING THE SAFETY, STABILITY AND INTEGRITY OF ADJACENT STRUCTURES AND FACILITIES.
- C. WHEN ANCHORING, SHOOTING, DRILLING, CHIPPING OR CORING INTO CONCRETE, THE AREA SHALL BE SCANNED USING GROUND PENETRATING RADAR (GPR) PRIOR TO START OF WORK. DO NOT CUT OR NICK EXISTING REINFORCING UNLESS NOTED OTHEWISE
- D. EDGE OF DRILL HOLES AND OPENINGS SHALL BE NO LESS THAN 4" FROM EXISTING REINFORCEMENT.

STRUCTURAL DESIGN PARAMETERS

- 1.01 GENERAL
- A. CONSTRUCTION SHALL COMPLY WITH THE BUILDING CODE AND OTHER APPLICABLE CODES AND STANDARDS.
- B. BUILDING CODE: CALIFORNIA BUILDING CODE (CBC 2019) AS ADOPTED AND AMENDED BY CITY OF SANTA ANA.
- 2.01 DESIGN CRITERIA
- A. REFERENCE STANDARDS: MINIMUM DESIGN LOADS AND ASSOCIATED CRITERIA FOR BUILDINGS AND OTHER STRUCTURES, ASCE 7-16.
- B. DEAD LOADS
- 1. MATERIAL WEIGHT OF STRUCTURE AND EQUIPMENT
- C. WIND LOAD PARAMETERS 1. EXPOSURE CATEGORY = C
- 2. STRUCTURAL RISK CATEGORY = II
- 3. BASIC WIND SPEED = 95 MPH D. SEISMIC LOAD PARAMETERS
- 1. STRUCTURAL RISK CATEGORY = II
- 2. SITE CLASS D (DEFAULT)
- 3. SEISMIC DESIGN CATEGORY = (NOT AVAILABLE)
- 4. S(DS) = 1.055q5. S(D1) = (NOT AVAILABLE)
- 6. S(1) = 0.474q
- 7. S(s) = 1.319g
- 8. I(e)= 1.0
- 9. I(p) = 1.0

GROUT

- 1.01 NON-SHRINK GROUT
- A. USE PLASTIC OR STIFF (DRY PACK), NON-METALLIC NON-SHRINK GROUT WITH MINIMUM 7,000 PSI COMPRESSIVE STRENGTH AT 28 DAYS. CONFORM TO THE REQUIREMENTS OF CRD-C 621 CORPS OF ENGINEERS FOR NON-SHRINK GROUT.
- B. USE BASE CONSTRUCTION GROUT, EUCO DRY PACK GROUT, OR EQUAL.

CONCRETE

- 1.01 DESCRIPTION
- A. THIS SECTION INCLUDES THE REQUIREMENTS FOR MATERIALS, PROPORTIONING, AND INSTALLATION OF CONCRETE (RE: ACI 301, ACI 318, ACI 350). PROVIDE NORMAL WEIGHT CONCRETE (144PCF WET).
- 1.02 QUALITY ASSURANCE
 - A. PRODUCE AND DELIVER CONCRETE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS IN ACI 301 AND TOLERANCES OF ACI 117. PLACE CONCRETE IN ACCORDANCE WITH ACI 304. CONDUCT HOT WEATHER AND COLD WEATHER CONCRETING IN ACCORDANCE WITH ACI 305 AND ACI 306 RESPECTIVELY.
- 2.01 MIX WATER
- A. USE POTABLE WATER FREE FROM MATERIALS THAT ARE DELETERIOUS TO CONCRETE OR STEEL (ASTM C1602).
- 2.02 CEMENTITIOUS MATERIALS
- A. PORTLAND CEMENT: CONFORM TO ASTM C 150, TYPE II
- B. FLY ASH: ACCEPTABLE FOR USE IN MIX DESIGN IF COMPLIANT WITH REQUIREMENTS OF CONTRACT DOCUMENTS AND THE MAX RATIO OF FLY ASH TO TOTAL CEMENT AND FLY ASH DOES NOT EXCEED 20 PERCENT BY WEIGHT. CONFORM TO ASTM C 618. TYPE F. DO NOT USE FLY ASH IN COLORED CONCRETE WITHOUT WRITTEN APPROVAL.
- 2.03 AGGREGATE
- A. PROVIDE A SINGLE SIZE OR A GRADATION OF AGGREGATE WITH THE MAXIMUM SIZE AS SHOWN ON THE MIX DESIGN PROPORTIONS BELOW. DO NOT USE AGGREGATES CONTAINING SOLUBLE SALTS OR OTHER SUBSTANCES SUCH AS IRON SULFIDES, PYRITE, MARCASITE, OCHRE OR OTHER MATERIALS THAT MAY CAUSE STAINS ON EXPOSED CONCRETE SURFACES.
- B. UNLESS NOTED OTHERWISE, AGGREGATE SHALL BE NORMAL WEIGHT CONFORMING TO ASTM C33.
- 2.04 SLUMP
- A. TOLERANCE FOR SPECIFIED SLUMP IS +/- 1 INCH BEFORE THE ADDITION OF SUPERPLASTICIZERS/WATER REDUCERS PER ACI 117. MAXIMUM SLUMP WITH SUPERPLASTICIZERS IS 8 INCHES. WATER MAY BE ADDED ON SITE FOR SLUMP ADJUSTMENT IF THE TOTAL AMOUNT ADDED IS WITHIN THE WATER/CEMENTITIOUS RATIO AND SLUMP LIMITS SPECIFIED. DO NOT ADD WATER IF SUPERPLASTICIZERS ARE
- 2.05 MIX DESIGN PROPORTIONS (NORMAL WT CONCRETE U.N.O.)
- A. PROVIDE COMPUTERIZED BATCH RECORDS WITH ALL LOAD LOCATION.

LOCATION	COM	28 DAY IPRESSIVE ENGTH (PSI)	MAX W/CM RATIO	SLUMP (IN)	% AIR	MAX AGGREGATE SIZE (IN)
DRILLED PIE	RS	3000	0.58	6	4.5	1
FOOTINGS, GRADE BEAM	ИS	4000	0.50	5	4.5	1

- 3.01 CONCRETE PLACING
- A. DO NOT PLACE CONCRETE IN CONTACT WITH ALUMINUM.
- B. DO NOT ADD WATER ON SITE OR AFTER SUPERPLASTICIZERS HAVE BEEN ADDED.
- C. THE MAXIMUM FREE DROP OF CONCRETE IS 6'-0" WITHOUT A TREMIE PIPE TO PREVENT SEGREGATION. DEPOSIT CONCRETE AS NEAR AS POSSIBLE TO ITS FINAL POSITION. DO NOT EMPLOY ANY PRACTICES CAUSING SEGREGATION SUCH AS VIBRATING CONCRETE TO SPEED CONVEYANCE
- D. MECHANICALLY VIBRATE CONCRETE. REVIBRATE CAISSONS (DRILLED

MASONRY

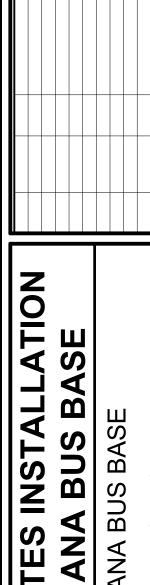
- 1.01 DESCRIPTION
- A. THIS SECTION INCLUDES THE REQUIREMENTS FOR MATERIAL PROPORTIONING, AND REQUIREMENTS FOR INSTALLATION OF MASONRY CONSTRUCTION.
- 1.02 QUALITY ASSURANCE
- A. MINIMUM 28-DAY COMPRESSIVE STRENGTH OF EACH WYTHE OF CONCRETE MASONRY. F'm = 2000 PSI.
- 2.01 MATERIALS
- A. LOAD BEARING HOLLOW CONCRETE MASONRY UNITS: MEDIUM WEIGHT WITH COMPRESSIVE STRENGTH OF 1900 PSI ON THE NET AREA. UNITS SHALL CONFORM TO ASTM C-90.
- B. GROUT: 2000 PSI, MINIMUM 28 DAY COMPRESSIVE STRENGTH. GROUT SHALL CONFORM TO ASTM C 476 AND ACI-530 BUILDING CODE.
- C. MORTAR SHALL BE PORTLAND CEMENT-LIME TYPE S CONFORMING TO ASTM C 270, WITH A MINIMUM AVERAGE 28 DAY COMPRESSIVE STRENGTH OF 1800 PSI AND MAXIMUM AIR CONTENT OF 12%. DO NOT USE MASONRY CEMENT IN MORTAR. THE MIXTURE OF CEMENTITIOUS MATERIAL. AGGREGATE.AND WATER SHALL CONFORM TO THE FOLLOWING PROPORTIONS BY VOLUME
- 1. 1 PART PORTLAND CEMENT OR BLENDED CEMENT CONFORMING TO ASTM C 150 AND ASTM C515 RESPECTIVELY.
- 2. 1/4 TO 1/2 PARTS HYDRATED LIME OR LIME PUTTY CONFORMING TO ASTM C 207.
- 3. VOLUME OF AGGREGATE, MEASURED IN DAMP LOOSE CONDITION, EQUAL TO 2 1/4 TO 3 TIMES THE SUM OF THE VOLUMES OF THE ABOVE CEMENTITIOUS MATERIALS.

REINFORCING STEEL

- 1.01 DESCRIPTION
- A. THIS SECTION INCLUDES REQUIREMENTS FOR MATERIALS, DETAILING, AND INSTALLATION OF REINFORCING STEEL (RE: ACI 301-05, ACI 318-05, ACI 350-06).
- B. PLACE REINFORCEMENT IN CONFORMANCE WITH CONTRACT DRAWINGS AND ACI DETAILING MANUAL SP-66.
- 1.02 COORDINATION
- A. DO NOT DAMAGE OR DISRUPT REINFORCING BARS OR STEEL EMBEDS FROM THEIR PROPER LOCATION BY THE PLACEMENT OF EMBEDDED PIPING OR CONDUIT. PROVIDE REQUIRED CLEARANCE BETWEEN REINFORCEMENT AND EMBEDDED PIPING AND CONDUIT.
- 1.03 QUALITY ASSURANCE
- A. TOLERANCES FOR FABRICATION, PLACEMENT, BAR BENDS, STANDARD HOOKS AND LAP SPLICES FOR REINFORCEMENT SHALL CONFORM TO ACI 117, SECTION 2 AND CRSI STANDARDS.
- 2.01 REINFORCEMENT MATERIALS
- A. REINFORCING STEEL SHALL CONFORM TO THE FOLLOWING STANDARDS.
- 1. #3 BARS AND LARGER ASTM A 615, GRADE 60
- 2. WELDABLE REINFORCING STEEL ASTM A 706
- 3.01 COVER
- A. CONCRETE COVER FOR REINFORCING BARS (TO FACE OF BAR INCLUDING PRIMARY REINFORCEMENT) UNLESS NOTED OTHERWISE ON DRAWINGS.
- B. CAST-IN-PLACE CONCRETE ACI 350 (NON-PRESTRESSED) 1. CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH • ALL BARS - 3"
- 3.02 WELDING
- A. WELD REINFORCING BARS IN CONFORMANCE WITH AWS D1.4 USING ELECTRODE E8018-X.
- B. SUBMIT WELDER CERTIFICATIONS AND WELDING PROCEDURES PER AWS D1.4.

FOUNDATIONS

- 1.01 GENERAL
- A. PRESUMPTIVE BUILDING CODE MINIMUM VALUES FOR SOIL LOAD-BEARING CAPACITIES SHALL BE USED UNLESS GEOTECHNICAL ENGINEERING DATA TO SUBSTANTIATE HIGHER VALUES IS SUBMITTED AND APPROVED.
- B. FOUNDATION DESIGN IS BASED ON THE FOLLOWING PRESUMPTIVE LOAD-BEARING VALUES PROVIDED BY THE BUILDING CODE
- 1. SOIL CLASSIFICATION = TYPE 5: CLAY, SANDY CLAY, SILTY CLAY,
- 2. VERTICAL (GRAVITY) NET BEARING PRESSURE = 1500 PSF
- 3. LATERAL PASSIVE PRESSURES = 100 PSF/FT 4. LATERAL SLIDING RESISTANCE = 130 PSF (IN NO CASE SHALL THE LATERAL SLIDING RESISTANCE EXCEED ONE-HALF THE DEAD
- LOAD). C. SEE OTHER SECTIONS OF THE GENERAL STRUCTURAL NOTES FOR
- ADDITIONAL INFORMATION ON DRILLED PIER FOUNDATIONS. D. FOR SHORING REQUIRED TO PROTECT EXISTING STRUCTURES. CONTRACTOR SHALL SUBMIT SHORING SHOP DRAWINGS AND CALCULATIONS TO THE ENGINEER FOR REVIEW. SHOP DRAWINGS AND CALCULATIONS SHALL BEAR THE SEAL OF A GEOTECHNICAL ENGINEER REGISTERED IN THE STATE IN WHICH CONSTRUCTION WILL BE DONE.
- 2.01 CONTROLLED LOW STRENGTH MATERIAL (CLSM)
- A. CLSM SHALL BE USED AS AN UNREINFORCED FILL MATERIAL TO REPLACE EXCAVATED SOIL UNDER STRUCTURE FOUNDATIONS AND AS SHOWN ON DRAWINGS.
- B. PROPORTIONS: CEMENT CONTENT = 94 LBS/CU YD (+/- 5%): SLUMP = 7 INCHES (+/- 1 INCH); COMPRESSIVE STRENGTH AT 28 DAYS= 150 PSI (+/-50 PSI).
- 3.01 PLACEMENT
- A. PLACE FOUNDATION CONCRETE ONLY ON CLEAN, FIRM BEARING MATERIAL. VERIFY THE SUITABILITY OF THE BEARING MATERIAL WITH THE GEOTECHNICAL ENGINEER BEFORE PLACING FOUNDATIONS.
- B. PLACE DOWELS AND ANCHORS BEFORE PLACING CONCRETE. USE TEMPLATES TO ENSURE PROPER PLACEMENT.



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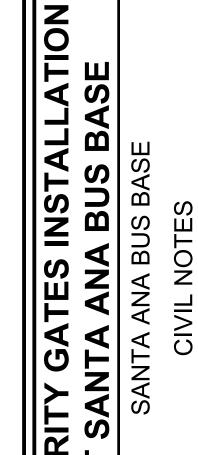
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A. STEEL CONSTRUCTION SHALL CONFORM TO THE SPECIFICATIONS AND STANDARDS AS CONTAINED IN THE LATEST EDITION OF THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC) MANUAL, INCLUDING THE COMMENTARY AND SUPPLEMENTS.

B. ALL STEEL FABRICATION WORK SHALL BE PREFORMED BY A FABRICATOR APPROVED BY THE OWNER.

2.01 MATERIALS

OTHER ROLLED SECTIONS (ANGLES, CHANNELS, PLATES, ETC.) WHERE NOTED "50 KSI" ON DRAWINGS A572 FY=50 STEEL PIPE (TYPE E) A53 GR B, FY=35 STRUCTURAL ROUND (HSS) A500 GR B, FY=42 STRUCTURAL TUBES (HSS) A500 GR C, FY=50 STRUCTURAL BOLTS (U.N.O.) (TYPE N CONNECTION) ANCHOR RODS/BOLTS F1554 GR 36 SHEET STEEL A1011 GR 36 WELDING RODS (LOW HYDROGEN)	1/-	CATEGORY	<u>ASTM</u>	GRADE, FY (KSI)
STEEL PIPE (TYPE E) STRUCTURAL ROUND (HSS) STRUCTURAL TUBES (HSS) STRUCTURAL BOLTS (U.N.O.) (TYPE N CONNECTION) ANCHOR RODS/BOLTS SHEET STEEL A1011 GR 36 WELDING RODS A53 GR B, FY=35 A500 GR C, FY=42 A500 GR C, FY=50 F3125 A325 GR 36 F1554 GR 36 F1554 GR 36 E-70XX SERIE			A36	FY=36
STRUCTURAL ROUND (HSS) A500 GR B, FY=42 STRUCTURAL TUBES (HSS) A500 GR C, FY=50 STRUCTURAL BOLTS (U.N.O.) (TYPE N CONNECTION) ANCHOR RODS/BOLTS F1554 GR 36 SHEET STEEL A1011 GR 36 WELDING RODS E-70XX SERIE		WHERE NOTED "50 KSI" ON DRAWINGS	A572	FY=50
STRUCTURAL TUBES (HSS) STRUCTURAL BOLTS (U.N.O.) (TYPE N CONNECTION) ANCHOR RODS/BOLTS SHEET STEEL A1011 GR 36 WELDING RODS E-70XX SERIE		STEEL PIPE (TYPE E)	A53	GR B, FY=35
STRUCTURAL BOLTS (U.N.O.) F3125 A325 (TYPE N CONNECTION) ANCHOR RODS/BOLTS F1554 GR 36 SHEET STEEL A1011 GR 36 WELDING RODS E-70XX SERIE		STRUCTURAL ROUND (HSS)	A500	GR B, FY=42
(TYPE N CONNECTION) ANCHOR RODS/BOLTS F1554 GR 36 SHEET STEEL A1011 GR 36 WELDING RODS E-70XX SERIE		STRUCTURAL TUBES (HSS)	A500	GR C, FY=50
SHEET STEEL A1011 GR 36 WELDING RODS E-70XX SERIE		,	F3125	A325
WELDING RODS E-70XX SERIE		ANCHOR RODS/BOLTS	F1554	GR 36
		SHEET STEEL	A1011	GR 36
				E-70XX SERIES

2.02 ANCHOR RODS

A. PROVIDE HEADED OR THREADED AND NUTTED ANCHOR RODS. HOOKED ANCHOR RODS ARE NOT ACCEPTABLE.

B. DO NOT HEAT OR BEND ANCHOR RODS.

3.01 FIELD WELDING

A. PROVIDE HOT WORK PERMITS. HOT WORK IS ANY WORK INVOLVING WELDING, TORCH CUTTING, GRINDING, OPEN-FLAME SOLDERING, BRAZING OR SIMILAR OPERATIONS CAPABLE OF INITIATING FIRES OR EXPLOSIONS.

B. WELDING SHALL CONFORM TO THE FOLLOWING AMERICAN WELDING SOCIETY (AWS) STRUCTURAL WELDING CODES AS APPLICABLE.

1. AWS D1.1 STRUCTURAL WELDING CODE-SHEET.

AWS D1.3 STRUCTURAL WELDING CODE-SHEET STEEL.
 AWS D1.4 STRUCTURAL WELDING CODE-REINF'G STEEL.

AWS D1.8 STRUCTURAL WELDING CODE SEISMIC SUPPLEMENT.
 WELDERS SHALL HOLD VALID CERTIFICATES ISSUED BY AN ACCEPTED TESTING AGENCY WITHIN THE LAST 12 MONTHS. IF ANY CERTIFICATE IS MORE THAN 12 MONTHS OLD, SUBMIT DETAILS OF COMPANY QUALITY CONTROL.

POST-INSTALLED ANCHORS AND DOWELS

1.01 DESCRIPTION

A. POST INSTALLED ANCHORS AND DOWELS SHALL ONLY BE USED WHERE SPECIFIED ON THE CONSTRUCTION DOCUMENTS.

1.02 QUALITY ASSURANCE

A. PROVIDE SPECIAL INSPECTION IN ACCORDANCE WITH THE APPLICABLE ICC-ES REPORT, THE BUILDING CODE, AND THE GENERAL STRUCTURAL NOTES.

B. INSTALL ALL ADHESIVE ANCHORS, DOWELS AND MECHANICAL ANCHORS PER ADHESIVE MANUFACTURER'S REQUIREMENTS.

SPECIAL INSPECTION

1.01 GENERAL

A. THE OWNER OR THE REGISTERED DESIGN PROFESSIONAL ACTING AS THE OWNER'S AGENT SHALL EMPLOY ONE OR MORE SPECIAL STRUCTURAL INSPECTORS IN ACCORDANCE WITH THE APPLICABLE BUILDING CODE.

1.02 CONTRACTOR AND STRUCTURAL INSPECTOR RESPONSIBILITIES

A. IT IS THE CONTRACTOR'S RESPONSIBILITY TO SELF-INSPECT THE STRUCTURAL WORK FOR CONFORMANCE WITH THE CONTRACT DOCUMENTS. PRIOR TO REQUESTING ANY SPECIAL INSPECTION, STRUCTURAL INSPECTION PROVIDED BY OTHERS DOES NOT RELIEVE THE CONTRACTOR OF THIS RESPONSIBILITY. STRUCTURAL DEVIATIONS FROM THE CONTRACT DOCUMENTS THAT ARE FOUND AT A LATER DATE AND ARE DECLARED TO BE SIGNIFICANT BY THE STRUCTURAL ENGINEER OF RECORD SHALL BE CORRECTED BY THE CONTRACTOR WITH ALL DISPATCH.

B. THE STRUCTURAL INSPECTOR IS NOT AUTHORIZED TO STOP OR DELAY THE WORK. IF THE CONTRACTOR ELECTS TO CONTINUE WITH CERTAIN WORK AFTER BEING NOTIFIED BY THE STRUCTURAL INSPECTOR THAT SUCH WORK IS UNACCEPTABLE, THE CONTRACTOR DOES SO AT THEIR OWN RESPONSIBILITY AND RISKS CORRECTING THE WORK AT A LESS OPPORTUNE TIME.

C. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING ADEQUATE FACILITIES FOR THE STRUCTURAL INSPECTOR TO INSPECT THE WORK SAFELY AND EFFICIENTLY. TWENTY-FOUR (24) HOUR NOTICE IS REQUIRED PRIOR TO INSPECTION.

D. WORK TO BE INSPECTED MUST BE COMPLETED PRIOR TO TIME OF INSPECTION. CONTRACTOR SHALL BEAR THE EXPENSE OF ADDITIONAL INSPECTIONS THAT MAY OCCUR BECAUSE OF INCOMPLETE OR INCORRECT WORK.

E. INSPECTION OF WORK PROVIDED BY THE CONTRACTOR SUCH AS TEMPORARY SHORING OR JACKING SYSTEMS SHALL BE PROVIDED BY THE CONTRACTOR'S DESIGN ENGINEER FOR THOSE SYSTEMS. THE CONTRACTOR/ENGINEER SHALL PROVIDE A LETTER/REPORT TO BOTH THE OWNER AND ENGINEER OF RECORD THAT THESE INSPECTIONS HAVE BEEN COMPLETED BEFORE EACH PHASE OF SUCH WORK CAN PROCEED.

F. THE STRUCTURAL INSPECTOR IS NOT RESPONSIBLE FOR OSHA COMPLIANCE OR FOR TEMPORARY CONSTRUCTION, SUCH AS

G. THE STRUCTURAL INSPECTOR IS NOT AUTHORIZED TO DIRECT OR APPROVE CHANGES FROM THE CONTRACT DOCUMENTS. IF THE CONTRACTOR WISHES TO QUESTION THE STRUCTURAL INSPECTOR'S INTERPRETATION OF THE CONTRACT DOCUMENTS, THEY MAY DO SO DIRECTLY WITH THE STRUCTURAL ENGINEER OF RECORD.

2.01 SHOP FABRICATIONS

A. SHOP FABRICATION WORK IS SUBJECT TO SPECIAL STRUCTURAL INSPECTION UNLESS THE FABRICATOR IS REGISTERED AND APPROVED BY THE BUILDING OFFICIAL TO PERFORM WORK WITHOUT SPECIAL INSPECTION.

B. FABRICATOR SHALL SUBMIT CERTIFICATE OF COMPLIANCE STATING WORK PERFORMED IS IN ACCORDANCE WITH APPROVED CONSTRUCTION DOCUMENTS.

3.01 NOTES APPLICABLE FOR SPECIAL INSPECTION TABLES BELOW
A. "PERIODIC" SPECIAL INSPECTION: THE PART-TIME OR INTERMITTENT
OBSERVATION OF WORK REQUIRING SPECIAL INSPECTION BY AN
APPROVED SPECIAL INSPECTOR WHO IS PRESENT IN THE AREA
WHERE THE WORK HAS BEEN OR IS BEING PERFORMED AND AT THE
COMPLETION OF WORK. 2019 CBC CHAPTER 17.

B. "CONTINUOUS" SPECIAL INSPECTION: THE FULL-TIME OBSERVATION OF WORK REQUIRING SPECIAL INSPECTION BY AN APPROVED SPECIAL INSPECTOR WHO IS PRESENT IN THE AREA WHERE THE WORK IS BEING PERFORMED. 2019 CBC CHAPTER 17.

C. ITEMS NOT SHOWN MAY REQUIRE CONTINUOUS OR PERIODIC SPECIAL STRUCTURAL INSPECTION AT THE DISCRETION OF THE ENGINEER OF RECORD. ITEMS LISTED MAY REQUIRE ALTERNATE FREQUENCIES OF INSPECTION OTHER THAN SHOWN, UNDER THE DIRECTION OF THE ENGINEER OF RECORD.

D. "OBSERVED" IN STEEL CONSTRUCTION SPECIAL INSPECTION: THE INSPECTOR SHALL OBSERVE THESE ITEMS ON A RANDOM BASIS.

OPERATIONS NEED NOT BE DELAYED PENDING THESE INSPECTIONS

E. "PERFORM" IN STEEL CONSTRUCTION SPECIAL INSPECTION: THESE TASKS SHALL BE PERFORMED FOR EACH BOLTED CONNECTION AND WELDED JOINT OR MEMBER.

3.02 REQUIRED VERIFICATION AND SPECIAL INSPECTIONS

INSPECTION OF CONCRETE CONSTRUCTION (RE: 2019 CBC 1705.3)

TYPE AND FREQUENCY OF INSPECTION

1. INSPECT REINFORCEMENT AND VERIFY PLACEMENT. CONTINUOUS ___ PERIODIC _√_

2. INSPECT ANCHORS CAST IN CONCRETE. CONTINUOUS ___ PERIODIC _√_

3. INSPECT ANCHORS POST-INSTALLED IN HARDENED CONCRETE MEMBERS

a. ADHESIVE ANCHORS INSTALLED IN HORIZONTALLY OR UPWARDLY INCLINED ORIENTATIONS TO RESIST SUSTAINED TENSION LOADS. CONTINUOUS $_{\sqrt{}}$ PERIODIC ___

b. MECHANICAL ANCHORS AND ADHESIVE ANCHORS NOT DEFINED IN 3.a. CONTINUOUS ___ PERIODIC $_\sqrt{}$

4. VERIFY USE OF REQUIRED DESIGN MIX. CONTINUOUS ___ PERIODIC _√_

5. PRIOR TO CONCRETE PLACEMENT, FABRICATE SPECIMENS FOR STRENGTH TESTS, PERFORM SLUMP AND AIR CONTENT TESTS, AND DETERMINE THE TEMPERATURE OF THE CONCRETE. CONTINUOUS $_{\sqrt{}}$ PERIODIC ___

6. INSPECT CONCRETE FOR PROPER APPLICATION TECHNIQUES. CONTINUOUS _√_ PERIODIC ___

7. VERIFY MAINTENANCE OF SPECIFIED CURING TEMPERATURE AND TECHNIQUES.

CONTINUOUS ___ PERIODIC _√_

8. VERIFY IN SITU CONCRETE STRENGTH PRIOR TO REMOVAL OF SHORES AND FORMS FROM STRUCTURAL SLABS. CONTINUOUS ___ PERIODIC $_{-}\sqrt{}_{-}$

 INSPECT FORMWORK FOR SHAPE, LOCATION AND DIMENSIONS OF THE CONCRETE MEMBER BEING FORMED.
 CONTINUOUS ___ PERIODIC _√_

REQUIRED SPECIAL INSPECTIONS AND TESTS OF CAST-IN-PLACE DEEP FOUNDATION ELEMENTS (2019 CBC, TABLE 1705.8)

TYPE AND FREQUENCY OF INSPECTION

1. INSPECT DRILLING OPERATIONS AND MAINTAIN COMPLETE AND ACCURATE RECORDS FOR EACH ELEMENT.

CONTINUOUS _√_ PERIODIC ___

2. VERIFY PLACEMENT LOCATIONS AND PLUMBNESS, CONFIRM ELEMENT DIAMETERS, LENGTHS, EMBEDMENT INTO BEDROCK (IF APPLICABLE), AND ADEQUATE END-BEARING STRATA CAPACITY. RECORD CONCRETE OR GROUT VOLUMES.

CONTINUOUS _√_ PERIODIC ___

3. FOR CONCRETE ELEMENTS, PERFORM TESTS AND ADDITIONAL SPECIAL INSPECTIONS IN ACCORDANCE WITH SECTION 1705.3.

INSPECTION OF STEEL WELDING (RE: AISC360-16 TABLES N5.4-1, N5.4-2, & N5.4-3)

INSPECTION TASKS PRIOR TO WELDING

1. THE FOLLOWING TASK(S) SHALL BE **OBSERVED**.

A. WELDER QUALIFICATION RECORDS AND CONTINUITY RECORDS.

B. MATERIAL IDENTIFICATION (TYPE/GRADE).

C. WELDER IDENTIFICATION SYSTEM.

D. FIT-UP OF GROOVE WELDS (INCLUDING JOINT GEOMETRY, JOINT PREPARATIONS, DIMENSIONS, CLEANLINESS, TACKING, AND BACKING).

E. FIT-UP OF CJP GROOVE WELDS AT HSS T-, Y- AND K- JOINTS WITHOUT BACKING (INCLUDING JOINT GEOMETRY, JOINT PREPARATIONS, DIMENSIONS, CLEANLINESS, AND TACKING).

F. CONFIGURATION AND FINISH OF ACCESS HOLES.
G. FIT-UP OF FILLET WELDS (INCLUDING DIMENSIONS CLEA

G. FIT-UP OF FILLET WELDS (INCLUDING DIMENSIONS, CLEANLINESS, AND TACKING).

2. THE FOLLOWING TASKS SHALL BE **PERFORMED**

A. WPS AVAILABLE

B. MANUFACTURER CERTIFICATIONS FOR WELDING CONSUMABLES AVAILABLE.

INSPECTION TASKS DURING WELDING

1. THE FOLLOWING TASK(S) SHALL BE **OBSERVED**.

A. CONTROL AND HANDLING OF WELDING CONSUMABLES (INCLUDING PACKAGING AND EXPOSURE CONTROL).

B. NO WELDING OVER CRACKED TACK WELDS.

C. ENVIRONMENTAL CONDITIONS (INCLUDING WIND SPEED WITHIN LIMITS, PRECIPITATION, AND TEMPERATURE).

D. WPS FOLLOWED (INCLUDING SETTINGS ON WELDING EQUIPMENT, TRAVEL SPEED, SELECTED WELDING MATERIALS, SHIELDING GAS TYPE/FLOW RATE, PREHEAT APPLIED, INTERPASS TEMPERATURE MAINTAINED (MIN/MAX), AND PROPER POSITION (F, V, H, OH)).

E. WELDER IDENTIFICATION SYSTEM (INCLUDING INTERPASS AND FINAL CLEANING, EACH PASS WITHIN PROFILE LIMITATIONS, AND EACH PASS MEETS QUALITY REQUIREMENTS).

2. THE FOLLOWING TASK(S) SHALL BE **PERFORMED**.

A. PLACEMENT AND INSTALLATION OF STEEL HEADED STUD ANCHORS.

INSPECTION TASKS AFTER WELDING

1. THE FOLLOWING TASK(S) SHALL BE **OBSERVED**.

A. WELDS CLEANED.

B. NO PROHIBITED WELDS HAVE BEEN ADDED WITHOUT THE APPROVAL OF THE EOR.

2. THE FOLLOWING TASK(S) SHALL BE **PERFORMED**.

 A. SIZE, LENGTH, AND LOCATION OF WELDS.
 B. WELDS MEET VISUAL ACCEPTANCE CRITERIA (INCLUDING CRACK PROHIBITION, WELD/BASE-METAL FUSION, CRATER CROSS SECTION CRACK PROHIBITION, WELD PROFILES, WELD SIZE, UNDERCUT, AND

POROSITY). C. ARC STRIKES.

D. K-AREA.

E. WELD ACCESS HOLES IN ROLLED HEAVY SHAPES AND BUILT-UP HEAVY SHAPES.

F. BACKING REMOVED AND WELD TABS REMOVED (IF REQUIRED).G. REPAIR ACTIVITIES.

H. DOCUMENT ACCEPTANCE OR REJECTION OF WELDED JOINT OR MEMBER.

INSPECTION OF POST-INSTALLED ANCHORS AND DOWELS (RE: PRODUCT ICC-ES EVALUATION REPORT)

INSPECTION ITEM AND FREQUENCY OF INSPECTION

1. ADHESIVE ANCHORS AND REINFORCEMENT DOWELS

THE FOLLOWING TASKS SHALL BE PERFORMED <u>CONTINUOUSLY</u>.
 A. VERIFY DRILL BIT TYPE AND SIZE.

B. HOLE DEPTH AND CLEANING PROCEDURE

C. PRODUCT DESCRIPTION INCLUDING NAME, ROD TYPE,

DIAMETER, AND LENGTH.

D. ADHESIVE EXPIRATION DATE.

E. PROPER INSTALLATION TECHNIQUE FOR ADHESIVE ANCHORS.

2. MECHANICAL ANCHORS

THE FOLLOWING TASKS SHALL BE PERFORMED CONTINUOUSLY.

A. VERIFY DRILL BIT TYPE AND SIZE.

B. HOLE DEPTH AND CLEANING PROCEDURE.C. PRODUCT DESCRIPTION INCLUDING NAME, ANCHOR TYPE.

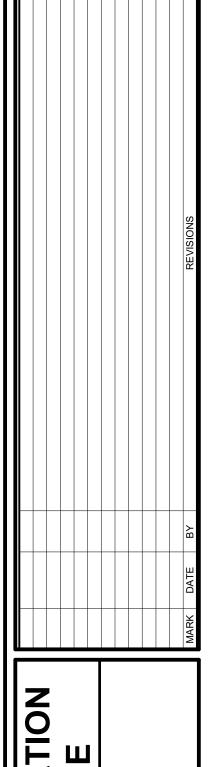
DIAMETER, AND LENGTH.

D. PROPER INSTALLATION TECHNIQUE FOR MECHANICAL ANCHORS AND TIGHTENING TORQUE.

GANNETT FLEMING

G.F. # 067909-02

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LOS ANGELES, CA 90017
T: 213 624 0347
www.gannettfleming.com



CURITY GATES INSTALLATI
AT SANTA ANA BUS BASE
SANTA ANA BUS BASE

 JOB #
 067909-02

 DESIGN BY:
 ZSC

 DRAWN BY:
 CAS

 CHECKED BY:
 CMF

 DATE:
 01.20.2023

 SCALE:
 AS INDICATED

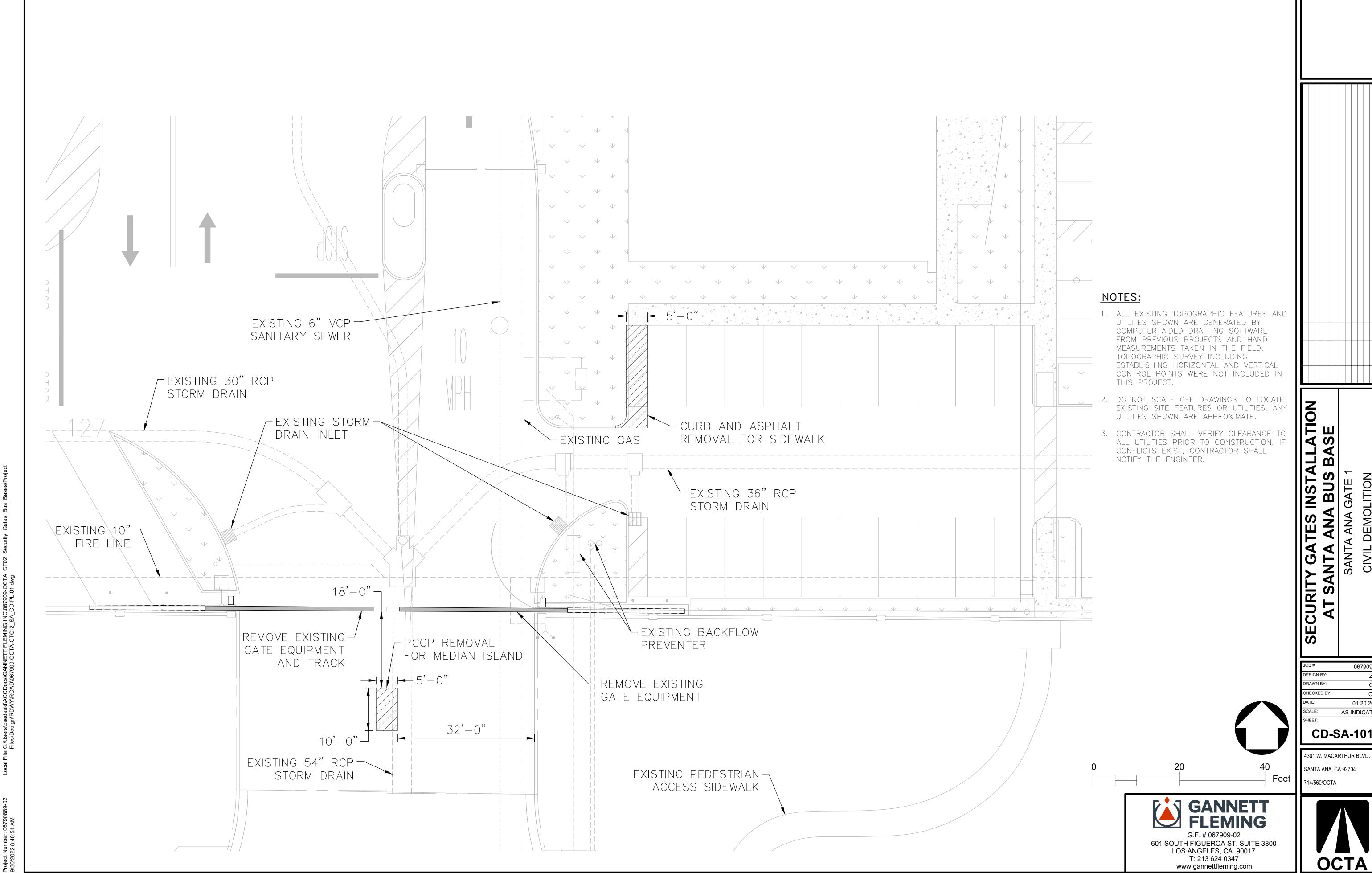
 SHEET:

CG-SA-101

S

4301 W. MACARTHUR BLVD. SANTA ANA, CA 92704 714/560/OCTA



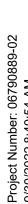


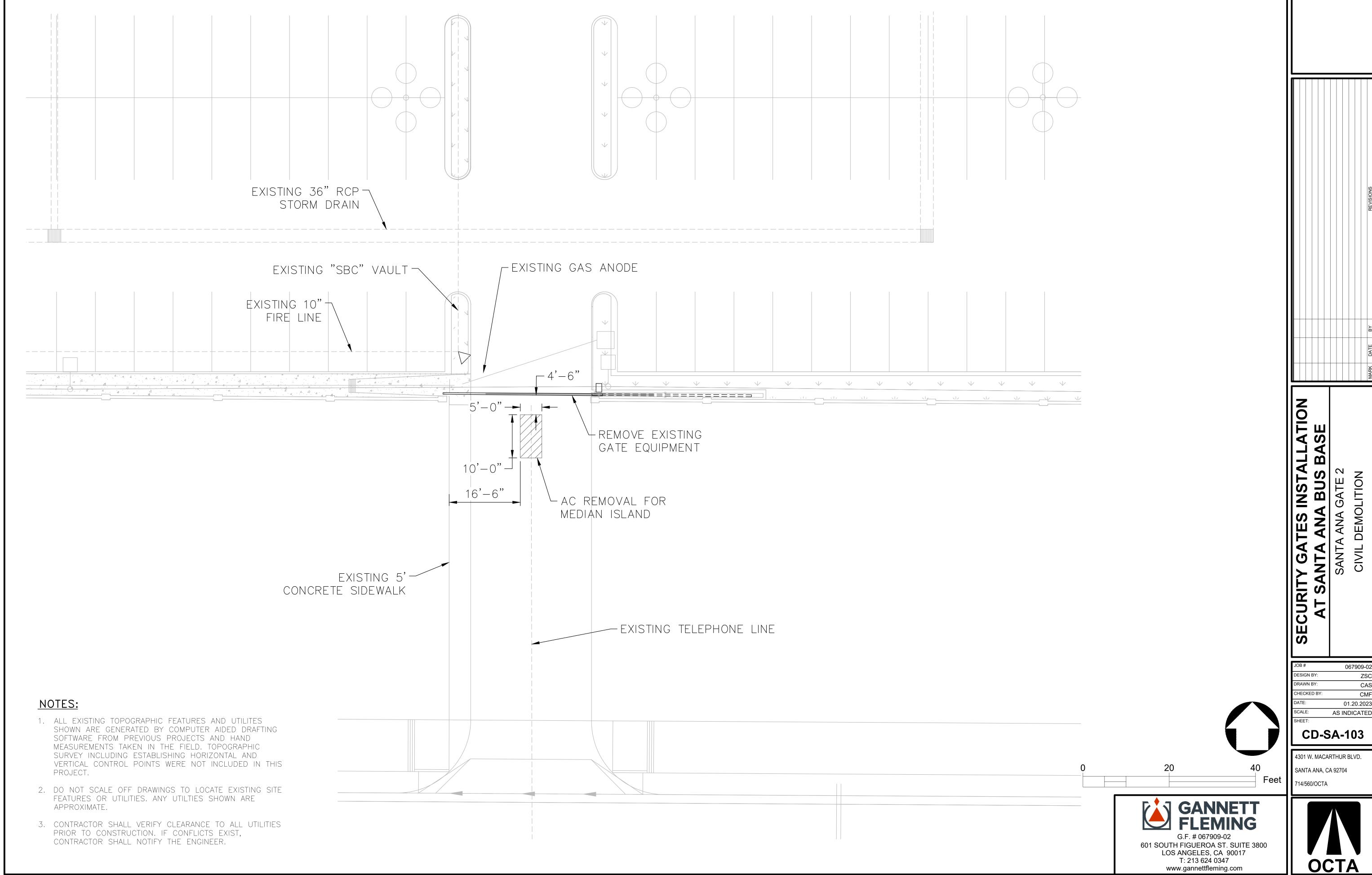
067909-02 01.20.2023 AS INDICATED

CD-SA-101

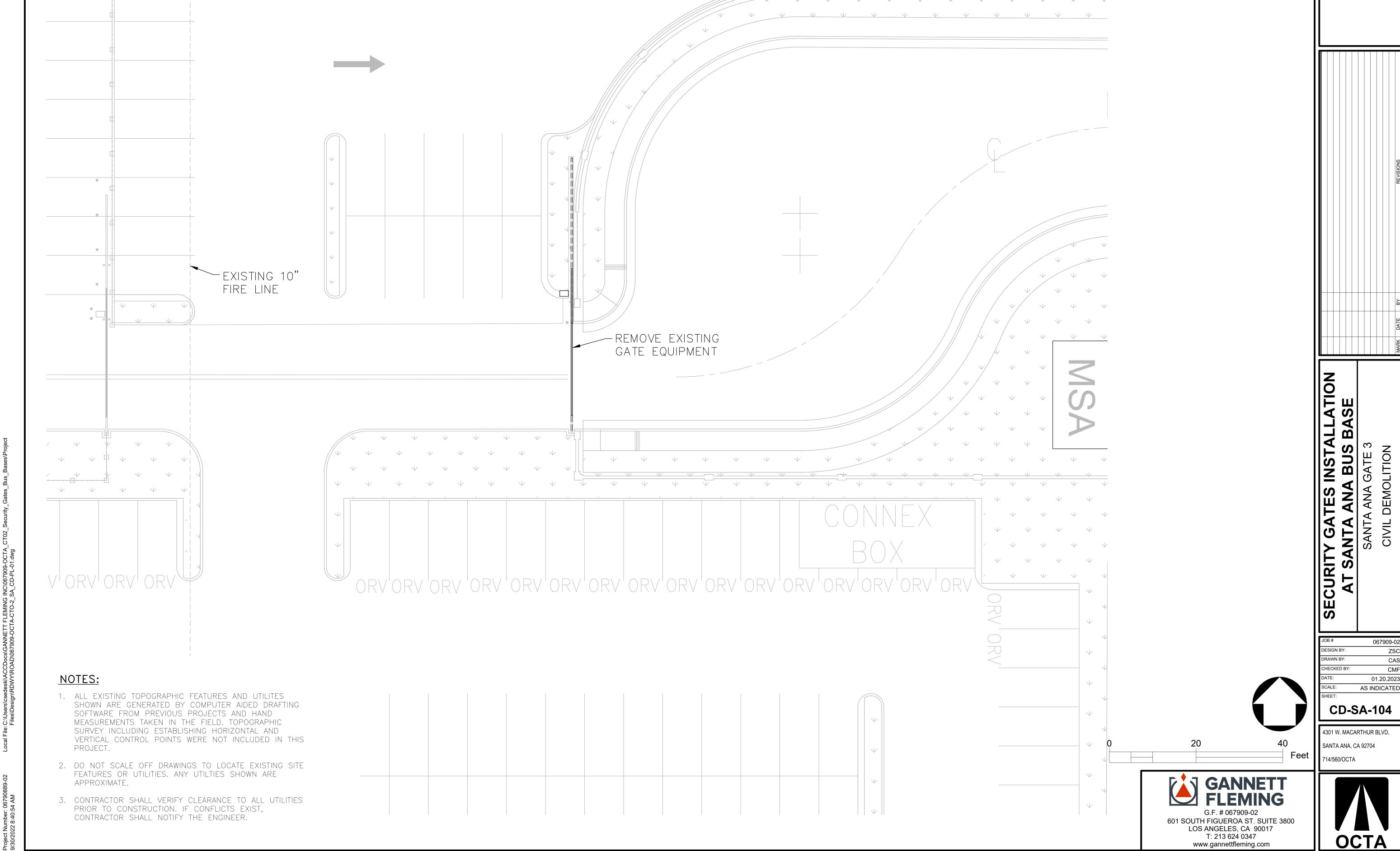




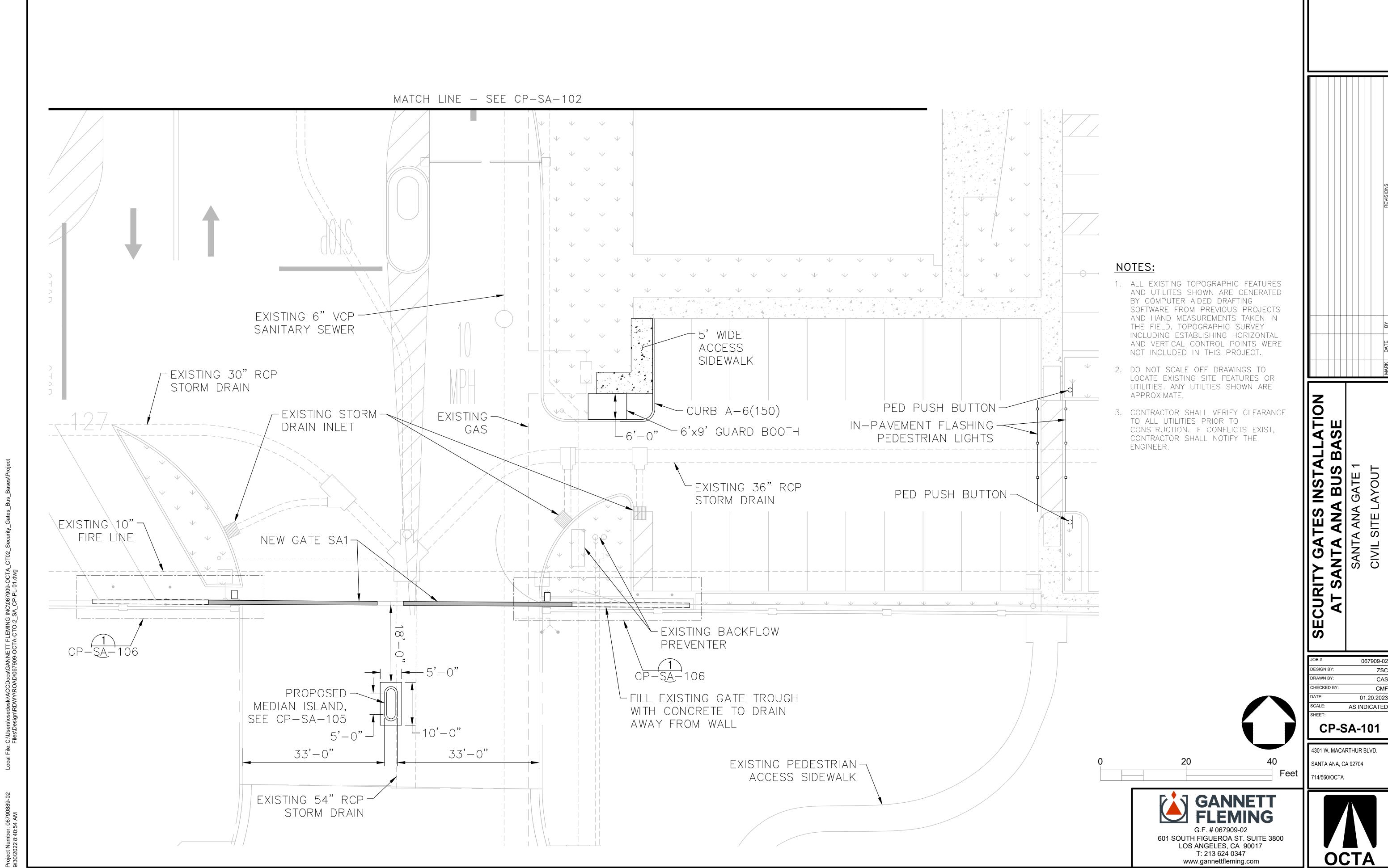




OCTA

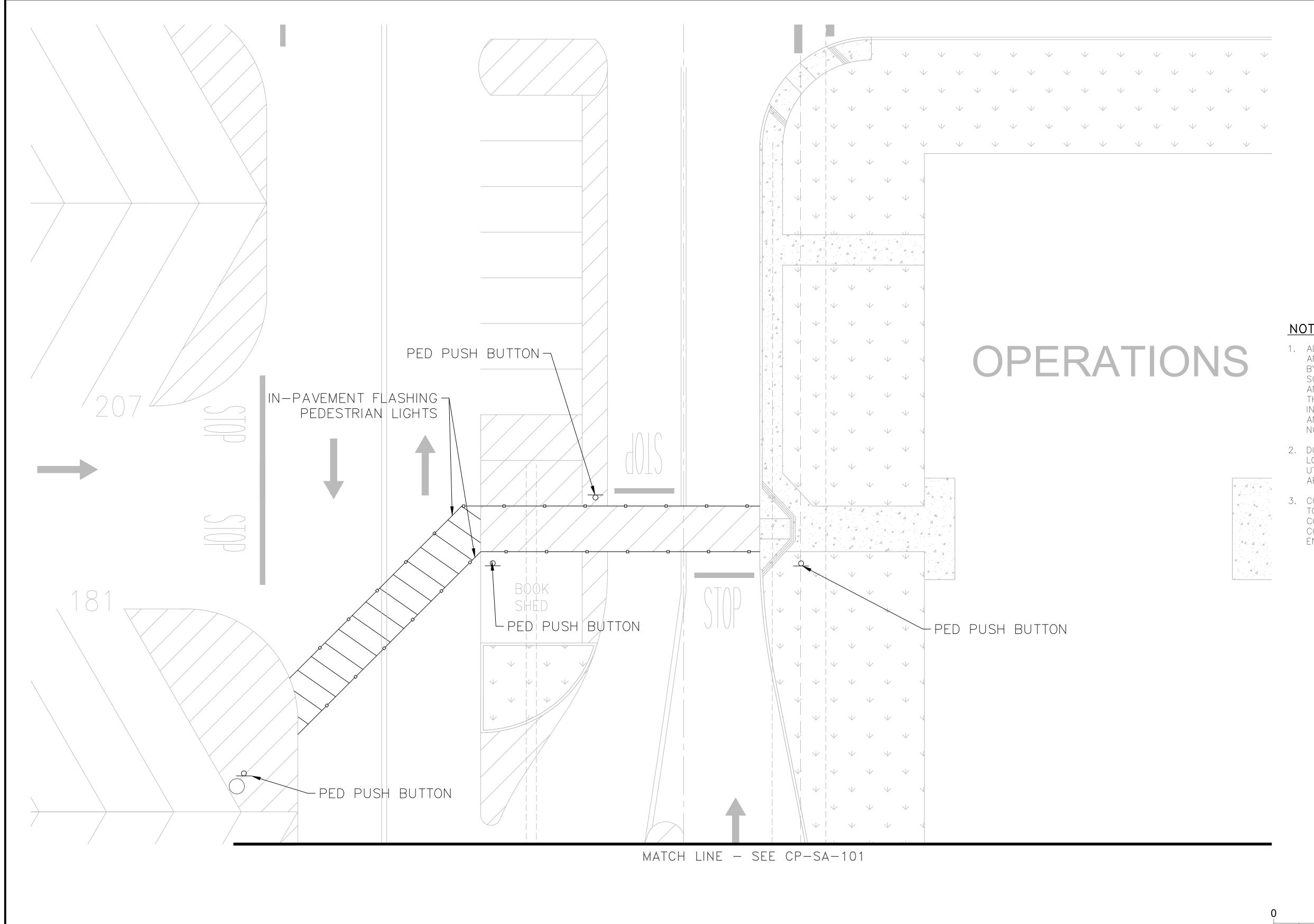


OCTA



CP-SA-101







- 1. ALL EXISTING TOPOGRAPHIC FEATURES AND UTILITES SHOWN ARE GENERATED BY COMPUTER AIDED DRAFTING SOFTWARE FROM PREVIOUS PROJECTS
 AND HAND MEASUREMENTS TAKEN IN
 THE FIELD. TOPOGRAPHIC SURVEY
 INCLUDING ESTABLISHING HORIZONTAL
 AND VERTICAL CONTROL POINTS WERE
 NOT INCLUDED IN THIS PROJECT.
- 2. DO NOT SCALE OFF DRAWINGS TO LOCATE EXISTING SITE FEATURES OR UTILITIES. ANY UTILTIES SHOWN ARE APPROXIMATE.
- CONTRACTOR SHALL VERIFY CLEARANCE TO ALL UTILITIES PRIOR TO CONSTRUCTION. IF CONFLICTS EXIST, CONTRACTOR SHALL NOTIFY THE ENGINEER.

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LOS ANGELES, CA 90017
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SANTA A

JOB#	067909-02
DESIGN BY:	ZSC
DRAWN BY:	CAS
CHECKED BY:	CMF
DATE:	01.20.2023
SCALE:	AS INDICATED
SHEET:	

CP-SA-102

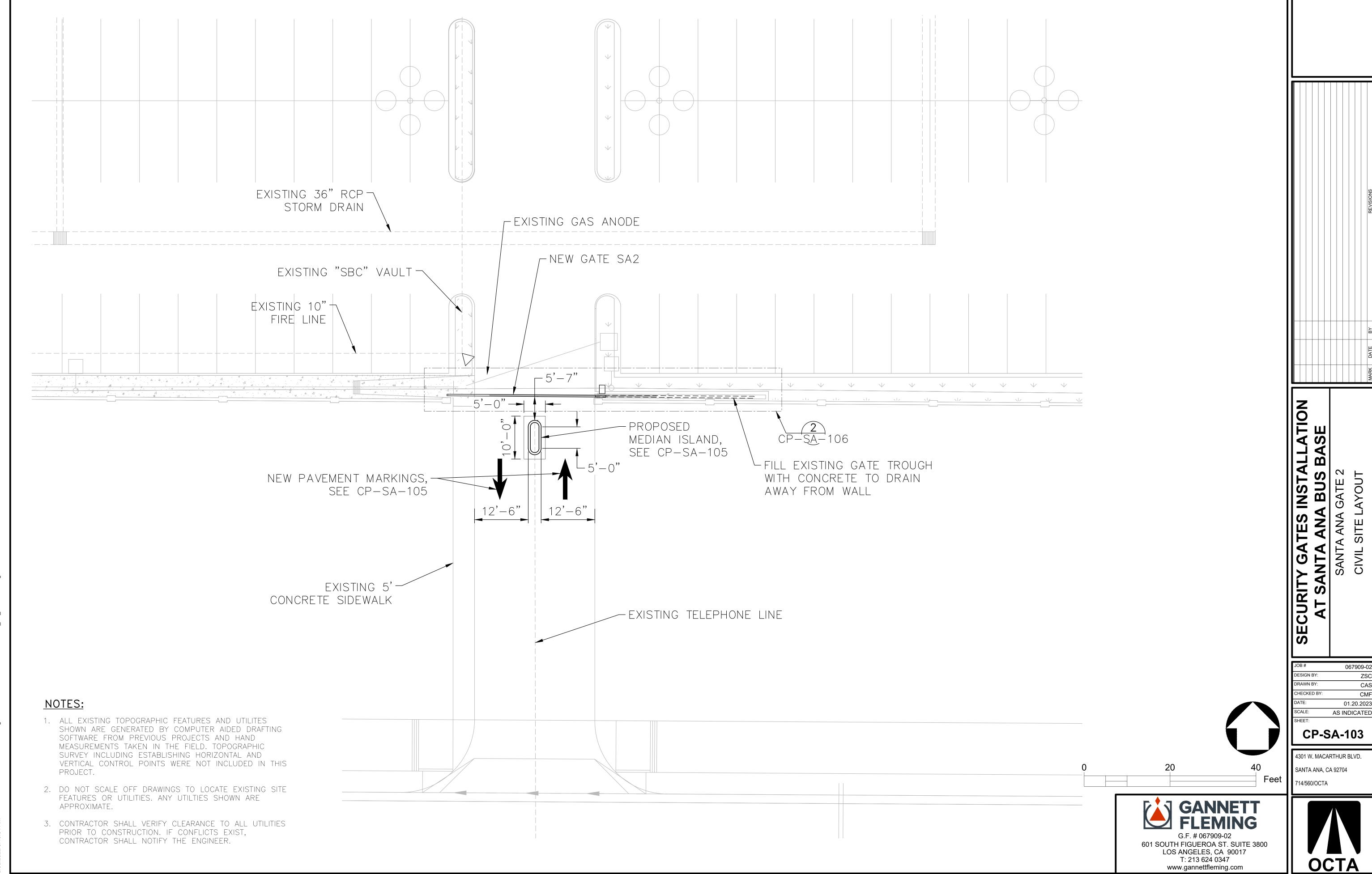
4301 W. MACARTHUR BLVD. SANTA ANA, CA 92704

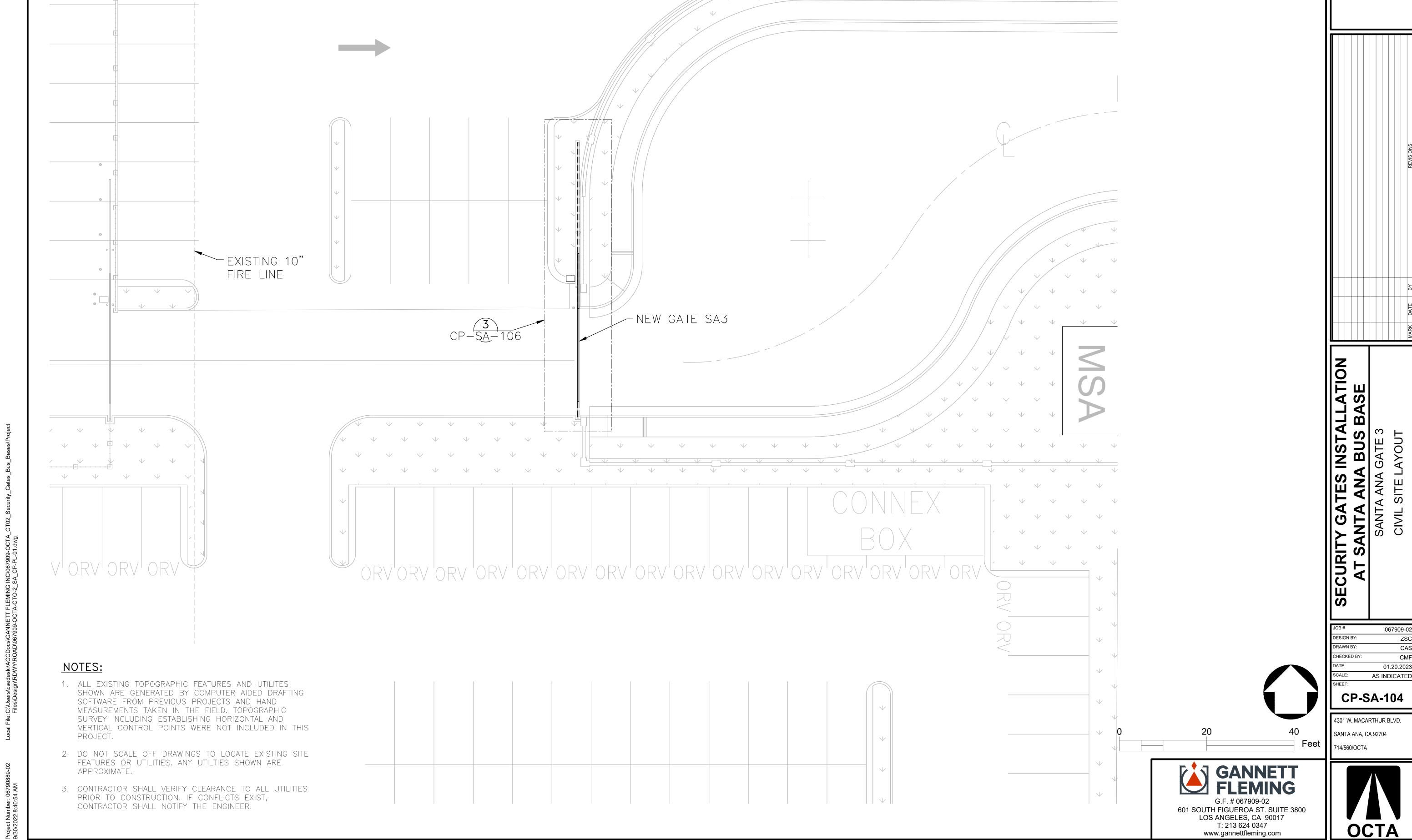
Feet 714/560/OCTA



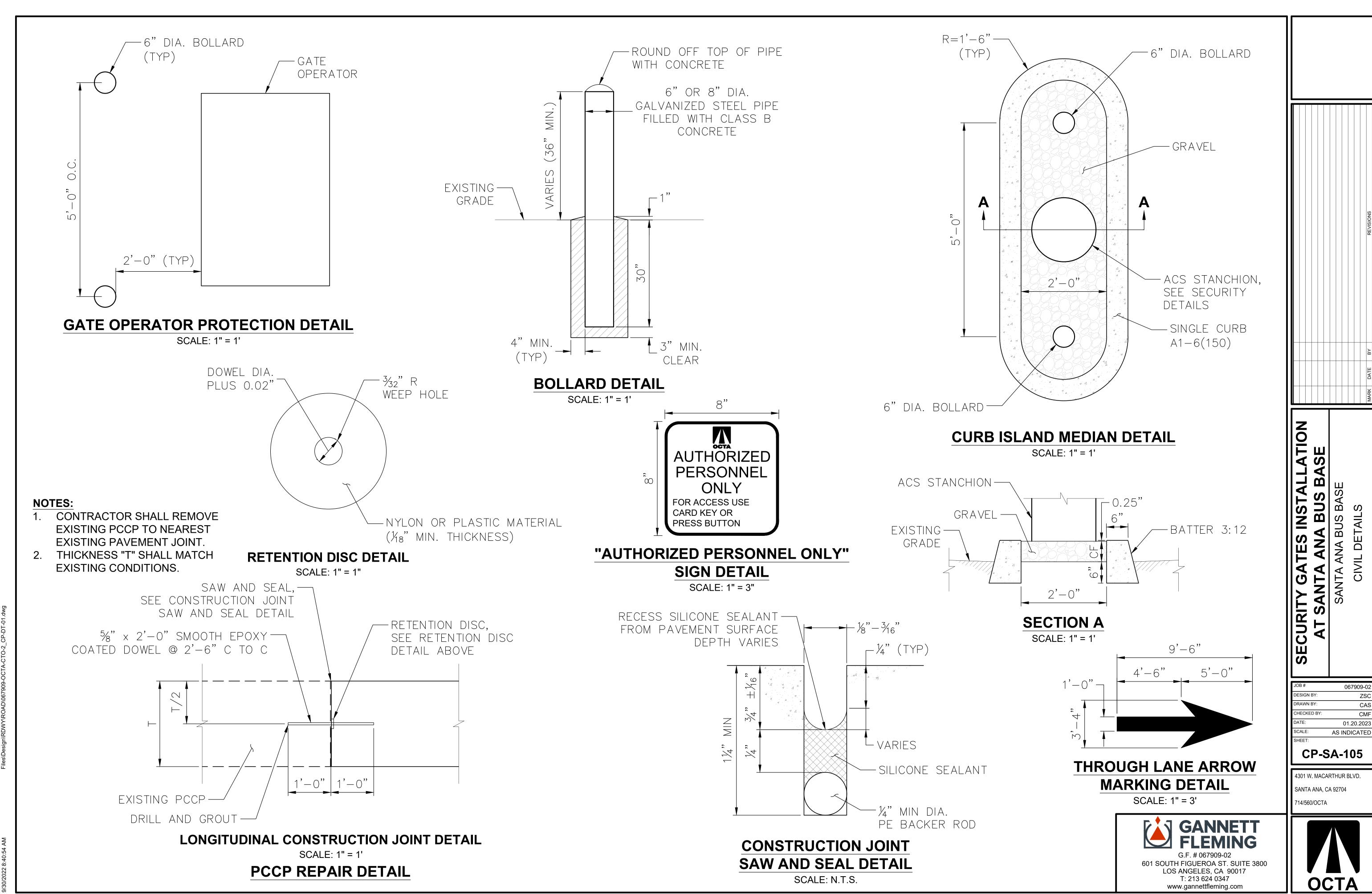








OCTA



OCTA

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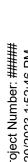
AS INDICATE

CP-SA-105

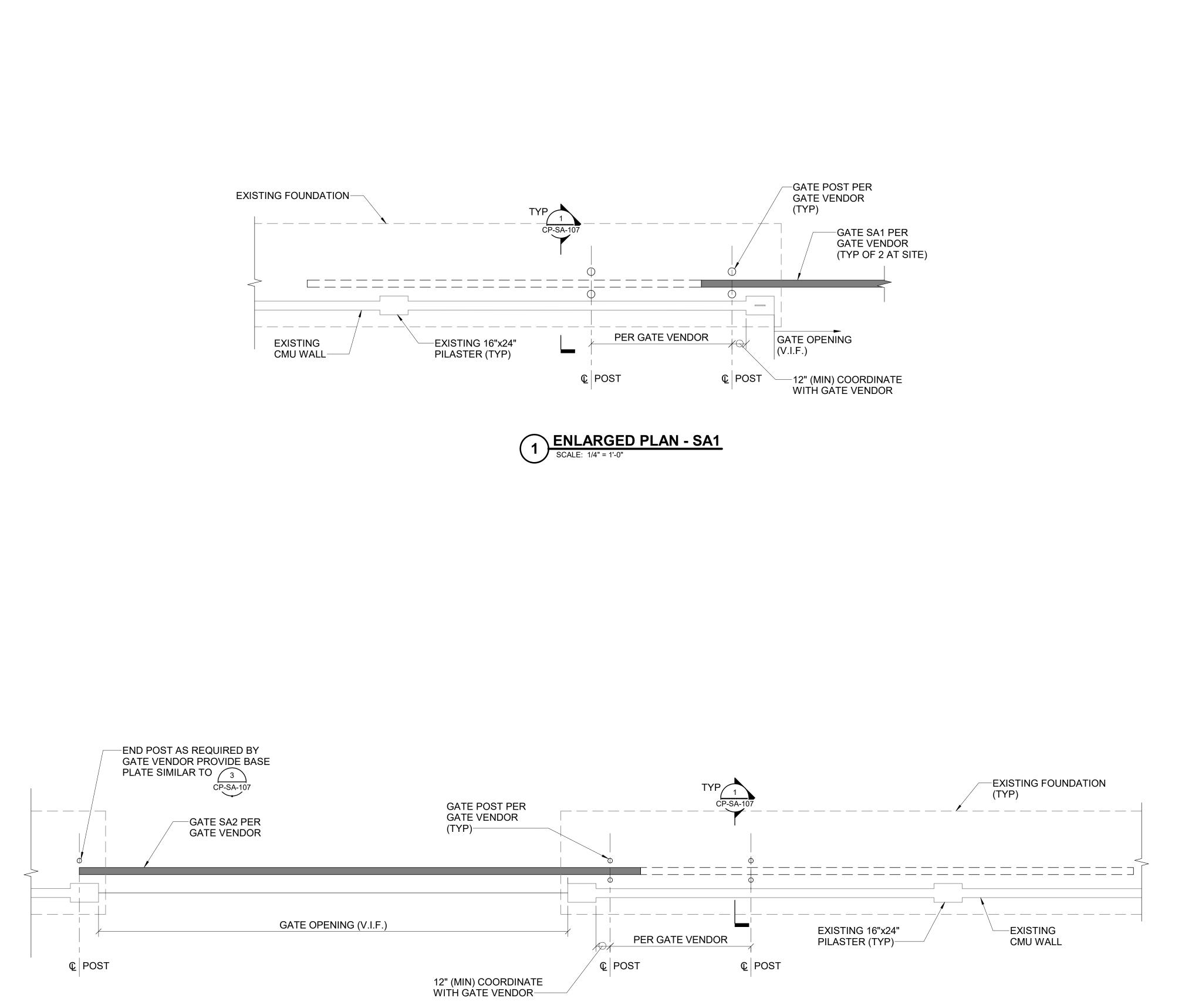
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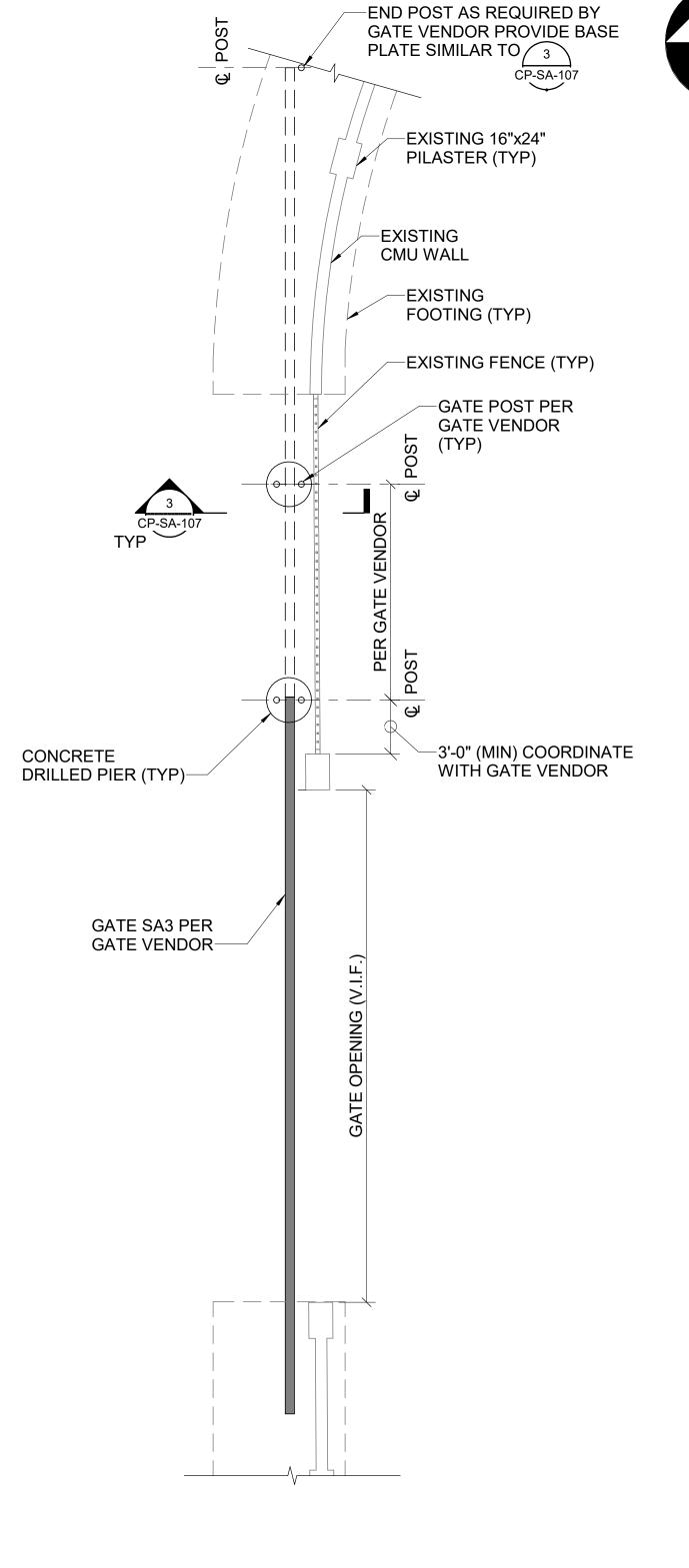
SANTA ANA, CA 92704

714/560/OCTA









3 ENLARGED PLAN - SA3
SCALE: 3/16" = 1'-0"





||CP-SA-106

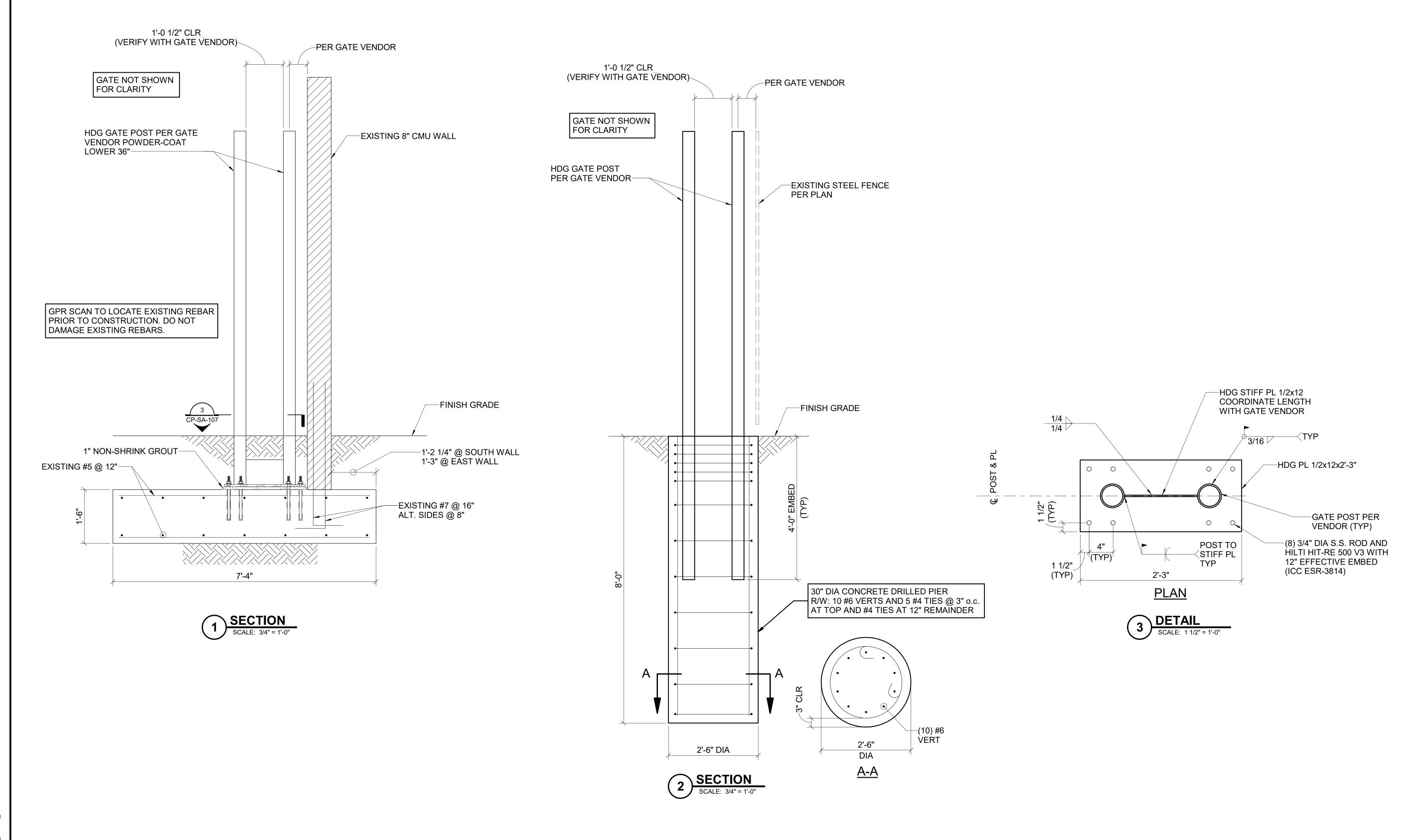
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SANTA ANA, CA 92704

CHECKED BY

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01.20.2023 AS INDICATED



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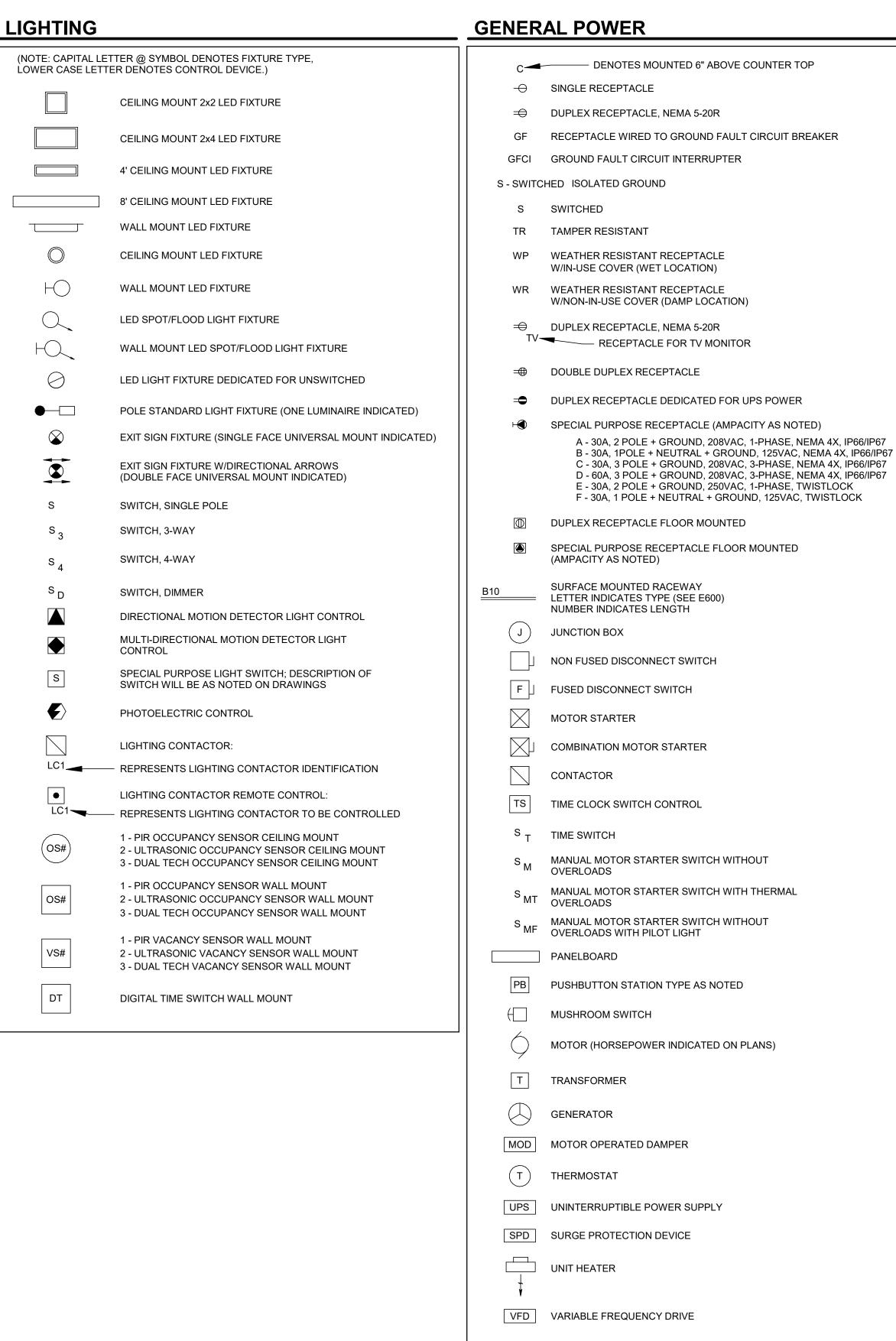
067909-02 CHECKED BY: 01.20.2023 AS INDICATED

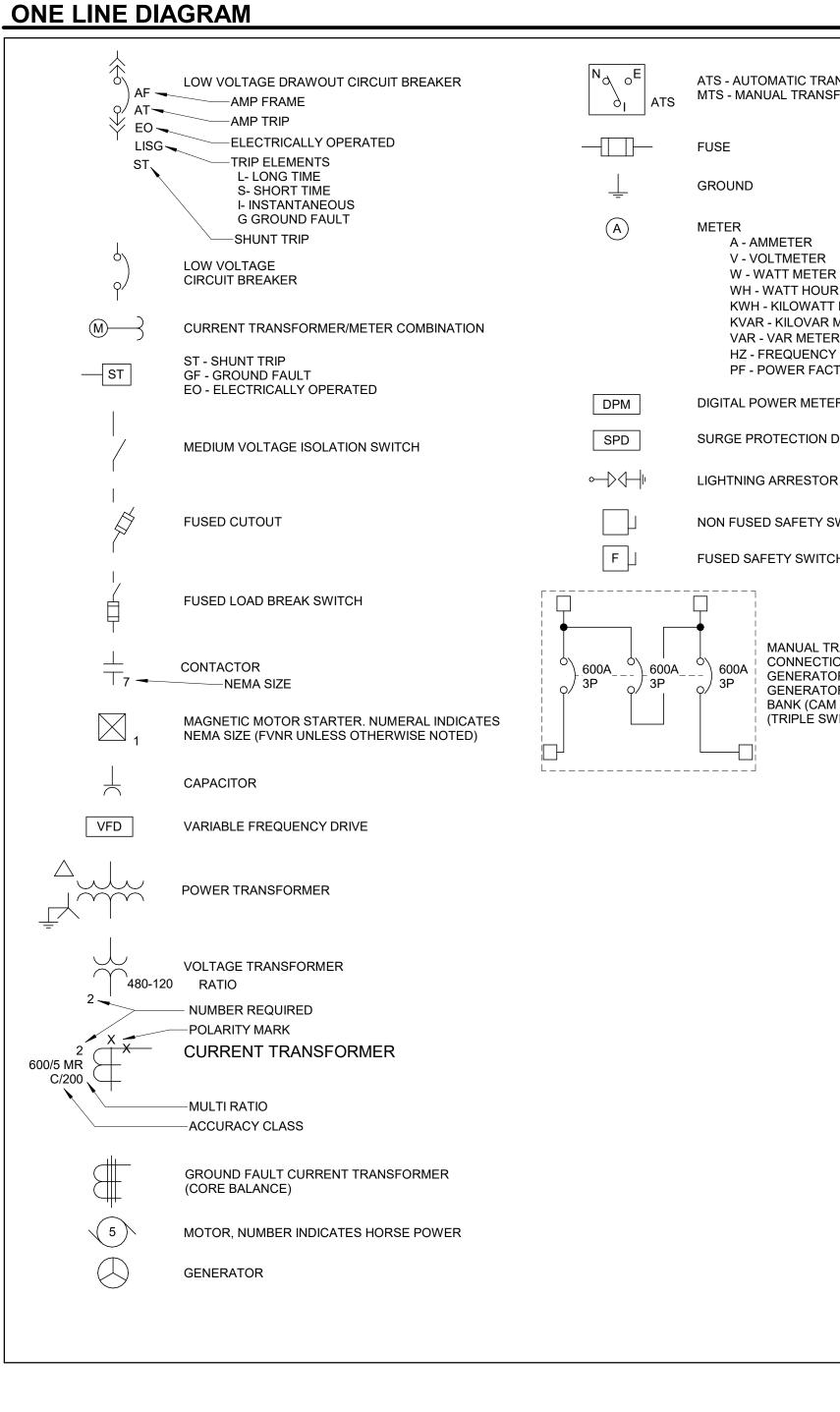
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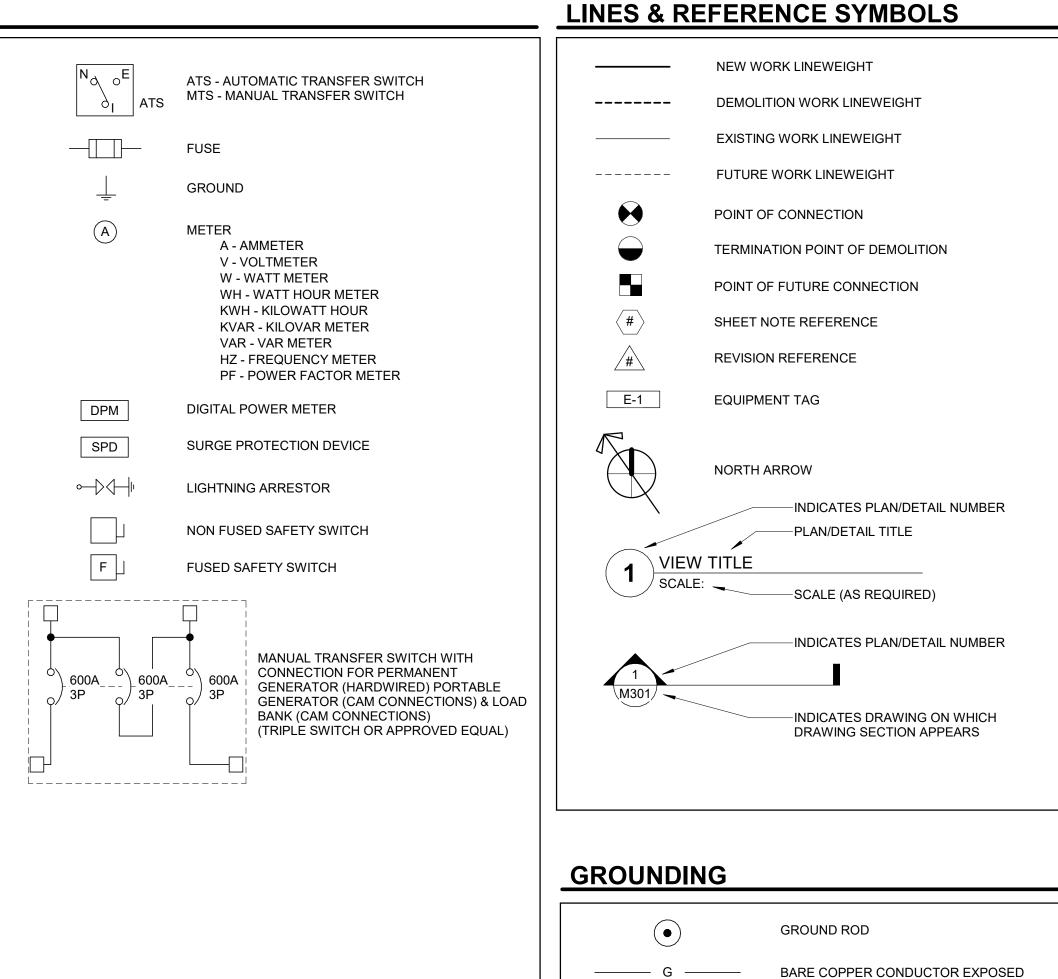
4301 W. MACARTHUR BLVD. SANTA ANA, CA 92704

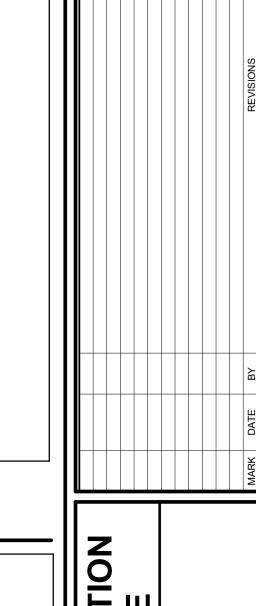
714/560/OCTA











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CONDUIT - EXPOSED

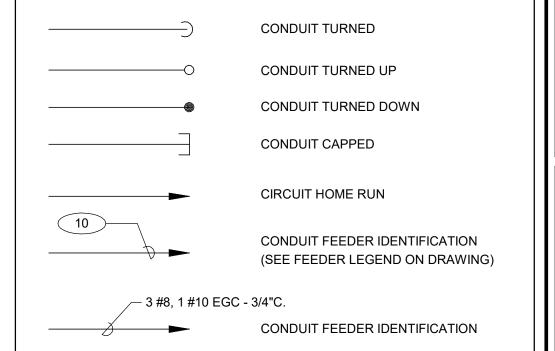
GROUND BUS

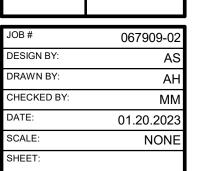
TEST WELL

GND

BARE COPPER CONDUCTOR BURIED OR

EMBEDDED IN CONCRETE





E-SA-001

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60
Bases/0679
Bus
Gates
Security
CT02
Docs://067909-OCTA CT02 Security Gates Bus Bases/067909 OCTA

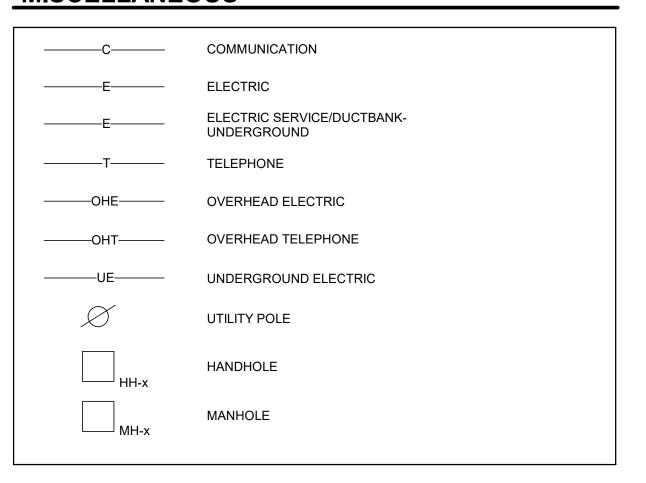
EMERGENCY LIGHTING

LUMINAIRE PROVIDING EMERGENCY ILLUMINATION EMERGENCY BATTERY PACK EXIT EMERGENCY EXIT SIGN • REMOTE TWIN HEADS

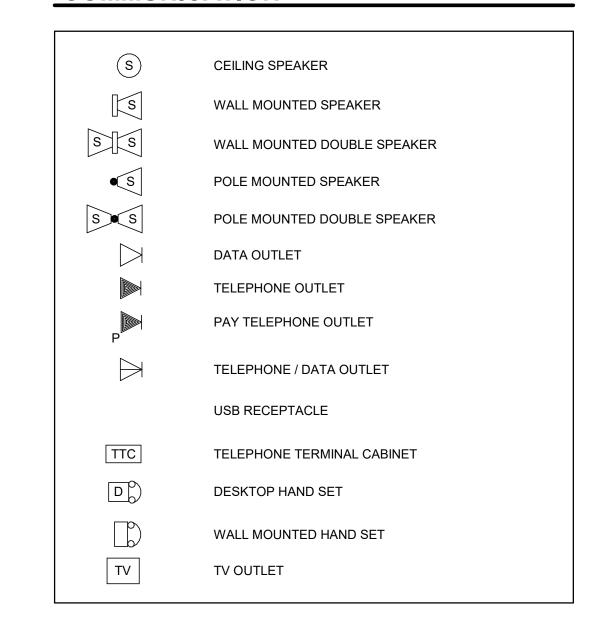
ACCESS CONTROL/INTRUSION ALARM

ACCESS/INTRUSION ALARM CONTROL PANEL DC DOOR CONTACT KP ACCESS KEYPAD CARD READER ES ELECTRIC DOOR STRIKE GR GATE RELEASE REQUEST TO EXIT CLOSED CIRCUIT TELEVISION CAMERA

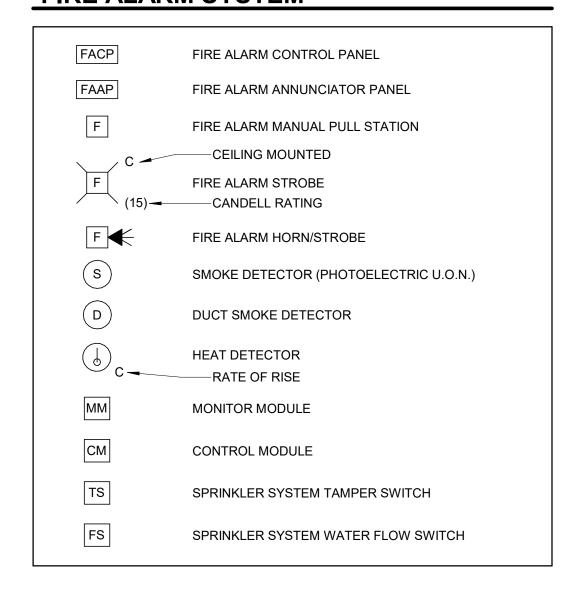
MISCELLANEOUS



COMMUNICATION



FIRE ALARM SYSTEM





067909-02 CHECKED BY: 01.20.2023

E-SA-002

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A or AMP

NORMALLY CLOSED NORMALLY OPEN NUMBER

PAD MOUNTED TRANSFORMER
PANEL
POTENTIAL TRANSFORMER
POLYVINYL CHLORIDE (CONDUIT)

RECEPTACLE
RIGID GALVANIZED STEEL(CONDUIT)
REDUCED VOLTAGE AUTOTRANSFORMER

REDUCED VOLTAGE AUTOTRANSFORMER
REDUCED VOLTAGE SOLID STATE

SURGE CAPACITOR

SURGE PROTECTION DEVICE SWITCH SWITCHBOARD

CABLE TRAY - CABLE
TELEPHONE TERMINAL BOARD
TELEPHONE TERMINAL CABINET
TYPICAL

UNIT HEATER
UNDERWRITER LABORATORIES
UNI ESS OTHERWISE NOTED

UNLESS OTHERWISE NOTED
UNINTERRUPTIBLE POWER SUPPLY

VOLTMETER SELECTOR SWITCH

WIRE WEATHERPROOF

TRANSFORMER

SINGLE PHASE

THREE PHASE

SCOPE OF WORK

MEDIUM VOLTAGE

NOT APPLICABLE

- PROVIDE POWER REQUIREMENT TO SERVE PROPOSED GATES AT SANTA ANA BUS BASE.
- a. THIS INCLUDES DEMOLISHING EXISTING FEEDERS, CONDUITS, CIRCUIT BREAKERS AS SHOWN ON PLANS.
- b. PROPOSED DESIGN WILL PROVIDE A DISCONNECT SHWITCHES AS SHOWN ON THE RENOVAION PLANS ON SHEET E-SA-101 AND E-SA-102 AND ON EQUIPMENT/FEEDER SCHEDULE ON SHEET E-SA-601. PROVIDE NEW FEEDERS IN NEW CONDUITS FROM EXISTING PANELS '4LC' AND '1L' TO SERVE THE PROPOSED GATES ASSEMBLY THROUGH A DISCONNECTING MEANS.
- PROVIDE POWER REQUIREMENT TO SERVE PROPOSED SECURITY CAMERAS, GUARD HOUSE AND PEDESTRIAN IN-GROUND LIGHTING.
- a. PROPOSED DESIGN INCLUDES PROVIDING NEW FEEDERS, CONDUITS, CIRCUIT BREAKERS AS SHOWN ON THE RENOVAION PLANS ON SHEET E-SA-101 AND E-SA-102 AND ON EQUIPMENT/FEEDER SCHEDULE ON SHEET E-SA-601. PROVIDE NEW FEEDERS IN NEW CONDUITS FROM EXISTING PANELS '4LC' AND '1L' TO SERVE THE PROPOSED SECURITY CAMERAS, GUARD HOUSE AND PEDESTRIAN IN-GROUND LIGHTING.

GENERAL NOTES

- THE SEISMIC BRACING AND ANCHORAGE OF ELECTRICAL CONDUITS, BUS DUCT, WIREWAY, AND CABLE TRAY SHALL BE IN ACCORDANCE WITH CBC 2019, FOR 1.0 IMPORTANCE FACTOR. RESTRAINT SYSTEM SHALL BE DESIGN AND BUILD BY THE CONTRACTOR PER SPECIFICATION SECTION 260549.
- 2. ALL ELECTRICAL MATERIALS AND EQUIPMENT SHALL BE NEW AND SHALL BE LISTED BY UNDERWRITER'S LABORATORIES (UL) AND BEAR THEIR LABEL, OR LISTED AND CERTIFIED BY A NATIONALLY RECOGNIZED TESTING AUTHORITY WHERE UL DOES NOT HAVE A LISTING. CUSTOM MADE EQUIPMENT SHALL HAVE COMPLETE TEST DATA SUBMITTED BY THE MANUFACTURER ATTESTING TO ITS SAFETY. IN ADDITION, THE MATERIALS, EQUIPMENT, AND INSTALLATION SHALL COMPLY WITH THE REQUIREMENTS OF THE FOLLOWING:
- 3. ELECTRICAL EQUIPMENT AND INSTALLATION SHALL COMPLY WITH ALL APPLICABLE REQUIREMENTS OF THE FOLLOWING CODES AND STANDARDS:
 - A. AMERICAN SOCIETY OF TESTING MATERIALS (ASTM)
 - INSULATED POWER CABLE ENGINEERS ASSOCIATION (IPCEA)
 - C. NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA)
 D. AMERICAN STANDARD ASSOCIATION (ASA)
 - E. NATIONAL FIRE PROTECTION AGENCY (NFPA)
 - F. AMERICAN NATIONAL STANDARD INSTITUTE (ANSI)G. CALIFORNIA ELECTRICAL CODE (CEC) LATEST EDITION
 - H. CALIFORNIA CODE OF REGULATIONS TITLE 24 (CCR)I. INSTITUTE OF ELECTRICAL AND ELECTRONIC ENGINEERS (IEEE)
 - J. ALL LOCAL CODES HAVING JURISDICTION.K. WHERE THE CODES HAVE DIFFERENT LEVELS OF REQUIREMENTS,
 - L. THE MOST STRINGENT RULE SHALL APPLY.
- 4. THE CONTRACTOR SHALL VISIT THE SITE INCLUDING ALL AREAS INDICATED ON THE DRAWINGS, WITH A FULL KNOWLEDGE THAT SOME OF THE AREAS REQUIRE SPECIAL SECURITY ARRANGEMENT TO GAIN ACCESS. IN SUCH CASE, IT SHALL BE THE CONTRACTOR'S SOLE RESPONSIBILITY TO MAKE ALL ARRANGEMENT TO VISIT THESE AREAS. HE SHALL THOROUGHLY FAMILIARIZE HIMSELF WITH THE EXISTING CONDITIONS AND ACCEPT SUCH CONDITIONS UNDER WHICH HE SHALL BE REQUIRED TO PERFORM HIS WORK.
- 5. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO OBTAIN A COMPLETE SET OF CONTRACT DOCUMENTS, ADDENDA, DRAWINGS AND SPECIFICATIONS. HE SHALL CHECK THE DRAWINGS OF THE OTHER TRADES AND SHALL CAREFULLY READ THE ENTIRE SPECIFICATIONS AND DETERMINE HIS RESPONSIBILITIES. FAILURE TO DO SO SHALL NOT RELEASE THE CONTRACTOR FROM DOING THE WORK IN COMPLETE ACCORDANCE WITH THE DRAWINGS AND SPECIFICATIONS.
- 6. THE CONTRACTOR SHALL SECURE AND PAY FOR ALL PERMITS, FEES, CHARGES, AND INCIDENTAL COSTS NECESSARY FOR EXECUTION AND COMPLETION OF ELECTRICAL FIRE ALARM SYSTEM WORK, INCLUDING ALL CHARGES BY STATE, COUNTY AND LOCAL GOVERNMENTAL AGENCIES.
- 7. THE CONTRACTOR SHALL COORDINATE HIS WORK WITH OTHER TRADES AT THE SITE.
 ANY DISCREPANCIES, AMBIGUITIES OR CONFLICTS SHALL BE BROUGHT TO THE
 ATTENTION OF THE ARCHITECT DURING BID TIME FOR CLARIFICATION. ANY SUCH
 CONFLICTS NOT CLARIFIED PRIOR TO BID SHALL BE SUBJECT TO THE INTERPRETATION
 OF THE ARCHITECT.
- 8. THE CONTRACTOR SHALL PROVIDE AND KEEP UP-TO-DATE A COMPLETE RECORD SET OF DRAWINGS. THESE PRINTS SHALL BE CORRECTED DAILY AND SHOW EVERY CHANGE FROM THE ORIGINAL DRAWINGS. THIS SET OF DRAWINGS SHALL BE KEPT ON THE JOB SITE AND SHALL BE USED ONLY AS A RECORD SET. THIS SHALL NOT BE CONSTRUED AS AUTHORIZATION FOR THE CONTRACTOR TO MAKE CHANGES IN THE LAYOUT WITHOUT DEFINITE INSTRUCTION IN EACH CASE. UPON COMPLETION OF THE WORK, A SET OF REPRODUCIBLE CONTRACT DRAWINGS SHALL BE OBTAINED FROM THE ARCHITECT, AND ALL CHANGES AS NOTED ON THE RECORD SET OF DRAWINGS SHALL BE INCORPORATED THEREON WITH BLACK INK IN A NEAT, LEGIBLE, UNDERSTANDABLE AND PROFESSIONAL MANNER.
- 9. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE TEMPORARY POWER FACILITIES AND CONNECTIONS FOR ALL FEEDERS OR SYSTEMS BEING DISCONNECTED IN ORDER TO MAINTAIN SYSTEMS IN OPERATION OR WHERE SAID FEEDERS OR SYSTEMS REQUIRE EMERGENCY STANDBY POWER.
- 10. AFTER ALL REQUIREMENTS OF THE SPECIFICATIONS AND/OR THE DRAWINGS HAVE BEEN FULLY COMPLETED, REPRESENTATIVES OF THE UNIVERSITY REPRESENTATIVE WILL INSPECT THE WORK. THE CONTRACTOR SHALL PROVIDE COMPETENT PERSONNEL TO DEMONSTRATE THE OPERATION OF ANY ITEM OR SYSTEM TO THE FULL SATISFACTION OF EACH REPRESENTATIVE. FINAL ACCEPTANCE OF THE WORK WILL BE MADE BY THE UNIVERSITY REPRESENTATIVE AFTER RECEIPT OF APPROVAL AND RECOMMENDATION OF ACCEPTANCE FROM EACH REPRESENTATIVE.
- 11. THE CONTRACTOR SHALL FURNISH A MINIMUM OF ONE YEAR WRITTEN GUARANTEE OF MATERIALS AND WORKMANSHIP FROM THE DATE OF SUBSTANTIAL COMPLETION.
- 12. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO REVIEW AND TO COORDINATE WITH THE MECHANICAL, FIRE PROTECTION AND PLUMBING DRAWINGS FOR DUCTS, LINES AND EQUIPMENT.
- 13. ALL FINAL CONNECTIONS TO, AND INSTALLATION OF UNIVERSITY REPRESENTATIVE FURNISHED EQUIPMENT SHALL BE MADE BY THE CONTRACTOR.
- 14. COORDINATE WITH OTHER TRADES AS TO THE EXACT LOCATION OF THEIR RESPECTIVE EQUIPMENT. SUPPLY POWER AND MAKE CONNECTION TO MOTORS AND EQUIPMENT REQUIRING ELECTRICAL CONNECTIONS AS INDICATED ON THE SINGLE LINE DIAGRAM, ELECTRICAL DRAWINGS, AND DRAWINGS OF OTHER TRADES. REVIEW THE DRAWINGS OF OTHER TRADES FOR CONTROL DIAGRAMS, SIZE AND LOCATION OF EQUIPMENT. DISCONNECT SWITCHES, STARTERS, WIRING, CONTROLS, AND CONDUIT FOR ELEVATOR ESCALATOR MECHANICAL, PLUMBING AND FOUNTAIN OPERATION SHALL BE PROVIDED. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING PROVIDE MANUFACTURER'S SHOP DRAWINGS PRIOR TO ROUGHING IN ALL CONDUIT TO THIS EQUIPMENT.
- 15. EXACT METHOD AND LOCATION OF CONDUIT PENETRATION AND OPENINGS IN CONCRETE WALLS OR FLOORS OR STRUCTURAL STEEL MEMBERS SHALL BE AS DIRECTED BY THE STRUCTURAL ENGINEER. PERFORM CORING, SAWCUTTING, PATCHING, AND REFINISHING OF EXISTING WALLS AND SURFACES WHEREVER IT IS NECESSARY TO PENETRATE. OPENINGS SHALL BE SEALED IN AN APPROVED METHOD TO MEET THE FIRE RATING OF THE PARTICULAR WALL, FLOOR OR CEILING. EXACT METHOD AND LOCATIONS OF CONDUIT PENETRATIONS AND OPENINGS IN CONCRETE WALLS OR FLOORS SHALL BE UL APPROVED.
- 16. ROUTE EXPOSED CONDUIT AND CONDUIT ABOVE ACCESSIBLE CEILING SPACES PARALLEL AND PERPENDICULAR TO WALLS AND ADJACENT PIPING. ARRANGE CONDUIT TO MAINTAIN HEADROOM AND TO PRESENT A NEAT APPEARANCE.

 CONDUIT SHALL NOT BE INSTALLED IN ANY FLOOR SLAB. CONDUIT SHALL BE INSTALLED CONCEALED IN THE CEILING SPACE, CONCEALED IN WALLS, OR BELOW SLAB ON GRADE UNLESS NOTED OTHERWISE.
- 17. ROUTE EXPOSED CONDUIT AND CONDUIT ABOVE ACCESSIBLE CEILING SPACES PARALLEL AND PERPENDICULAR TO WALLS AND ADJACENT PIPING. ARRANGE CONDUIT TO MAINTAIN HEADROOM AND TO PRESENT A NEAT APPEARANCE.
- 18. CONDUIT SHALL NOT BE INSTALLED IN ANY FLOOR SLAB. CONDUIT SHALL BE INSTALLED CONCEALED IN THE CEILING SPACE, CONCEALED IN WALLS, OR BELOW SLAB ON GRADE UNLESS NOTED OTHERWISE.
- 19. ATTENTION IS CALLED TO THE FACT THAT THE CEILING SYSTEMS FOR THE MOST PART ARE CONSIDERED TO BE INACCESSIBLE. THE CONTRACTOR SHALL STRATEGICALLY LOCATE BOXES, ETC., IN AN ACCESSIBLE CEILING SPACE. IT IS STRONGLY RECOMMEND THAT THE CONTRACTOR SHALL CONDUCT A SURVEY OF THE CEILING TYPE IN ALL WORK AREAS TO QUANTIFY ACCESSIBLE LOCATIONS FOR PULLBOXES AND JUNCTION BOXES REQUIRED ABOVE EXISTING CEILING.

- 20. WHENEVER A DISCREPANCY IN QUANTITY OR SIZE OF CONDUIT, WIRE, EQUIPMENT DEVICES, CIRCUIT BREAKERS, GROUND FAULT PROTECTION SYSTEMS, ETC. (ALL MATERIALS), ARISES ON THE DRAWINGS OR SPECIFICATIONS, THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING AND INSTALLING ALL MATERIAL AND SERVICES REQUIRED BY THE STRICTEST CONDITIONS NOTED ON THE DRAWINGS OR IN THE SPECIFICATIONS TO ENSURE COMPLETE AND OPERABLE SYSTEMS AS REQUIRED BY THE UNIVERSITY REPRESENTATIVE AND ARCHITECT/ENGINEER.
- 21. UTILITY AND ELECTRICAL OUTLETS OR BOXES SHALL BE SECURELY FASTENED TO THE STUD OF FRAMING OF THE WALL, PARTITION OR CEILING ASSEMBLY. THE OPENING IN THE GYPSUM BOARD FACING SHALL BE CUT SO THAT THE CLEARANCE BETWEEN THE BOX AND THE GYPSUM BOARD DOES NOT EXCEED 1/8 INCH. IN SMOKE WALLS OR PARTITIONS, THE 1/8 INCH CLEARANCE SHALL BE FILLED WITH AN APPROVED FIRE-RATED SEALANT.
- 22. REFER TO SINGLE LINE DIAGRAM AND FEEDER SCHEDULES FOR CONDUIT AND CONDUCTOR SIZE TO PANELS, TRANSFORMERS, MECHANICAL AND PLUMBING EQUIPMENT, ETC. CONDUIT RUNS MAY NOT BE SHOWN ON DRAWINGS, BUT ARE PART OF THIS CONTRACT.
- 23. STRAIGHT FEEDER, BRANCH CIRCUIT, AND CONDUIT RUNS SHALL BE PROVIDED WITH SUFFICIENT PULL BOXES OR JUNCTION BOXES TO LIMIT THE MAXIMUM LENGTH OF ANY SINGLE CABLE PULL TO 100 FEET. PULL BOXES SHALL BE SIZED PER CODE OR AS INDICATED ON DRAWINGS. LOCATIONS SHALL BE DETERMINED IN THE FIELD OR AS INDICATED ON THE DRAWINGS.
- 4. MAXIMUM NUMBER OF CONDUCTORS IN OUTLET OR JUNCTION BOXES SHALL CONFORM TO THE CALIFORNIA ELECTRICAL CODE, ARTICLE 3214-6, BUT IN NO CASE SHALL CONTAIN MORE THAN THE FOLLOWING NUMBER OF #12 AWG CONDUCTORS FOR THE SIZE OF BOX INDICATED. THE MINIMUM SIZE OUTLET OR JUNCTION BOX PERMITTED IN A WALL IS FOR INCHES SQUARE BY 1 1/2 INCHES DEEP.
 - a. 4" SQ. BY 1-1/2" D BOX: 9 CONDUCTORSb. 4" SQ. BY 2-1/8" D BOX: 13 CONDUCTORS
 - c. 4" SQ. BY 1-1/2" D BOX: 11 CONDUCTORSd. 4" SQ. BY 2-1/8" D BOX: 18 CONDUCTORS
- A. ALL OUTLET BOXES CONTAINING MORE THAN ONE DEVICE SHALL BE GANGED. TWO DEVICES DOUBLE GANGED, MINIMUM.
- 25. WHERE MULTI-HOMERUNS ARE INDICATED ON DRAWINGS INDICATING THE SAME PANELBOARD CIRCUIT NUMBER, PROVIDE JUNCTION BOX ABOVE ACCESSIBLE CEILING

AND ROUTE ONE SET OF WIRES TO CIRCUIT BREAKERS.

- 26. RECESSED PANELS AND CABINETS SHALL HAVE FIVE SPARE 3/4 INCH CONDUITS STUBBED UP INTO AN ACCESSIBLE CEILING SPACE AND CAPPED UNLESS OTHERWISE NOTED.
- 27. IDENTIFICATION NAMEPLATES SHALL BE MICARTA 1/8 INCH THICK AND OF APPROVED SIZE WITH BEVELED EDGES AND ENGRAVED WHITE LETTERS A MINIMUM OF 1/4 INCH HIGH ON BLACK BACKGROUND. NAMEPLATES SHALL BE PROVIDED FOR ALL CIRCUITS IN THE SERVICE DISTRIBUTION AND POWER DISTRIBUTION SWITCHBOARDS OR PANELBOARDS, MOTOR CONTROL CENTERS, LIGHTING DISTRIBUTION PANELBOARDS, SEPARATELY MOUNTED STARTING SWITCHES, DISCONNECTING SWITCHES, MOTOR CONTROL PUSHBUTTON STATIONS, SELECTOR SWITCHES, TRANSFORMERS, TERMINAL CABINETS, TELEPHONE CABINETS ETC. ALL NAMEPLATES SHALL BE ATTACHED WITH SCREWS. PULL BOXES, JUNCTION BOXES, AND DEVICE BOXES SHALL BE MARKED WITH A PERMANENT MARKER.
- 28. THE EXACT LOCATION OF ALL ELECTRICAL DEVICES AND EQUIPMENT SHALL BE COORDINATED WITH THE ARCHITECTURAL ELEVATIONS, DETAILS, OR SECTIONS PRIOR TO INSTALLATION. ALL ELECTRICAL DEVICES AND EQUIPMENT SHALL BE RECESSED IN WALLS UNLESS OTHERWISE NOTED. OUTLETS NOT INDICATED ON ARCHITECTURAL ELEVATIONS SHALL BE COORDINATED WITH THE ARCHITECT PRIOR TO ROUGH-IN. UNLESS OTHERWISE NOTED, MOUNT ELECTRICAL DEVICES AT THE FOLLOWING HEIGHTS

A. WALL SWITCH +4'-0" SET VERTICALLY
B. CONVENIENCE RECEPTACLE +1'-6" SET VERTICALLY OR AS NOTED

OTHERWISE.

C. TELEPHONE/DATA OUTLETS +1'-6" SET VERTICALLY.

D. OUTLETS AT COUNTERS +6" ABOVE COUNTERS HORIZONTALLY

- 29. REVIEW ARCHITECTURAL ELEVATIONS OF CASEWORK. OUTLETS MOUNTED ABOVE OR BELOW, OR ADJACENT TO CASEWORK SHALL BE COORDINATED WITH THE ARCHITECTURAL DRAWINGS, PRIOR TO FINAL ROUGH-IN. ELECTRICAL DRAWINGS SHALL GOVERN NUMBER AND TYPE OF OUTLETS. HOWEVER, LOCATIONS SHALL BE AS INDICATED ON ARCHITECTURAL ELEVATIONS. PROVIDE CONDUIT, WIRES, AND OUTLETS FOR WORK REQUIRED IN CASEWORK INSTALLATIONS. REFERENCE ARCHITECTURAL DETAILS FOR METHOD OF ROUTING CONDUIT WITHIN CASEWORK CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CUT-OUTS IN TILE OR COUNTER SPLASHES WHERE RECEPTACLES, OUTLETS, ETC., OCCUR. PROVIDE BOX EXTENSIONS THROUGH ALL CASEWORK. FINISH FLUSH WITH FACE OF SPLASH, CABINET, ETC.
- 30. MOUNTING HEIGHTS OF ALL DEVICES AND EQUIPMENT ARE FROM FINISHED FLOOR TO CENTER OF DEVICES AND EQUIPMENT UNLESS OTHERWISE NOTED. BOXES INSTALLED IN LOCATIONS NOT APPROVED BY THE ARCHITECT SHALL BE RELOCATED AS DIRECTED BY THE ARCHITECT AT NO ADDITIONAL COST TO THE UNIVERSITY REPRESENTATIVE.
- 31. THE EQUIPMENT GROUNDING CONDUCTOR SHOWN ON CONDUIT RUNS SHALL RUN CONTINUOUS FROM PANEL TO LAST OUTLET. THIS WIRE SHALL BE PIGTAILED IN EACH OUTLET FOR CONNECTION TO BOX AND DEVICE SO THAT IF DEVICE IS REMOVED, GROUND WILL NOT BE INTERRUPTED. ALL EQUIPMENT GROUNDING CONDUCTORS SHALL BE INSULATED GREEN CONDUCTORS ALTERNATE METHODS OF IDENTIFICATION SHALL NOT BE USED. CONTRACTOR SHALL NOTIFY ELECTRICAL ENGINEER TO EXAMINE CONDUCTOR INSTALLATION PRIOR TO INSTALLATION OF DEVICES.
- 32. FOR SMALL AC MOTORS NOT HAVING BUILT-IN THERMAL OVERLOAD PROTECTION, PROVIDE MANUAL MOTOR STARTERS WITH OVERLOAD HEATER ELEMENTS SIZED TO THE NAMEPLATE CURRENT RATING OF THE MOTOR. SMALL AC MOTORS WITH BUILT-IN THERMAL OVERLOAD PROTECTION, PROVIDE A HORSE- POWER RATED TOGGLE TYPE DISCONNECT SWITCH.
- 33. ALL BRANCH CIRCUITS MULTIPLE HOME RUN WIRING SHALL BE 12 NOS. MINIMUM AND SIZED TO COMPLY WITH NEC DERATING TABLE 310-15(a)2(a) & CONDUIT FILL. NO SHARED NEUTRAL TO BE USED.
- 34. REFER TO ARCHITECTURAL DRAWINGS FOR OCCUPANCY AND OCCUPANT LOAD INFORMATION FOR EACH PROJECT AREA.
- 35. SWITCHES, CIRCUIT BREAKERS, ETC., SHALL BE READILY ACCESSIBLE. FUSES SHALL BE INSTALLED NOT MORE THAN 6'-6" AFF.

- 36. NO PIPING, DUCTS OR EQUIPMENT FOREIGN TO ELECTRICAL EQUIPMENT SHALL BE PERMITTED TO BE LOCATED WITHIN THE DEDICATED SPACE ABOVE THE ELECTRICAL EQUIPMENT. (110-26(f)).
- 37. ELECTRICAL EQUIPMENT TESTING SHALL BE LISTED BY OCTA RECOGNIZED ELECTRICAL TESTING LABORATORY OR APPROVED BY OCTA.
- 38. PROTECTION DEVICES TYPES, DESIGNATION, SETTINGS AND AIC RATINGS SHALL BE DETERMINED FROM THE SHORT CIRCUIT ANALYSIS AND PROTECTIVE DEVICES COORDINATION STUDY AS PREPARED BY THE CONTRACTOR.
- 39. MINIMUM CONDUIT SIZE INDICATED SHALL SUPERCEDE MINIMUM CONDUIT SIZE CALL OUTS IN PLAN DRAWINGS. MINIMUM SIZE OF POWER AND LIGHTING CONDUITS FOR NON-FIRE/LIFE SAFETY SYSTEM SHALL BE 3/4 INCHES WHERE ALLOWED BY CODE REQUIREMENTS. MINIMUM SIZE OF POWER AND LIGHTING CONDUITS FOR FIRE/LIFE SAFETY SYSTEM SHALL BE 3/4 INCHES.
- 40. BRANCH CIRCUIT CABLE SIZE SHALL BE ADJUSTED BASED ON THE VALUES INDICATED BELOW:
- A. A. 120/208V CABLING FROM PANEL TO ELECTRICAL LOAD SHALL BE AS FOLLOWS UNLESS OTHERWISE INDICATED:
- a. 0'-100' 12 AWG MINIMUM
- b. 101'-200' 10 AWG MINIMUM
- c. 201'-250' 8 AWG MINIMUM
- B. 277/480V CABLING FROM PANEL TO ELECTRICAL LOAD SHALL LOAD SHALL BE AS FOLLOWS UNLESS OTHERWISE:
- a. 0'-150' 12 AWG MINIMUM
- b. 151'-250' 10 AWG MINIMUM
- c. 251'-300' 8 AWG MINIMUM
- C. CONDUCTORS 12 AWG AND SMALLER SHALL BE SOLID. CONDUCTORS 10 AWG AND LARGER SHALL BE STRANDED. CONDUCTORS SHALL BE COPPER, OF THE SIZES NOTED, WITH TYPE THHN OR THWN 600V, INSULATION.
- D. ALL ABANDONED AND NEW PENETRATIONS IN WALLS, FLOORS OR CEILINGS SHALL BE SUITABLE CLOSED UP AND SEALED WITH HILTI CAULK. REFER TO STRUCTURAL DRAWINGS AND SPECIFICATIONS FOR PATCHING METHOD AND REQUIREMENT.
- 41. ELECTRICAL POWER & CONTROL FEEDER REQUIREMENT FOR ALL MECHANICAL & PLUMBING EQUIPMENT SHALL COMPLY WITH MECHANICAL/PLUMBING EQUIPMENT SCHEDULES/DRAWINGS.
- 42. ALL BRACH CIRCUITS REQUIRING ISOLATED GROUND BUS SHALL HAVE ISOLATED GROUND BUS SIZED PER NEC IN THE SOURCE PANELBOARD. MAIN ISOLATED GROUND WIRE SIZED PER NEC SHALL BE RUN FROM THE UPSTREAM SOURCE TRANSFORMER SECONDARY TO THE PANELBOARD.
- 43. WHEN INSTALLING DRILLED-IN ANCHORS IN EXISTING NON-PRESTRESSED/
 PRESTRESSED REINFORCED CONCRETE, USE CARE AND CAUTION TO AVOID CUTTING
 OR DAMAGING THE EXISTING REINFORCING BARS. CONTRACTOR TO LOCATE EXISTING
 SLAB REBAR VIA PACHOMETER/FERROSCAN AT EQUIPMENT ANCHORS.
- 44. KEY NOTES, GENERAL NOTES AND DETAILS ARE APPLICABLE FOR ALL PHASES OF CONSTRUCTION.
- 45. A FINAL REPORT FOR THE TESTING AND ADJUSTING OF ALL NEW SYSTEM SHALL BE COMPLETED AND PROVIDED TO THE FIELD INSPECTOR PRIOR TO FINAL APPROVAL. THIS REPORT SHALL BE SIGNED BY THE INDIVIDUAL RESPONSIBLE FOR PERFORMING THESE SERVICES.
- 46. AN OPERATION & SYSTEMS MANUAL, SHALL BE PROVIDED TO THE FIELD INSPECTOR AT THE TIME OF FINAL INSPECTION.
- 47. SUPPORT CONDUCTORS IN VERTICAL RACEWAYS BASED ON NEC 300.19.
- 48. GENERAL CONTRACTOR TO PROVIDED NECESSARY COLUMN WRAP FINISHES IN EXISTING COLUMNS BEING USED FOR NEW CONDUIT ROUTING.

WIRING METHOD

. UNDERGROUND

A. UNLESS OTHERWISE NOTED ON THE DRAWINGS, CONCRETE ENCASED AND DIRECT BURIED CONDUIT SHALL BE SCHEDULE 40 PVC. WHERE CONDUITS PASS THROUGH GRADE, THROUGH CONCRETE PADS, THROUGH BUILDING FOUNDATION WALLS OR FLOOR SLABS, CONDUIT SHALL BE PVC COATED.

OUTDOORS

- OUTDOORS

 A. UNLESS OTHERWISE NOTED ON THE DRAWINGS, CONDUIT INSTALLED OUTDOORS
 SHALL BE GALVANIZED RIGID STEEL AND FLEXIBLE CONNECTIONS SHALL BE
 LIQUIDTIGHT FLEXIBLE METAL CONDUIT.
- INDOORS
- A. IN FINISHED AREAS ALL RACEWAY AND WIRING SHALL BE CONCEALED AND BOXES RECESSED. WIRING INSTALLED IN MASONRY WALLS SHALL BE EMT OR GALVANIZED RIGID STEEL. WIRING INSTALLED IN STUD WALL CAVITIES OR ABOVE HUNG CEILINGS MAY BE TYPE EMT.
 B. IN UNFINISHED AREAS SUCH AS MECHANICAL AND ELECTRICAL ROOMS WIRING
- B. IN UNFINISHED AREAS SUCH AS MECHANICAL AND ELECTRICAL ROOMS WIRING SHALL BE INSTALLED IN RIGID STEEL CONDUIT.
- SHALL BE INSTALLED IN RIGID STEEL CONDUIT.

 C. WIRING IN THE CRAWLSPACE SHALL BE INSTALLED IN RIGID METAL CONDUIT.

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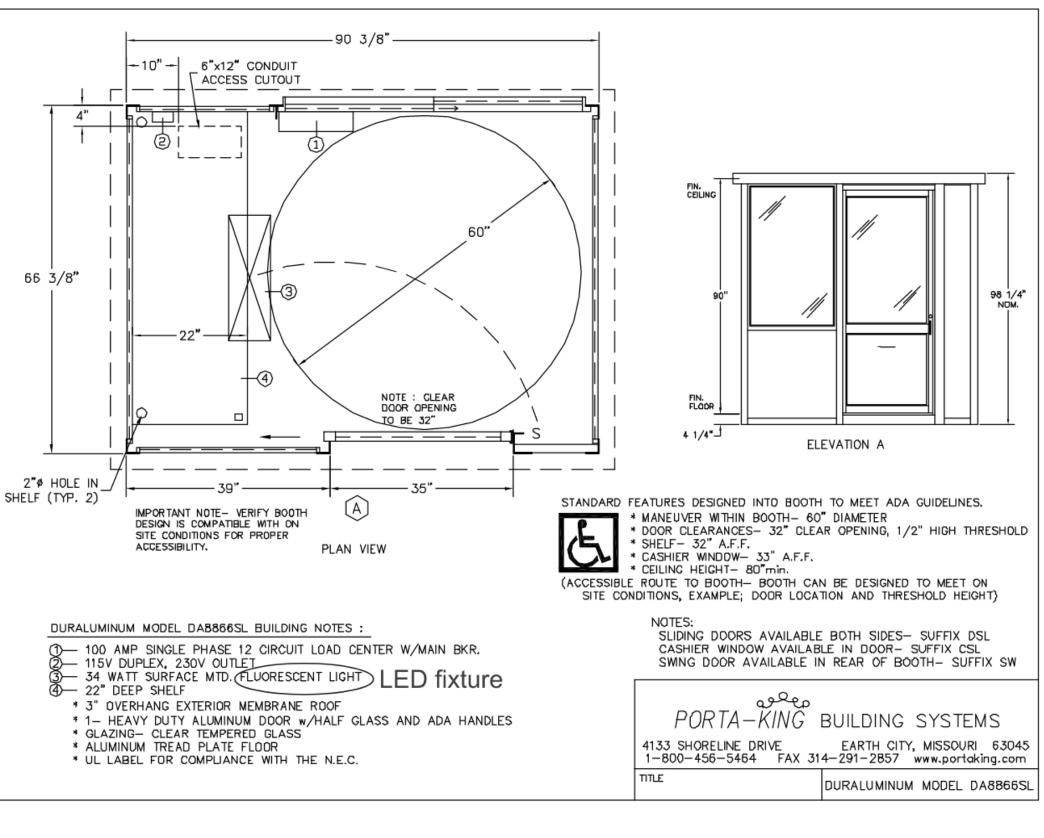
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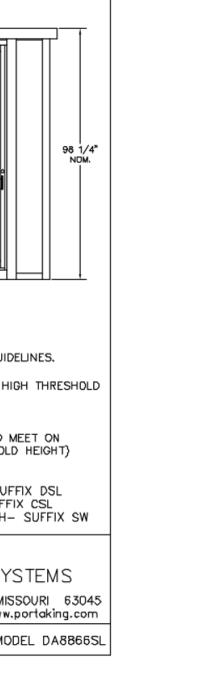
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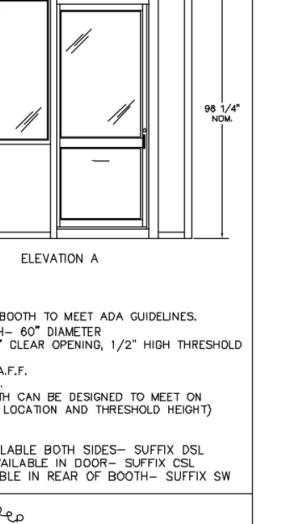
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LIGHTGUARD LightStar™ Plus with SMPL™ Part Number: LGS-M11A-SMPL Description: IRWL - In Roadway Warning Light fixture in a black fiberglass reinforced thermo-plastic housing with flashing amber LED & non-flashing white Surface Mount Pedestrian Luminaire (SMPL™) LED Application Notes: $\label{lightStar} \textbf{LightStar}^{\tiny{\texttt{TM}}} \ \textbf{Plus} \ \text{is the next-generation in-roadway light with a moisture-resistant design, surface}$ mount pedestrian luminaire (SMPL $^{\text{\tiny TM}}$), and black exterior. The amber LEDs flash towards the motorist at the highly visible enhanced $Enlighten1^{TM}$ rate, which is photosensitive epilepsy safe. The white LEDs illuminate towards the pedestrian and energize simultaneously with the amber LEDs a continuous non-flashing solid white for the cross-time duration. Once activated, the amber LED portion of the light fixture flashes, dvance. The white LED SMPL™ portion of the ht fixture also simultaneously energizes via selectable activation at nighttime. optics for precise focused light output using

into protective base plate models LGS-SD10-C and LGS-CHS-14 & fastens using stainless steel button head 1/4"-20 screws with thread locks and factory applied anti-seize compound.

IRWLs alert motorists of pedestrians inside, or about to enter the crosswalks, and used at mid-

block and other uncontrolled public, school zone, campuses, trails and facilities. Activation

Pursuant to MUTCD Sec. 4N.05 & .06, IRWLs should be installed in the center of each traffic

lane, at the center line of the roadway, at each edge of the roadway or parking lanes, or at

Amber, 595 nm

methods are push button, passive detection bollard, or motion activated sensor.

LED color

LIGHTGUARD

Description: Universal Controller AC

Application Notes:

Power

Consumption

Input Current

Protection

Input Surge

Voltage

Output DC Load

Enclosure Type

Enclosure Size

Enclosure Color Unpainted

Smart Crosswalk™ Universal Controller

duration (field adjustable) to allow pedestrians adequate street crossing time.

parameters. All outputs are software controlled, and configured by the factory.

LightGuard Systems Part Number: LGS-UC-AC

activation, radar, audible notification, etc.).

1 Watt (standby mode

5A Fast acting (2

2 power supply)

NEMA 3R, vented,

(H) 20.625" x (W) 17.5" x

circuit breaker)

13 kA

General Performance Specifications

Operating Temp -20C to 50C Input Operating 100-240 VAC, 50-60 H

Amber Warning Lights & White Pedestrian other suitable locations away from observed tire track paths. Placement within lanes should be based on engineering best judgement. Refer to our published installation layouts. Luminaire **General Performance Specifications** ashina Amber LEDs No Flash White LEDs vpical Mounting to Baseplat 30° viewing angle (± 15°) 18cd; visible up to 1 mile 2.3 ft. candle @ 5 ft. 2.5 W max 2.5 W max Housing material Housing color

high-intensity LEDs. The fixture fits tightly

SPEC Sheet #2022 M11 SMP

Most effective traffic calming measure High-intensity flashing amber LEDs

SMPL™ white pedestrian luminaire

Easily mounts to in-roadway baseplate

Amber Warning

SPEC Sheet #1500

Ruggedized polyurethane exterior moisture-resistant design

MUTCD Ch. 4, Sec. N compliant

Visible up to 1,000 feet

12 VDC operation

Features/Benefits:

Usage Notes and Limitations: The LGS IRWL designed to operate in a pulsed manner for compliance with MUTCD Chapter 4N, MUTCD states that steadily illuminate Usage Notes and Limitations: The LLS LINUL designed to operate in a pursed matriner for compliance with more chapter and indicate and scenario manifesting lights installed in the roadway surface are considered to be Internally Illiuminated Raised Pavement Markers (IIRPM). When any LGS IRWL are used as IIRPM instead of IRWL, the manufacturer's warranty will not apply. Additionally, if customers operate any LGS IRWL as IIRPM, the drive voltage should be controlled/reduced so as to limit the current/power consumed (with commensurate reduced brightness) to mitigate the risk of higher thermally induced failure rates.

The Universal Controller AC is intended for use at uncontrolled intersections. It accepts call signal inputs from a

manual pedestrian push button device (standard or APS) and automatic pedestrian activated detectors

(bollards). Solid State outputs (typically flashing light sequence) are activated which visually alert motorists to

the presence of pedestrians inside, or about to enter, the crosswalk. The flashing sequence is a factory preset

The programmable logic controller user interface consists of keypad + LCD. LightGuard Systems' proprietary

software provides effective, reliable operation allowing the user to make adjustments to the system

The Universal Controller operates LGS DuraFlash™ Plus (IRWL + SMPL), Illuminated Signs, RRFBs, alternating

beacons, etc. It is also compatible with most LGS upgrade kits (motion sensor, loop detector, wireless

2292 Airport Blvd., Santa Rosa, CA 95403 | P: (707) 542-4547 | F: (707) 525-6333 | www.lightguardsystems.com SMPL™ is U.S. patent pending. ©2020 LightGuard Systems, Inc. All Rights Reserved.

White 4000 k

Features/Benefits:

Lightning surge protection

Nominal 12VDC output

flange brackets

120 VAC single phase supply

Internal & external branch circuit protection

Lockable NEMA 3R Aluminum cabinet with welded

4 Solid State outputs support multiple configurations,





(70 cm/s) or 3 ft/s (91 cm/s)

■ Emergency Fast Close ■ Two 8 inch (20 cm) AdvanceDrive wheels for longer

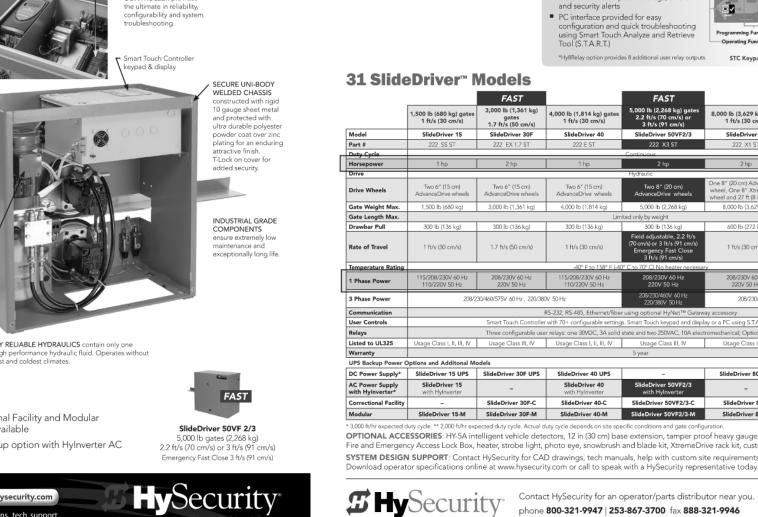
life and increased reliability ■ Seamless synchronization with all HySecurity operators for dual gate, sally port or sequenced gate





 Correctional Facility and Modular models available





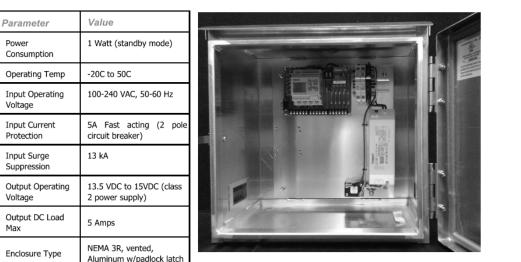


31 SlideDriver™ Models

		FAST		FAST			
	1,500 lb (680 kg) gates 1 ft/s (30 cm/s)	3,000 lb (1,361 kg) gates 1.7 ft/s (50 cm/s)	4,000 lb (1,814 kg) gates 1 ft/s (30 cm/s)	5,000 lb (2,268 kg) gates 2.2 ft/s (70 cm/s) or 3 ft/s (91 cm/s)	8,000 lb (3,629 kg) gates 1 ft/s (30 cm/s)	20,000 lb (9,072 kg) gates 1 ft/s (30 cm/s)	
Model	SlideDriver 15	SlideDriver 30F	SlideDriver 40	SlideDriver 50VF2/3	SlideDriver 80	SlideDriver 200	
Part #	222 SS ST	222 EX 1.7 ST	222 E ST	222 X3 ST	222 X1 ST	444 XS ST	
Duty Cycle				Continuous			
Horsepower	1 hp	2 hp	1 hp	2 hp	2 hp	5 hp	
Drive				Hydraulic			
Drive Wheels	Two 6" (15 cm) AdvanceDrive wheels	Two 6" (15 cm) AdvanceDrive wheels	Two 6" (15 cm) AdvanceDrive wheels	Two 8" (20 cm) AdvanceDrive wheels	One 8" (20 cm) AdvanceDrive wheel, One 8" XtremeDrive wheel and 27 ft (8 m) of rack	Two 8" (20 cm) AdvanceDrive wheels, Two 8" XtremeDrive wheels and 52 ft (16 m) of rac	
Gate Weight Max.	1,500 lb (680 kg)	3,000 lb (1,361 kg)	4,000 lb (1,814 kg)	5,000 lb (2,268 kg)	8,000 lb (3,629 kg)	20,000 lb (9,072 kg)	
Gate Length Max.			Limi	ited only by weight			
Drawbar Pull	300 lb (136 kg)	300 lb (136 kg)	300 lb (136 kg)	300 lb (136 kg)	600 lb (272 kg)	1,200 lb (544 kg)	
Rate of Travel			1 ft/s (30 cm/s)	Field adjustable, 2.2 ft/s (70 cm/s) or 3 ft/s (91 cm/s) Emergency Fast Close 3 ft/s (91 cm/s)		1 ft/s (30 cm/s)	
Temperature Rating			-40° F to 158° F (-40	1° C to 70° C) No heater necessa	ry		
1 Phase Power			115/208/230V 60 Hz 110/220V 50 Hz	208/230V 60 Hz 220V 50 Hz	208/230V 60 Hz 220V 50 Hz	230V 60 Hz	
3 Phase Power	208/2	30/460/575V 60 Hz , 220/38	0V 50 Hz	208/230/460V 60 Hz 220/380V 50 Hz	208/230/460/575V 6	0 Hz , 220/380V 50 Hz	
Communication				using optional HyNet™ Gatew	<i>, ,</i>		
User Controls		Smart Touch Controlle	r with 70+ configurable setting:	s. Smart Touch keypad and displ	ay or a PC using S.T.A.R.T. softw	are.	
Relays		Three configurable use	er relays: one 30VDC, 3A solid :	state and two 250VAC, 10A elect	tromechanical; Optional Hy8Rela	у™	
Listed to UL325	Usage Class I, II, III, IV	Usage Class III, IV	Usage Class I, II, III, IV	Usage Class III, IV	Usage Class III, IV		
Warranty				5 year			
UPS Backup Power C	ptions and Additonal Mo	odels					
DC Power Supply*	SlideDriver 15 UPS	SlideDriver 30F UPS	SlideDriver 40 UPS	-	SlideDriver 80 UPS	SlideDriver 200 UPS**	
AC Power Supply with Hylnverter*	SlideDriver 15 with Hylnverter	-	SlideDriver 40 with Hylnverter	SlideDriver 50VF2/3 with Hylnverter	-	-	
	-	SlideDriver 30F-C	SlideDriver 40-C	SlideDriver 50VF2/3-C	SlideDriver 80-C	SlideDriver 200-C	
Correctional Facility			SlideDriver 40-M	SlideDriver 50VF2/3-M	SlideDriver 80-M	SlideDriver 200-M	

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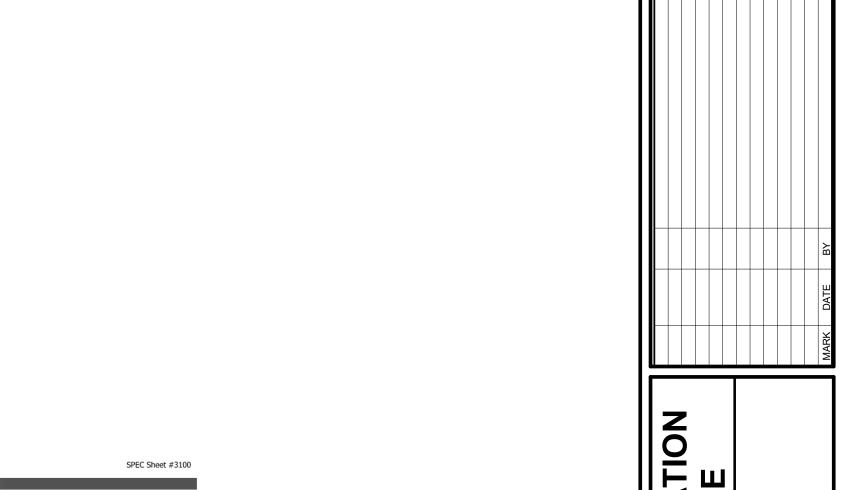




2292 Airport Blvd., Santa Rosa, CA 95403 | P: (707) 542-4547 | F: (707) 525-6333 | www.lightguardsystems.com $SMPL^{\tiny{\text{TM}}} \text{ is U.S. patent pending. } @2021 \text{ LightGuard Systems, Inc. All Rights Reserved.} \\$

GENERAL NOTES

CONTRACTOR TO COORDINATE WITH PORTA-KING BUILDING SYSTEM MANUFACTURE. STANDARD CUTSHEET IS PROVIDED FOR REFERENCE ONLY. REFER TO SHEET E-SA-101 ENLARGED PLANS-RENOVATION FOR LOCATION OF PROPOSED GUARD HOUSE AND SHEET E-SA-601 ELECTRICAL FEEDER SCHEDULE FOR CONDUIT AND FEEDER SIZE.



LIGHTGUARD

Smart Crosswalk™ Manual LED Activation

Mechanisms

Part Number: LGS-PBA Description: Push Button Assembly with Four LEDs **Application Notes:** The LightGuard System® push button assembly comes with a large touch

sensitive button with either a left or right facing figure. The push button activation device comes in pairs and are placed at each end of the crosswalk. Once the button is pushed, the system is activated; four LED lights on the face plate begin flashing simultaneously with the IRWL and/or sign system to alert the pedestrian that the system has been activated.

General Specifications	
Parameter	Value
Maximum separation distance	Length of crosswalk
Power consumption	1 watt (only when flashing)
Operating temperature	-20° to 80°C
Operating Voltage	9 VDC to 15 VDC (only when flashing)
Color	Green AL housing (standard)
Flashing Light Color	Amber
Button Size	2" silver mushroom vandal proof PB



Features/Benefits

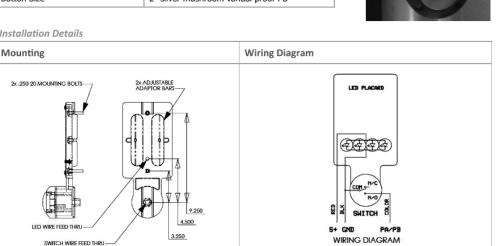
Easy electrical connections

Easily mounts to existing poles

Available with multiple placards

12 VDC operation (down to 9 VDC)

Sold in pairs for both sides of crosswalk



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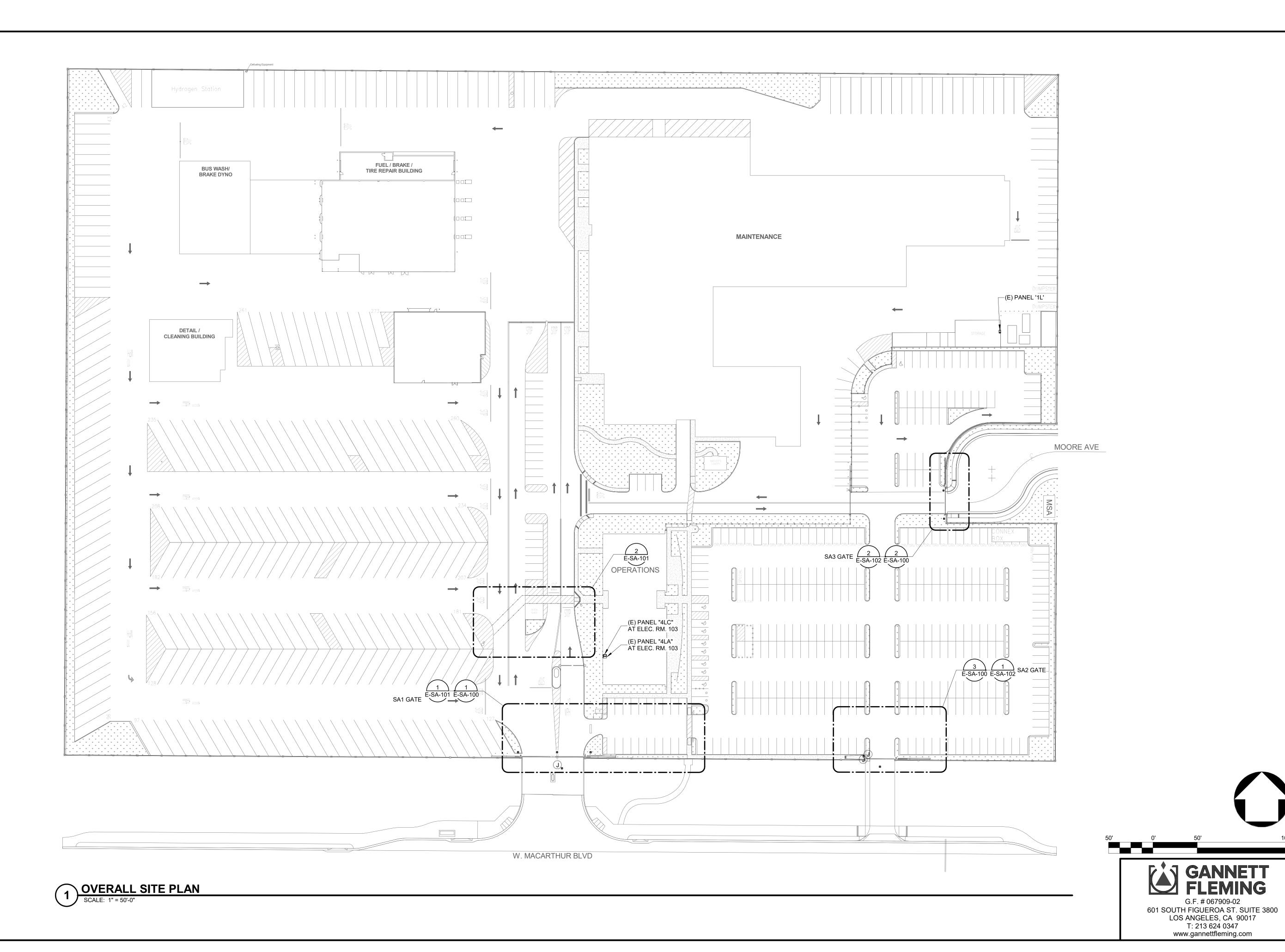
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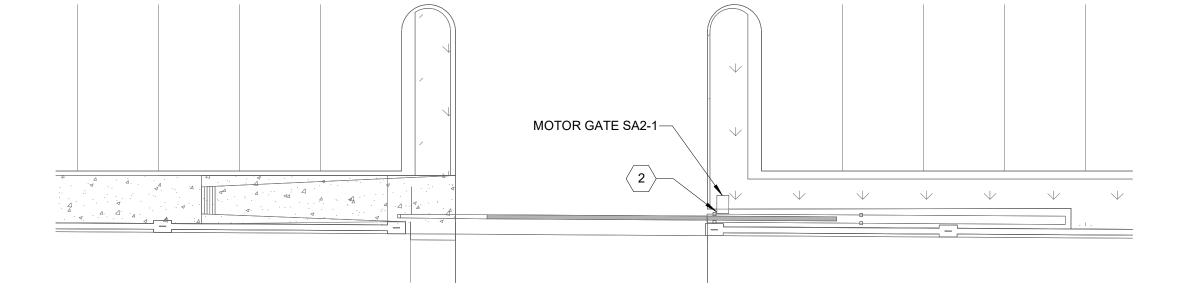
GENERAL NOTES

- 1. DE-ENERGIZE, MAKE SAFE AND REMOVE BACK TO SOURCE EXISTING EQUIPMENT AS SHOWN. EXISTING ELECTRICAL EQUIPMENT AND MOTOR GATE CONTROLS TO BE DEMOLISHED ALONG WITH ALL OTHER ASSOCIATED ACCESSORIES SHOWN.
- 2. CONTRACTOR SHALL REMOVE EXISTING BREAKER AT EXISTING PANEL "4LC", CLEAN AND RETURN TO CLIENT.
- 3. EXISTING EQUIPMENT TO REMAIN IN PLACE UNLESS OTHERWISE



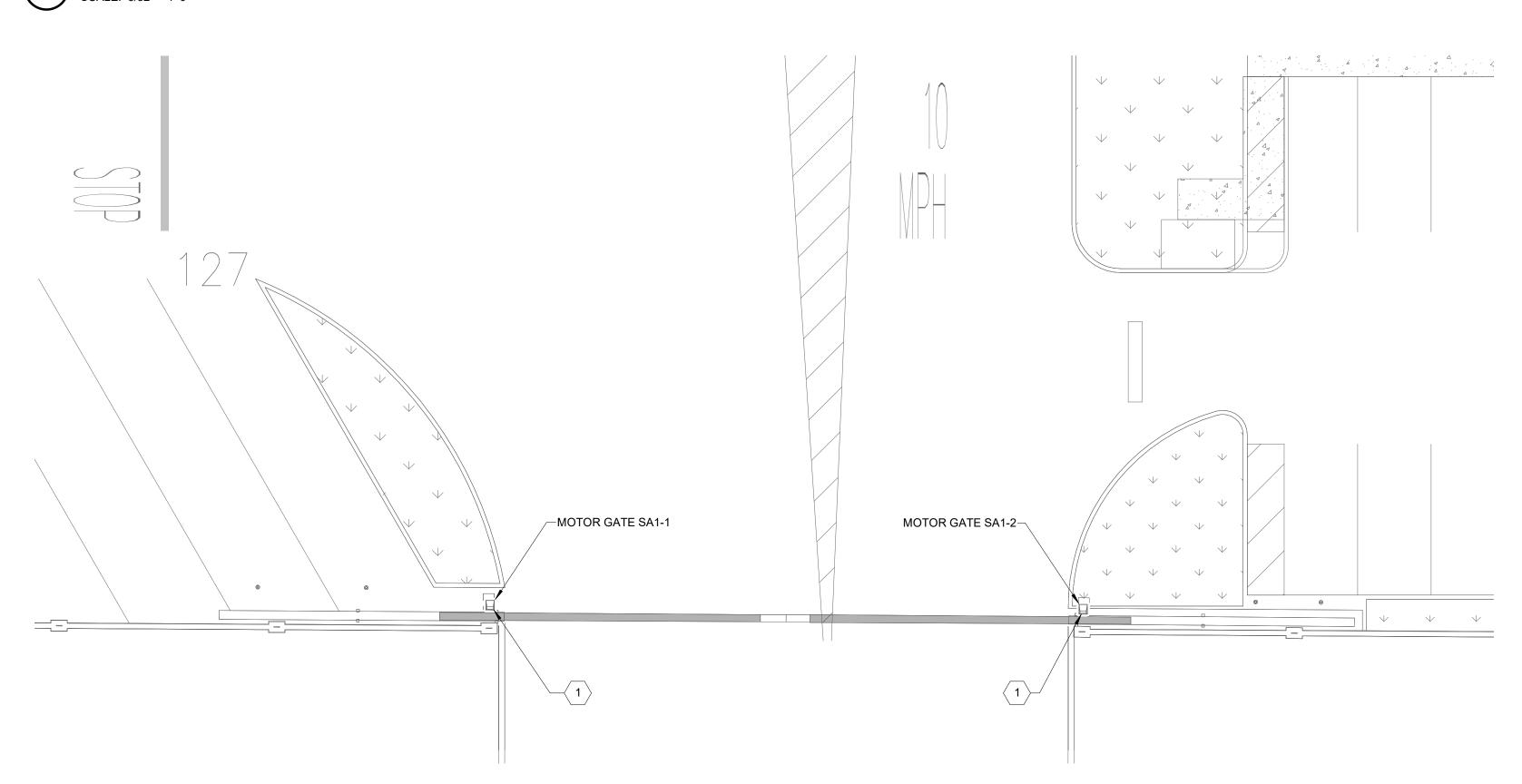
SHEET NOTES

- 1. CONTRACTOR SHALL DISCONNECT AND DEMOLISH EXISTING MOTOR GATE CONTROLS SA1-1 AND SA1-2 SERVING GATE SA1 WITH ALL OTHER ASSOCIATED ACCESSORIES. EXISTING CONDUIT AND CONDUCTORS TO BE DEMOLISHED ALONG WITH ALL OTHER ASSOCIATED ACCESSORIES BACK TO THE SOURCE PANEL.
- 2. CONTRACTOR SHALL DISCONNECT AND DEMOLISH EXISTING MOTOR GATE CONTROLS SA2-1 SERVING GATE SA2 WITH ALL OTHER ASSOCIATED ACCESSORIES. EXISTING CONDUIT AND CONDUCTORS TO BE DEMOLISHED ALONG WITH ALL OTHER ASSOCIATED ACCESSORIES BACK TO THE SOURCE PANEL.
- 3. CONTRACTOR SHALL DISCONNECT AND DEMOLISH EXISTING MOTOR GATE CONTROLS SA3-1 SERVING GATE SA3 WITH ALL OTHER ASSOCIATED ACCESSORIES. EXISTING CONDUIT AND CONDUCTORS TO BE DEMOLISHED ALONG WITH ALL OTHER ASSOCIATED ACCESSORIES BACK TO THE SOURCE PANEL.

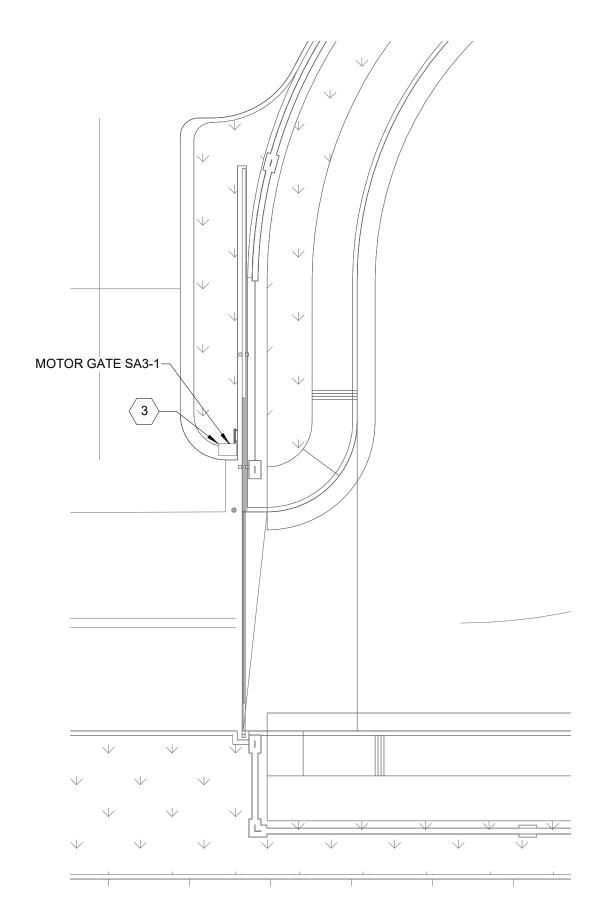


3 ENLARGED DEMOLITION PLAN - SA2 GATE

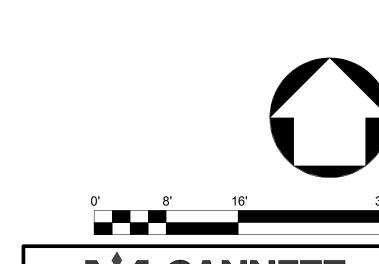
SCALE: 3/32" = 1'-0"



ENLARGED DEMOLITION PLAN - SA1 GATE



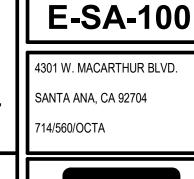
2 ENLARGED GATE DEMOLITION PLAN - SA3 GATE SCALE: 3/32" = 1'-0"



GANNETT FLEMING

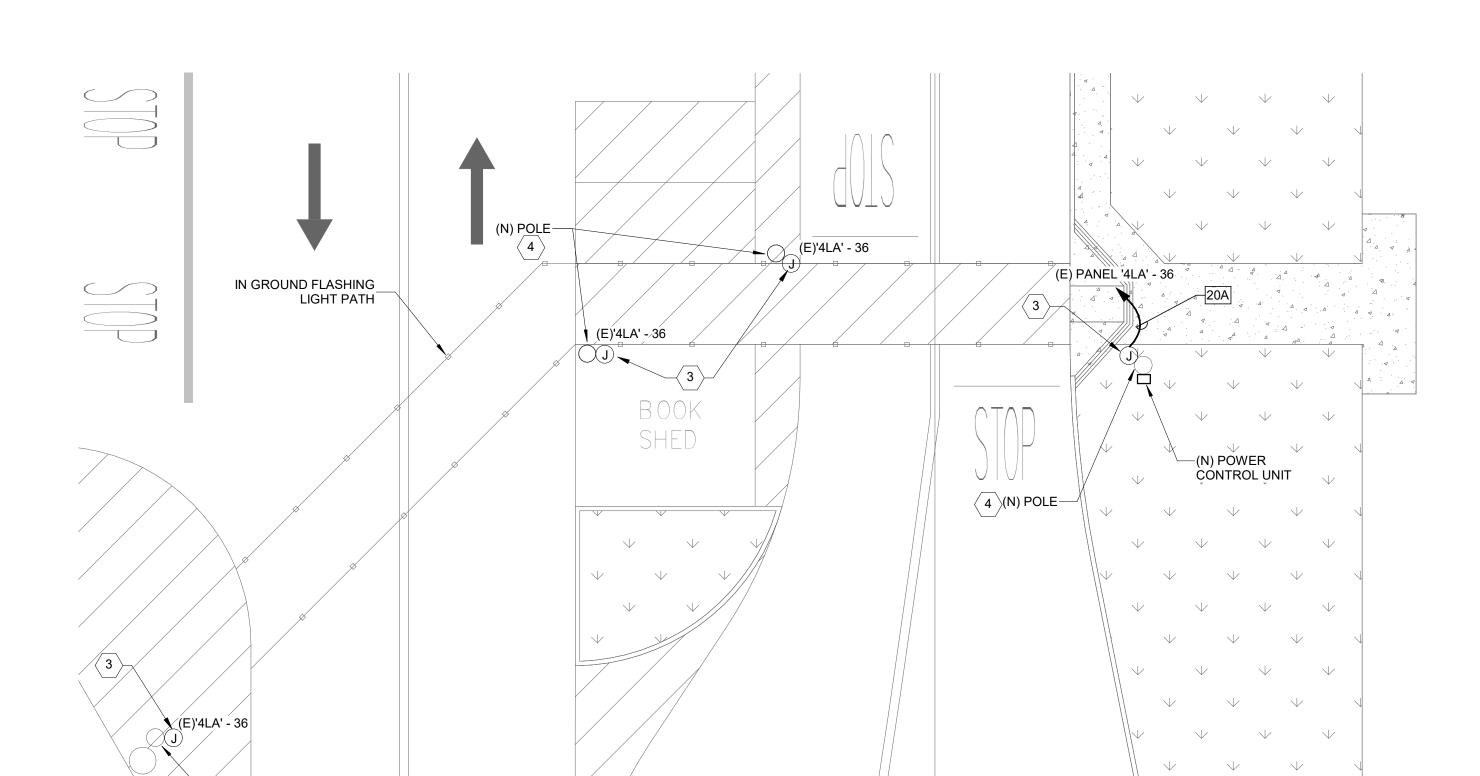
G.F. # 067909-02

601 SOUTH FIGUEROA ST. SUITE 3800
LOS ANGELES, CA 90017
T: 213 624 0347
www.gannettfleming.com



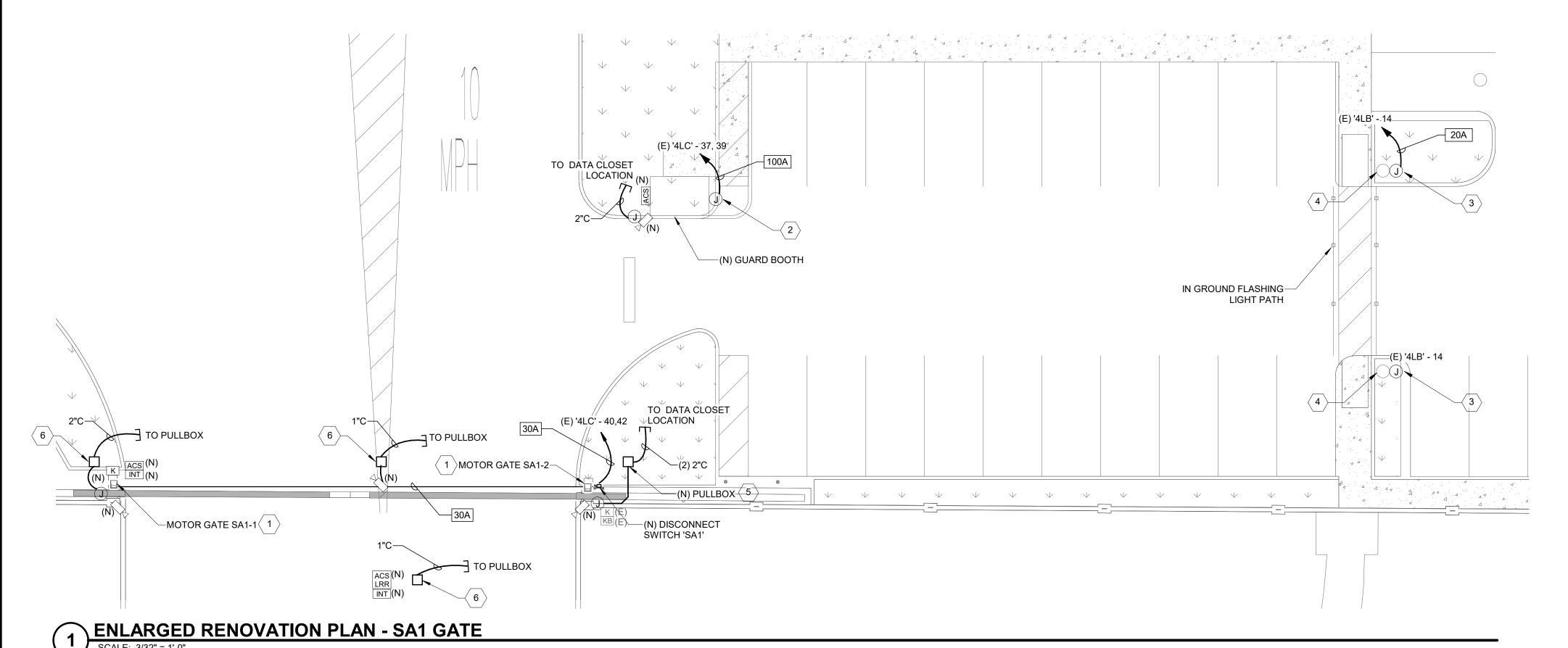


AS INDICATED



2 ENLARGED RENOVATION PLAN - PEDESTRIAN TRAFFIC LIGHT SCALE: 3/32" = 1'-0"

 \equiv (N) POLE \langle 4 angle



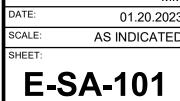
GENERAL NOTES

- 1. PRIOR TO DE-ENERGIZE ANY CIRCUIT, CONTRACTOR SHALL FIELD VERIFY, TRACE, IDENTIFY, LOCKOUT/TAGOUT ALL LOAD CALCULATIONS OF ANY CIRCUIT TO BE USED IN NEW WORK.
- 2. THE CONTRACT DRAWINGS ARE DIAGRAMMATIC IN NATURE AND NOT EVERY DETAIL OR EXACT LOCATION OF EQUIPMENT AND/OR CONDUIT IS SHOWN. EXISTING CONDITIONS SHALL BE VERIFIED IN THE FIELD COMMENCING ANY FABRICATION, ORDERING ANY MATERIAL, OR PERFORMING ANY WORK.

SHEET NOTES

- SERVING GATE SA1 WITH ALL OTHER ASSOCIATED ACCESSORIES. REFER TO FEEDER SIZE AND QUANTITY AND FEEDER SCHEDULE ON SHEET E-SA-601. PROVIDE NEW CONDUIT FROM EXISTING PANEL '4LC' TO SERVE PROPOSED GATE SA1. REFER TO PANEL SCHEDULE ON SHEET E-SA-601 FOR CIRCUIT BREAKER.
- REQUIRED PER MANUFACTURE CUTSHEET. REFER TO SHEET E-SA-004 FOR ADDITIONAL INFORMATION. VERIFY EXACT LOCATION IN THE FIELD PRIOR TO INSTALLATION. ELECTRICAL MAIN LOAD PANEL WILL SERVE AS A DISCONNECTING MEANS PROVIDED BY MANUFACTURE. REFER TO FEEDER SIZE AND QUANTITY IN FEEDER SCHEDULE ON SHEET E-SA-601.
- CONNECTION TO SERVE 120VAC-12VAC POWER CONTROL UNIT (PCU) LOCATED AT THE POLE TO SERVE PROPOSED IN-ROAD WARNING LIGHTS AS SHOWN. VERIFY EXACT LOCATION IN THE FIELD PRIOR TO INSTALLATION. SEE SHEET E-SA-601 ELECTRICAL FEEDER SCHEDULE FOR FEEDER SIZE AND QUANTITY. REFER TO E-SA-004 CUT SHEETS FOR ADDITIONAL INFORMATION.
- 4. CONTRACTOR SHALL INSTALL PROPOSE PUSH BUTTON AT THE PROPOSE 9' POLE. REFER TO E-SA-004 CUT SHEETS FOR ADDITIONAL
- 5. CONTRACTOR SHALL PROVIDE A 18"x18"x18" PULLBOX AS SHOWN. CONTRACTOR TO VERIFY WITH OCTA SECURITY MANAGEMENT THE LOCATION OF THE DATA CLOSET IN THE BUILDING PRIOR TO INSTALL PROPOSED CAMERAS. FIBER CONDUITS ROUTING TO BE VERIFIED IN





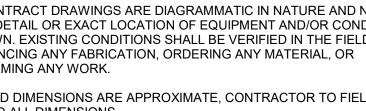
067909-02

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714/560/OCTA **GANNETT FLEMING**

G.F. # 067909-02 601 SOUTH FIGUEROA ST. SUITE 3800 LOS ANGELES, CA 90017 T: 213 624 0347 www.gannettfleming.com









- 1. CONTRACTOR SHALL INSTALL NEW DISCONNECT SWITCH 'SA1' MOTOR TO SERVE PROPOSED GATE CONTROLS SA1-1 AND SA1-2
- 2. CONTRACTOR SHALL PROVIDE A POINT OF CONNECTION AS
- 3. CONTRACTOR SHALL PROVIDE A 120V, SINGLE PHASE, 20A
- INFORMATION.
- 6. PROVIDE A 18"x18"x18" PULLBOX AS SHOWN.

TO DATA CLOSET LOCATION

1 ENLARGED RENOVATION PLAN - SA2 GATE

(N) PULLBOX—

 \langle 1 angle MOTOR GATE SA2-1-

(E) '4LC' - 18,20

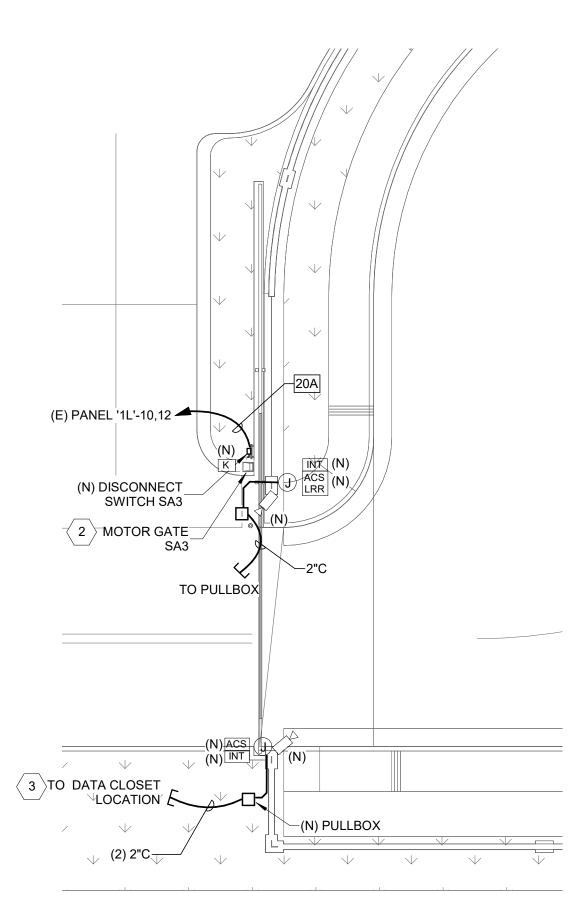
GENERAL NOTES

- 1. PRIOR TO DE-ENERGIZE ANY CIRCUIT, CONTRACTOR SHALL FIELD VERIFY, TRACE, IDENTIFY, LOCKOUT/TAGOUT ALL LOAD CALCULATIONS OF ANY CIRCUIT TO BE USED IN NEW WORK.
- 2. THE CONTRACT DRAWINGS ARE DIAGRAMMATIC IN NATURE AND NOT EVERY DETAIL OR EXACT LOCATION OF EQUIPMENT AND/OR CONDUIT IS SHOWN. EXISTING CONDITIONS SHALL BE VERIFIED IN THE FIELD COMMENCING ANY FABRICATION, ORDERING ANY MATERIAL, OR PERFORMING ANY WORK.
- 3. ALL FIELD DIMENSIONS ARE APPROXIMATE, CONTRACTOR TO FIELD VERIFIED ALL DIMENSIONS.



SHEET NOTES

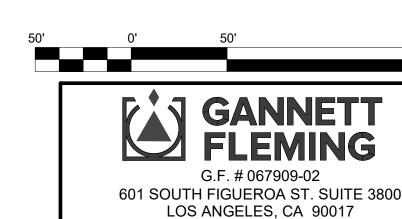
- 1. CONTRACTOR SHALL INSTALL NEW DISCONNECT SWITCH 'SA2' TO SERVE PROPOSED MOTOR GATE CONTROLS SA2-1 SERVING GATE 'SA2' WITH ALL OTHER ASSOCIATED ACCESSORIES. REFER TO FEEDER SIZE AND QUANTITY AND FEEDER SCHEDULE ON SHEET E-SA-601. PROVIDE NEW CONDUIT FROM EXISTING PANEL '4LC' TO SERVE PROPOSED GATE SA2. REFER TO PANEL SCHEDULE ON SHEET E-SA-601 FOR CIRCUIT BREAKER.
- 2. CONTRACTOR SHALL INSTALL NEW DISCONNECT SWITCH 'SA3' TO SERVE PROPOSED MOTOR GATE CONTROLS SA3 SERVING GATE 'SA3' WITH ALL OTHER ASSOCIATED ACCESSORIES. REFER TO FEEDER SIZE AND QUANTITY AND FEEDER SCHEDULE ON SHEET E-SA-601. PROVIDE NEW CONDUIT FROM EXISTING PANEL '1L' TO SERVE PROPOSED GATE SA3. REFER TO PANEL SCHEDULE ON SHEET E-SA-601 FOR CIRCUIT BREAKER.
- 3. CONTRACTOR SHALL PROVIDE A 18"x18" x18" PULLBOX AS SHOWN. CONTRACTOR TO VERIFY WITH OCTA SECURITY MANAGEMENT THE LOCATION OF THE DATA CLOSET IN THE BUILDING PRIOR TO INSTALL PROPOSED CAMERAS. FIBER CONDUITS ROUTING TO BE VERIFIED IN THE FIELD.



ENLARGED RENOVATION PLAN - SA3 GATE

SCALE: 3/32" = 1'-0"







067909-02

E-SA-102

4301 W. MACARTHUR BLVD.

PANEL L1A 120/208V, 3PH, 4W FED FROM T1A 10KAIC, 1-20-2011 CABLE COLOR CODE: PHASE A: BLACK PHASE B: RED PHASE C: BLUE NEUTRAL: WHITE GROUND: GREEN SWITCHBOARD, DISTRIBUTION PANEL AND PANELBOARD EXAMPLE.

120/208V, 3PH, 4W FED FROM T1A FEEDS PANEL L1A

SAFETY SWITCH OR ENCLOSED CIRCUIT BREAKER EXAMPLE.

LABELING DETAIL NOTES:

- 1. LABEL SHALL BE BLACK OR WHITE LAMINATED ACRYLIC OR MELAMINE WITH ENGRAVED LETTERING AND SELF-ADHESIVE BACK.
- 2. LETTERING SHALL BE WHITE ON BLACK OR BLACK ON WHITE BACKGROUND AND 3/8-INCH HIGH
- 3. PROVIDE THE FOLLOWING INFORMATION ON SWITCHBOARD LABELS: SWITCHBOARD TAG

SYSTEM VOLTAGE, PHASE, WIRE SHORT CIRCUIT RATING, DATE CONDUCTOR COLORS

CONDUCTOR COLORS

4. PROVIDE THE FOLLOWING INFORMATION ON DISTRIBUTION PANELBOARD AND PANELBOARD LABELS:

DISTRIBUTION PANELBOARD OR PANELBOARD TAG SYSTEM VOLTAGE, PHASE, WIRE FED FROM SHORT CIRCUIT RATING, DATE

BRANCH SWITCH TAG (LOAD BEING SERVED)

5. PROVIDE THE FOLLOWING INFORMATION ON SWITCHBOARD AND DISTRIBUTION PANELBOARD **BRANCH SWITCHES:**

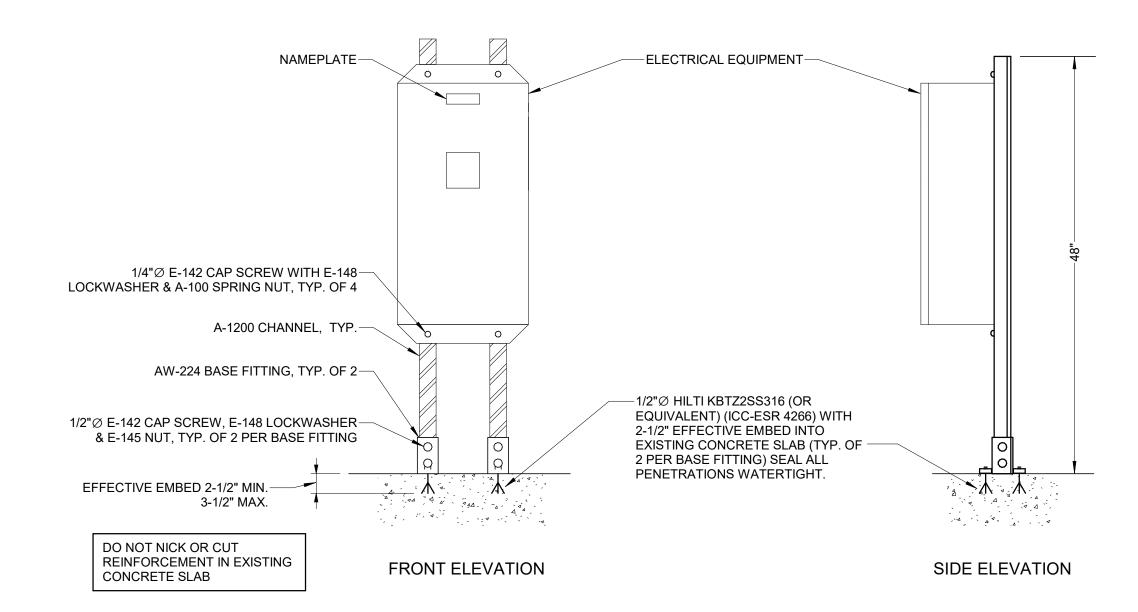
6. PROVIDE THE FOLLOWING INFORMATION ON TRANSFORMER LABELS: TRANSFORMER TAG SYSTEM PRIMARY AND SECONDARY VOLTAGE, WYE, DELTA, OR SINGLE PHASE

7. PROVIDE THE FOLLOWING INFORMATION ON SAFETY SWITCH OR CIRCUIT BREAKER ENCLOSURE LABELS:

SYSTEM VOLTAGE, PHASE, WIRE FED FROM FEEDS (LOAD BEING SERVED)

8. CONDUCTOR COLORS SHALL ALSO FOLLOW REQUIREMENTS LISTED IN SPECIFICATIONS SECTION

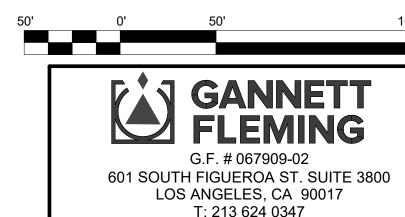
2 EQUIPMENT LABELING
SCALE: NONE



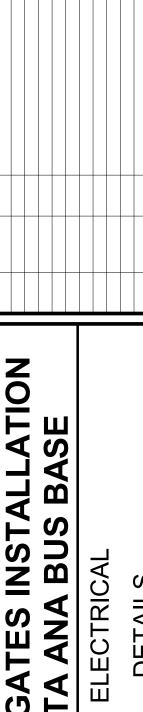
NOTES:

PART NUMBERS INDICATED ARE UNISTRUT OR EQUAL MANUFACTURER IS THOMAS & BETTS "SUPERSTRUT". CHANNELS, BASE FITTING AND FASTENERS SHALL BE STAINLESS STEEL.

\ ELECTRICAL EQUIPMENT UNISTRUT MOUNTING







067909-02 A. SAENZ

01.20.2023

DRAWN BY: A. HERNANDEZ CHECKED BY: M. MANJAREKAF

E-SA-501

4301 W. MACARTHUR BLVD.

SANTA ANA, CA 92704

714/560/OCTA

E) 4		IATION: PERATIONS BUILDING ELECTRICAL RO STRIBUTION PANEL "DB4"	OOM 103			MAIN B	R OF POUS RATING	DLES: INGS:	NEMA 1 42 250.0 MLO			VOLTAGE: PANEL MOU PANEL ENC PANEL MIN	LOSURE	S N	20/208V SURFACE NEMA 1 0,000		
			_			L	OAD KV	Ά	L	OAD KV	Α	<u> </u>					
CIR. No.	CIR. BKR.	DESCRIPTION	COND.	GRND.	WIRE SIZE	AØ	ВØ	сø	AØ	ВØ	СØ	WIRE SIZE	GRND.	COND.	DESCRIPTION	CIR. BKR.	CIR. No.
1	20	HAND DRYER	 			0.50			0.50						EF 4-1	20	2
3	20	MTCC-4	-				0.50		3.00	0.50					EF 4-2	20	4
5	20	PAC-1					0.00	0.50			0.50				EF 4-3	20	6
7	20	LAV/UR CONTROLS				0.50			0.50						EF 4-4	20	8
9	20	FIRE BELL					0.50			0.50					EF TIME CLOCK	20	10
11	20	MASTER DOOR CTRL PANEL	-				0.00	0.50			0.50				ROOF RECEPTACLES	20	12
13	20	MASTER INTERCOM CTRL PANEL				0.50			0.50						IRRIGATION CONTROLLER A	20	14
15	20	HAND DRYER					0.50			0.50					IRRIGATION CONTROLLER B	20	16
17	20	RECEPTACLES PBX	-				0.00	0.50			0.78			2			18
19	20	RECEPTACLES PBX	-			0.50			0.78			2#12	1#12	3/4"	(N) MOTOR GATE SA2-1	20	20
21	20	RECEPTACLES OC-12					0.50			0.50					EMPLOYEE ENTRANCE GATE	20	22
23	20	RECEPTACLES OC-12	-				0.00	0.50			0.50				BUS STOP SHELTER	20	24
25	20	RECEPTACLES OC-12	-			0.50			0.50						LOT MONITORING SHACK	20	26
27	20	RECEPTACLE				0.00	0.50		0.00	3.26					LOT MONITORING SHACK	20	28
29	20	HOOD	-				0.00	0.50		0.20	1.56				AC 4-1	20	30
31	20	LOCK CONTROL				0.50		0.00	0.50						AC 4-1	20	32
33	20	ELECTRIC RANGE				0.00	0.50		0.00	0.50					AC 4-2	20	34
35	20	ELECTRIC RANGE					0.00	0.50		0.00	0.50				AC 4-2	20	36
37					1	3.50		0.00	0.50		0.00				SF 4-1	20	38
39	100	(N) GUARD BOOTH	1 1/2"	1#8	2#1	0.00	3.50		0.00	1.56							40
41	20	(R) DAMPERS	(E)	(E)	(E)		0.00	1.56			1.56	2#12	1#12	3/4"	(N) MOTOR GATE SA1-1 AND SA1-2	20	42
ONNE AØ BØ CØ	10.28 13.82 10.46 34.56	OAD - KVA KVA TOTAL TOTAL ESTIMATED DEMAND							SOLID I EQUIPA INTERN DIGITAI FEED T SHUNT	MENT GF IAL/EXT L POWE HROUG	ROUND ERNAL R METE	SURGE PRO	TECTION	DEVICE			
OTES		TOTAL ESTIMATED DEMAND															
		LOAD SUMMARY FOR OVERALL EXIST	TING DEMA	ND, DEMC	DLISHED AND	ADDED	LOADS										

LOCA	TION:	STO	PRAGE ROOM IEL '1H'			М	UMBER OF IAIN BUS RA IAINS RATIN	TINGS:	18 70.0 70		PANE	L MOUNTIN L ENCLOSU L MIN. A.I.C	JRE:	SURFACE NEMA 1R 10,000		
		1		 	<u> </u>		LOAD F	(VA	LC	DAD KVA				1		1
CIR. N		CIR. BKR.	DESCRIPTION	COND.	GRND.	WIRE SI	ZE AØ	BØ	AØ	ВØ	WIRE SIZE	GRND.	COND.	DESCRIPTION	CIR. BKR.	CIR. No
1		20	GEN. BATTERY CHARGER	3/4"	1#12	2#12	0.50		0.00					SPARE	20	2
3		20	RECEPTACLE	3/4"	1#12	2#12		0.50		0.50	2#12	1#12	3/4"	FUEL PUMP	20	4
5		20	RECEPTACLE	3/4"	1#12	2#12	0.50		0.50		2#12	1#12	3/4"	SECURITY GATE	40	6
7		20	SPARE					0.00		0.50	2#12	1#12	3/4"	F.A. BELL	20	8
9		20	4 FLEXT EXT OUTLETS	3/4"	1#12	2#12	0.50		1.44		2#10	1#10	3/4"	(N) MOTOR GATE SA3-1	20	10
11		20	SPARE					0.00		1.44	2#10	1#10	3/4	(N) WOTOR GATE SAS-T		12
13			SPACE											SPACE		14
15			SPACE											SPACE		16
17			SPACE											SPACE		18

CONNE	CTED LOAD - KVA
AØ	3.44

PANEL DESIGNATION:

BØ 2.94 CØ 0.00 6.38 **KVA TOTAL**

SOLID NEUTRAL BUS EQUIPMENT GROUND BUS INTERNAL/EXTERNAL SURGE PROTECTION... DIGITAL POWER METER FEED THROUGH LUGS SHUNT TRIP

VOLTAGE:

120/240V

6.38 TOTAL ESTIMATED DEMAND

REFER TO LOAD SUMMARY FOR OVERALL EXISTING DEMAND, DEMOLISHED AND ADDED LOADS.

GENERAL NOTES:

1. INFORMATION ON THE CIRCUIT NUMBERS OF EXISTING LOADS WERE OBTAINED FROM AVAILABLE AS-BUILTS AND MAY NOT BE ENTIRELY ACCURATE. CONTRACTOR SHALL REARRANGE THE NUMBERING OF CONTRACTOR IN THE PANELBOARD TO MATCH CLOSELY THE PANEL SCHEDULE ON THIS SHEET. CONTRACTOR TO VERIFY THE CIRCUIT NUMBERS IN THE FIELD PRIOR TO INSTALLATION. INCLUDE ALL

2. CONTRACTOR TO VERIFY CIRCUIT AND PANEL INFORMATION IN THE FIELD PRIOR TO INSTALLATION.

	ELECTRICAL FEEDER SCHEDULE								
(LABEL) NO.	FROM	то	WIRE SIZE	NO. & SIZE	GND	NOTE			
20A	(E) PANEL '4LC'	(N) DISCONNECT SWITCHES 'SA2'	3/4"	2#12	1#12	30AS, 20AT, 2P, 240VAC DISCONNECT SWITCH			
20A	(E) PANEL '4LA'	(N) PEDESTRIAN FLASHING IN-GROUND LIGHT	3/4"	2#12	1#12	20A, 120V, SINGLE POLE			
20A	(E) PANEL '1L'	(N) DISCONNECT SWITCHES 'SA3'	3/4"	2#12	1#12	30AS,20AT, 1P, 240VAC, DISCONNECT SWITCH			
20A	(E) PANEL '4LC'	(N) DISCONNECT SWITCHES 'SA1'	3/4"	2#12	1#12	30AS, 20AT, 2P, 240VAC DISCONNECT SWITCH			
100A	(E) PANEL '4LC'	(N) GUARD BOOTH	1 1/2"	2#1	1#8	100A, 120V/240, SINGLE PHASE MAIN LOAD CENTER			

							OAD KV	Ά	LOAD KVA]					
IR. No.	CIR. BKR.	DESCRIPTION	COND.	GRND.	WIRE SIZE	AØ	ВØ	СØ	AØ	BØ	СØ	WIRE SIZE	GRND.	COND.	DESCRIPTION	CIR. BKR.	CI N
1	20	GARBAGE DISPOSAL	(E)	(E)	(E)	1.59			1.00			(E)	(E)	(E)	REFRIGERATOR	20	
3	20	HOT WATER DISPENSER	(E)	(E)	(E)		1.30			1.20		(E)	(E)	(E)	MICROWAVE	20	
5	20	RECEPTACLES COUNTER	(E)	(E)	(E)			0.54			12.00	(E)	(E)	(E)	MICROWAVE	20	(
7	20	RECEPTACLES	(E)	(E)	(E)	1.08			0.60			(E)	(E)	(E)	HOT WATER CIRC. PUMP	20	
9	20	RECEPTACLES	(E)	(E)	(E)		1.08			1.08		(E)	(E)	(E)	RECEPTACLES OUTDOORS	20	
11	20	RECEPTACLES	(E)	(E)	(E)			1.08			0.36	(E)	(E)	(E)	RECEPTACLES TELEPHONE	20	
13	20	RECEPTACLES	(E)	(E)	(E)	0.72			1.44			(E)	(E)	(E)	VENDING MACHINE	20	<u> </u>
15	20	RECEPTACLES	(E)	(E)	(E)		0.72			1.44		(E)	(E)	(E)	VENDING MACHINE	20	
17	20	RECEPTACLES	(E)	(E)	(E)			0.72			1.44	(E)	(E)	(E)	VENDING MACHINE	20	
19	20	RECEPTACLES	(E)	(E)	(E)	0.36			1.44			(E)	(E)	(E)	VENDING MACHINE	20	1 2
21	20	RECEPTACLES	(E)	(E)	(E)		0.36			1.44		(E)	(E)	(E)	VENDING MACHINE	20	1 2
23	20	RECEPTACLES	(E)	(E)	(E)			0.36			0.80	(E)	(E)	(E)	LOBBY LIGHTS	20	2
25	20	RECEPTACLES TELEPHONE	(E)	(E)	(E)	0.36			0.72			(E)	(E)	(E)	RECEPTACLES	20	2
27	20	DRINKING FOUNTAIN	(E)	(E)	(E)		0.50			0.72		(E)	(E)	(E)	RECEPTACLES	20	2
29	20	TREADMILL	(E)	(E)	(E)			0.84			0.54	(E)	(E)	(E)	RECEPTACLES	20] 3
31	20	RECEPTACLES	(E)	(E)	(E)	0.54			0.50			(E)	(E)	(E)	TRAIN CONTROLS	20	3
33	20	RECEPTACLES LOBBY	(E)	(E)	(E)		0.72			0.50		(E)	(E)	(E)	CCTV PWR / DOOR CONTROL	20	3
35	20	RECEPTACLES RESTROOMS	(E)	(E)	(E)			1.26			0.40	2#12	1#12	3/4"	(N) POLE LIGHT FIXTURE	20	3
37	30	(E) PANEL 4U	(E)	(E)	(E)	1.62			6.43								3
39		<u> </u>					1.62			6.43		(E)	(E)	(E)	(E) PANEL 4LB	100	4
41	20	(E) PANEL LCP4A	(E)	(E)	(E)			0.20			6.43	<u> </u>					
NNE	CTED L	OAD - KVA							SOLID	NEUTRA	L BUS						
٩Ø	18.40								EQUIPN	MENT GF	ROUND	BUS					
зø	19.11	-						X	INTERN	ΔΙ /ΕΧΤ	FRNAI :	SURGE PRO	TECTION	DEVICE			
cø	26.97	-							DIGITA				12011011	DEVIOL			
שכ									_	_							
	64.48	KVA TOTAL							_ FEED T		H LUGS	i					
									SHUNT	TRIP							
	64.48	KVA TOTAL							_ FEED T SHUNT		H LUGS	i					

067909-02 A. SAENZ DRAWN BY: A. HERNANDEZ CHECKED BY: M. MANJAREKAR 01.20.2023 12" = 1'-0"

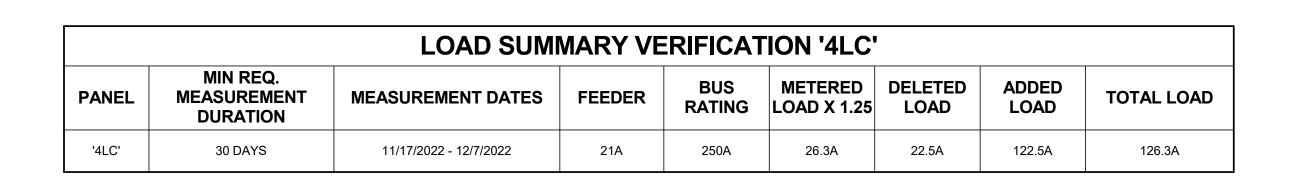
E-SA-601

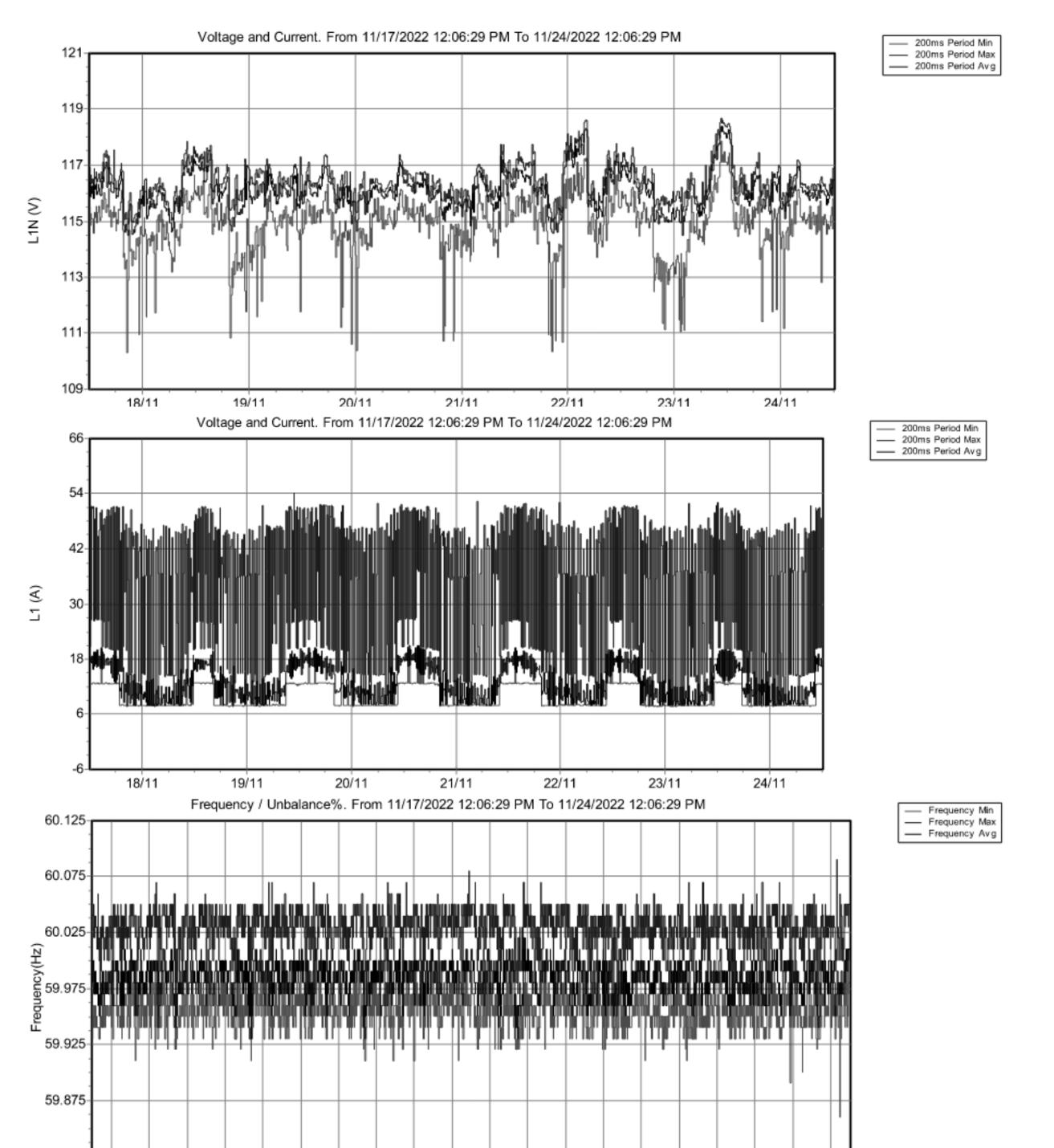
4301 W. MACARTHUR BLVD. SANTA ANA, CA 92704 714/560/OCTA



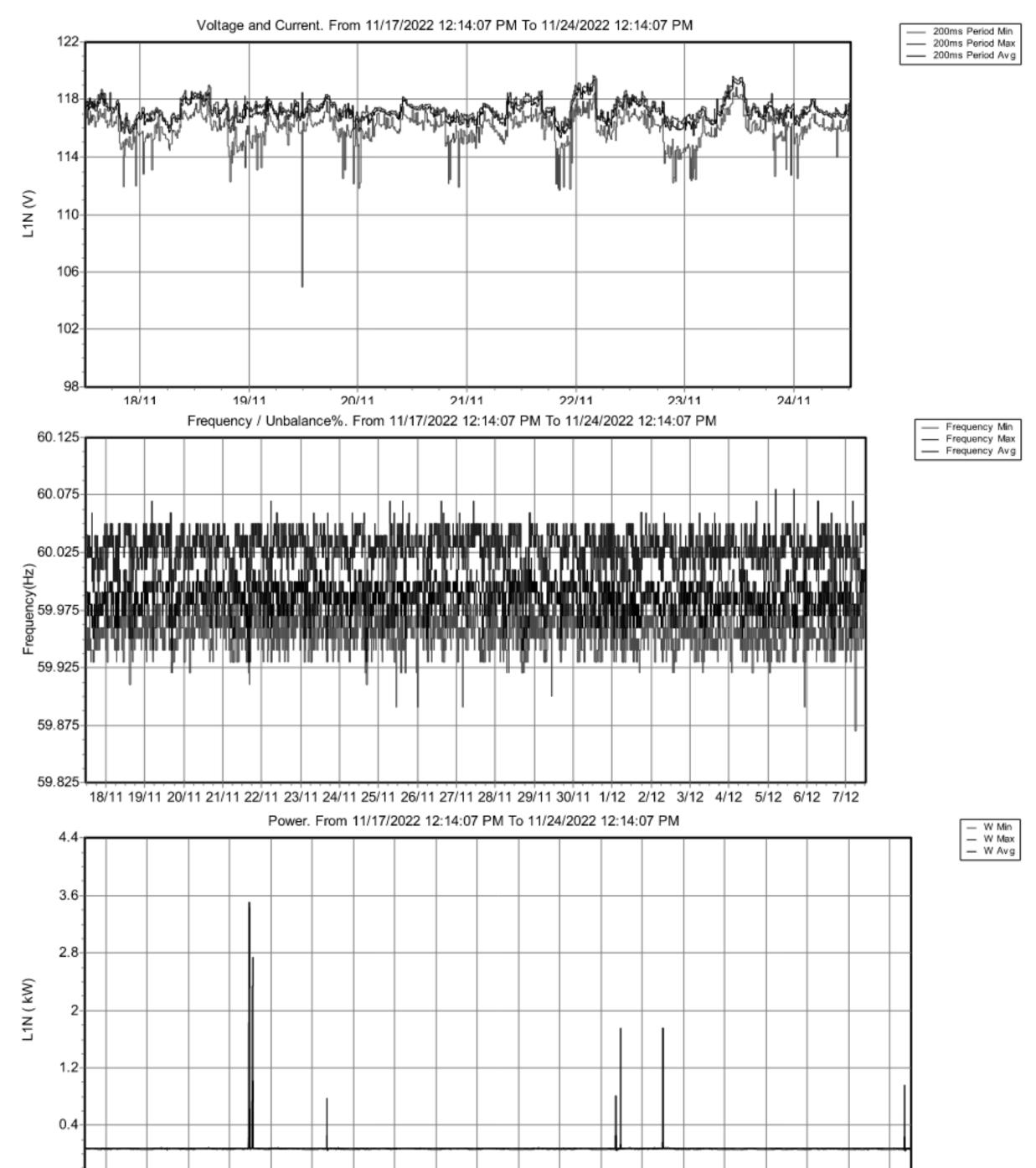


	18/11 19/11	20/11	21/11	22/11 2	23/11	24/11	25/11	26/11	27/11	28/11	29/11	30/11	1/12	2/12	3/12	4/12	5/12	6/12	7/12	
LOAD	SUMMA	ARY	'4LC	,																
SCALE: N																				





	LOAD SUMMARY VERIFICATION '1L'									
PANEL	MIN REQ. MEASUREMENT DURATION	MEASUREMENT DATES	FEEDER	BUS RATING	METERED LOAD X 1.25	DELETED LOAD	ADDED LOAD	TOTAL LOAD		
'1L'	7 DAYS	11/17/2022 - 12/7/2022	16.8A	70A	21A	7.5A	7.5A	21A		



18/11 19/11 20/11 21/11 22/11 23/11 24/11 25/11 26/11 27/11 28/11 29/11 30/11 1/12 2/12 3/12 4/12 5/12 6/12 7/12

2 LOAD SUMMARY '1L'
SCALE: NTS





067909-02

E-SA-602

4301 W. MACARTHUR BLVD.

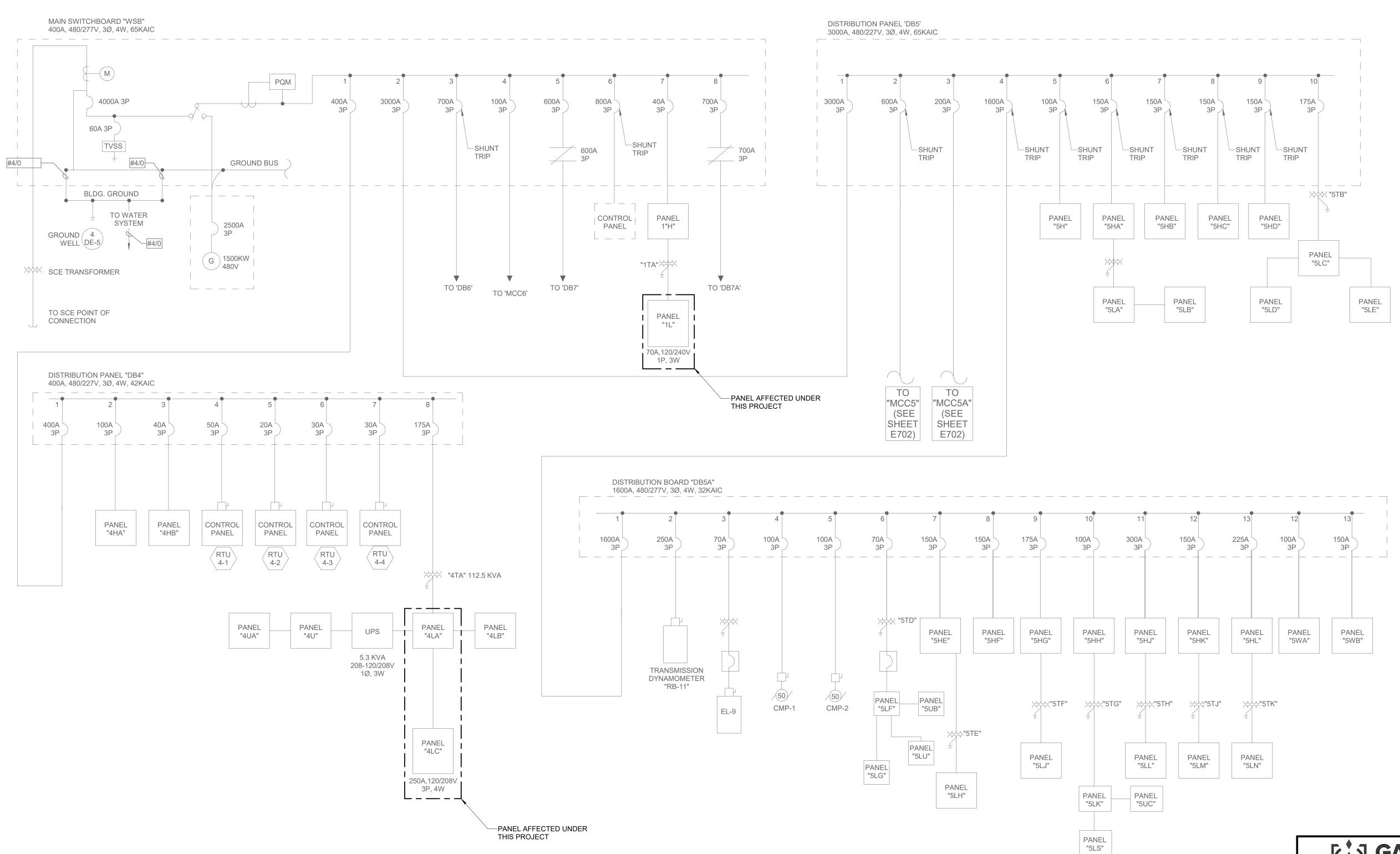
SANTA ANA, CA 92704

714/560/OCTA

LECTRICAL SINGLE LINE DIAGRAM FOR REFERENCE

GENERAL NOTES

1. SINGLE LINE DIAGRAM IS SHOWN FOR REFERENCE. IF APPLICABLE, PROJECT RELATED INFORMATION PERTAINING TO PROJECT SCOPE OF WORK IS HIGHLIGHTED IN A DASHED LINE AND MARKED AS 'SCOPE OF WORK'. REFER TO LEAD SHEET FOR PROJECT SCOPE OF WORK AND FLOOR PLANS FOR ADDITIONAL INFORMATION. .



GANNETT FLEMING

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E-SA-701

4301 W. MACARTHUR BLVD.

SANTA ANA, CA 92704

714/560/OCTA

ATION

IST/ SUS

GATES IN

SECURITY G AT SANT

CHECKED BY

ECTRICA : LINE DIA

SINGLE

067909-02

01.20.2023 NONE

SYMBOLS

ACS

SECURITY SYSTEM

CLOSED CIRCUIT TELEVISION (CCTV) CAMERA

ACCESS CONTROL SYSTEM

SAFETY LOOP

KNOX BOX KEY CONTROL INTERCOM

ACS ACCESS CONTROL NEDAP LRR LONG RANGE READER _____ VEHICULAR EXIT LOOP/

<u>LIGHTING</u>

POLE MOUNTED LIGHT FIXTURE (SINGLE) POLE MOUNTED LIGHT FIXTURE (DOUBLE)

MAIN DISTRIBUTION FRAME

MISCELLANEOUS:



KEYNOTE OR EQUIPMENT IDENTIFICATION



SECTION NOMENCLATURE

-SHEET NUMBER ON WHICH SECTION IS SHOWN -DETAIL IDENTIFICATION DETAIL NOMENCLATURE

SECTION IDENTIFICATION

-SHEET NUMBER ON WHICH DETAIL IS SHOWN

----- UNDERGROUND ELECTRICAL/COMMUNICATION CONDUITS

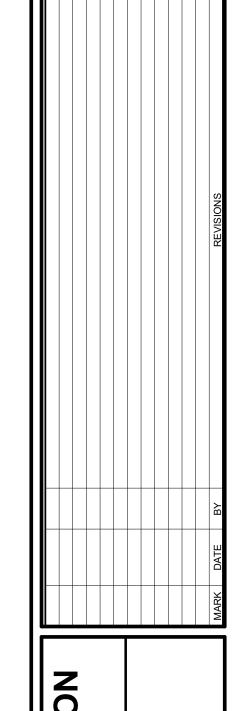
HANDHOLE 'C' DENOTES COMMUNICATIONS HANDHOLE 'P' DENOTES POWER HANDHOLE

ABBREVIATIONS

@	AT	MH	MANHOLE
AC	ALTERNATING CURRENT	MIN	MINIMUM
ACM	ASBESTOS CONTAINING MATERIAL	MISC	MISCELLANEOUS
AFF	ABOVE FINISHED FLOOR	MM	MULTIMODE (FIBER OPTIC CABLE)
AFG	ABOVE FINISHED GRADE	MUX	MULTIPLEXER
APPROX	APPROXIMATELY		
ASPH	ASPHALT	N	NEUTRAL
AWG	AMERICAN WIRE GAUGE	NC	NORMALLY CLOSED CONTACT
		NEC	NATIONAL ELECTRICAL CODE
BATT	BATTERY	NIC	NOT IN CONTRACT
BMS	BALANCED MAGNETIC SWITCH	NO or #	NUMBER
BR	BRICK	NTS	NOT TO SCALE
BR	BRIDGE	NVR	NETWORK VIDEO RECORDER
BLDG	BUILDING	N/A	NOT APPLICABLE
С	CENTER	ОН	OVERHEAD
		OH	OVERTIEND
C, CND	CONDUIT		
CAT	CATENARY	PIDS	PASSENGER INFORMATION DISPLAY SYSTEM
CB	CIRCUIT BREAKER	PLATF	PLATFORM
CCTV	CLOSED CIRCUIT TELEVISION	PNL	PANEL
CKT, CCT	CIRCUIT	PROP	PROPOSED
CP	CATENARY POLE	PAVT	PAVEMENT
COM	COMMUNICATION	PTZ	PAN TILT AND ZOOM
CT	CATENARY TOWER	PWR	POWER
0.	ON ENVIRONMENT		
DC	DIDECT CURRENT	OLIANITE (OLIANITITY
DC	DIRECT CURRENT	QUANTITY	QUANTITY
DEG	DEGREE		
DIA, Ø	DIAMETER	ROW	RIGHT OF WAY
DIS. SW.	DISCONNECT SWITCH	RR	RAILROAD
DVR	DIGITIAL VIDEO RECORDER	RTE	ROUTE
		RTU	REMOTE TERMINAL UNIT
EA	EACH		
EG	EQUIPMENT GROUND	SF	SQUARE FEET
EHH	ELECTRICAL HANDHOLE	SP	SPARE
EOCC	EMERGENCY OPERATIONS CONTROL CENTER	SS	STAINLESS STEEL
ER	EQUIPMENT RACK/CABINET	STA	STATION
ELEC	ELECTRICAL	STD	STANDARD
ELEV	ELEVATION	SW	SWITCH
EQUIP	EQUIPMENT	SMH	SEWER MANHOLE
EX	EXISTING TO REMAIN	SM	SINGLE MODE (FIBER OPTIC CABLE)
EXIST	EXISTING	SMFOPP	SINGLE MODE FIBER OPTIC PATCH PANEL
		STMH	STEAM MANHOLE
FO	FIBER OPTIC	STOMH	STORM MANHOLE
FOMC	FIBER OPTIC MEDIA CONVERTOR	SWBD	SWITCHBOARD
		SWBD	SWITCHBOARD
FOPP	FIBER OPTIC PATCH PANEL		
		Т	THERMOSTAT
GEN	GENERAL	TBR	TO BE REMOVED
GA	GAUGE	TEMP	TEMPORARY
GRV	GRAVEL	T/R	TOP OF RAIL
GALV	GALVANIZED	TYP	TYPICAL
G, GND	GROUND	TK	TRACK
GRD	GRADE	TEL	TELEPHONE
- · · -		TMH	TELEPHONE MANHOLE
INI	INCL	FIIVI I	I LLLI I IONL WANTIOLE
IN	INCH		
INFO	INFORMATION	UP	UTILITY POLE
INV	INVERT	U/G	UNDERGROUND
IJ	INSULATED JOINT	UTP	UNSHIELDED TWISTED PAIR
		C	
IT	IOINT	\/	VOLT
JT 	JOINT	V	VOLT
JB	JUNCTION BOX		
		W	WIRE
KVA	KILOVOLT AMPERE	W/	WITH
e e e		W/O	WITHOUT
LD	LICHT DOLE		
LP	LIGHT POLE	WP	WEATHERPROOF
LTG	LIGHTING	WH	WATER HYDRANT
MAX	MAXIMUM	XFMR	TRANSFORMER
MCB	MAIN CIRCUIT BREAKER	XING	CROSSING
MDE	MAIN DISTRIBUTION EDAME	AING	GAGGGIIVG

GENERAL NOTES

- 1. ALL MATERIALS PROVIDED SHALL BE NEW, UL LISTED AND CONFORM TO CONTRACT SPECIFICATIONS, DRAWINGS AND THE 2014 EDITION OF NATIONAL ELECTRICAL CODE.
- 2. ALL WORK SHALL COMPLY WITH THE 2014 EDITION OF NATIONAL ELECTRICAL CODE AND THE REQUIREMENTS OF ALL LOCAL CODES AND REGULATIONS OF AUTHORITIES HAVING JURISDICTION OVER THE WORK.
- 3. PROVIDE FIRESTOP TO ALL PENETRATIONS (I.E. WALL, FLOOR, ETC.)
- 4. ALL CABLING & TERMINATION SHALL COMPLY WITH EIA/TIA STANDARDS.
- 5. THE DRAWINGS SCALES AND DIMENSIONS ARE FOR REFERENCE ONLY. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS, FLOOR PLANS, AND ADJUST ACCORDINGLY.
- 6. FIELD MOUNT ALL LOW-PROFILE PANELS WITH UNISTRUT AS REQUIRED AND FIELD LOCATE; P-1000 GALVANIZED, FURNISH AND INSTALL. COMM CABINETS LOCATE 18" AFF TO BOTTOM OF
- 7. PROVIDE ALL APPURTENANCES FOR A COMPLETE AND OPERATIONAL INSTALLATION; WHETHER OR NOT SHOWN IN THE DRAWINGS OR CALLED OUT IN THE SPECIFICATIONS.
- 8. CONDUITS INSTALLED UNDER ROADWAYS OR DRIVE AREAS SHALL BE CONCRETE ENCASED AND EXTEND 3' BEYOND. CONDUIT IN GRASS AREAS SHALL BE DIRECT BURIED.
- 9. PROVIDE GROUND ROD AT EVERY NEW GATE CONTROLLER LOCATION, NEW SWING GATE, NEW VEHICLE GATE, NEW WEDGE BARRIER LOCATION, NEW SITE LIGHTING POLE LOCATION, AND NEW SITE COMMUNICATIONS ENCLOSURE.
- 10. ALL MATERIALS PROVIDED SHALL BE NEW, UL LISTED AND CONFORM TO CONTRACT SPECIFICATIONS, DRAWINGS AND THE LATEST EDITION OF NATIONAL ELECTRICAL CODE.
- 11. ALL WORK SHALL COMPLY WITH THE LATEST EDITION OF NATIONAL ELECTRICAL CODE AND THE REQUIREMENTS OF ALL LOCAL CODES AND REGULATIONS OF AUTHORITIES HAVING JURISDICTION OVER THE WORK.
- 12. PROVIDE FIRESTOP TO ALL PENETRATIONS (I.E. WALL, FLOOR, ETC.)
- 13. ALL CABLING & TERMINATION SHALL COMPLY WITH EIA/TIA STANDARDS.
- 14. THE DRAWINGS SCALES AND DIMENSIONS ARE FOR REFERENCE ONLY. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS, FLOOR PLANS, AND ADJUST ACCORDINGLY.
- 15. FIELD MOUNT ALL LOW-PROFILE PANELS WITH UNISTRUT AS REQUIRED AND FIELD LOCATED; P-100 GALVANIZED, FURNISH AND INSTALL. COMM CABINETS LOCATE 18" AFF TO BOTTOM OF CABINET.
- 16. PROVIDE ALL APPURTENANCES FOR A COMPLETE AND OPERATIONAL INSTALLATION: WHETHER OR NOT SHOWN IN THE DRAWING OR CALLED OUT IN THE SPECIFICATIONS.

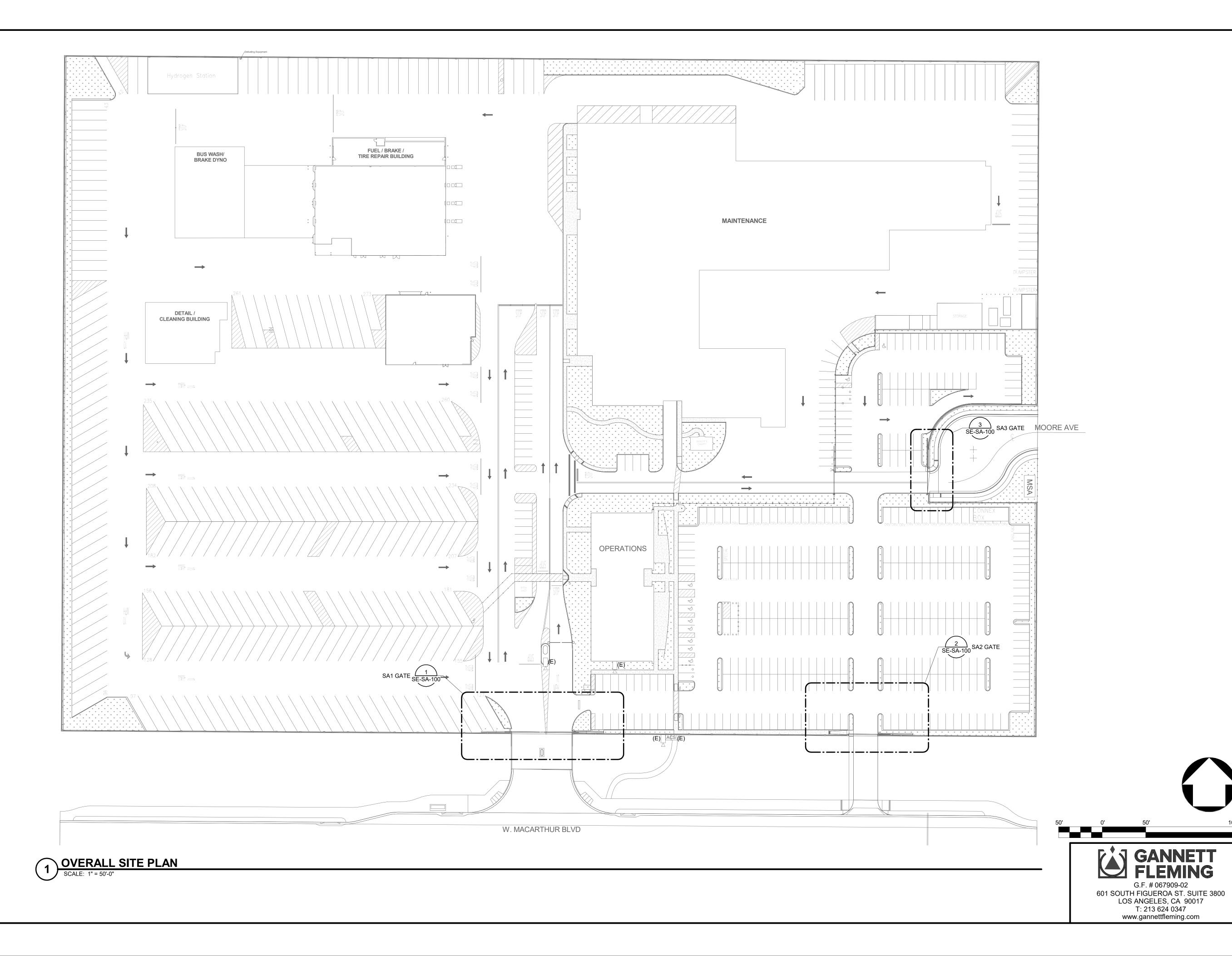


JOB#	007000 00
JOB #	067909-02
DESIGN BY:	RH
DRAWN BY:	AH
CHECKED BY:	MM
DATE:	01.20.2023
SCALE:	NONE
SHEET:	·

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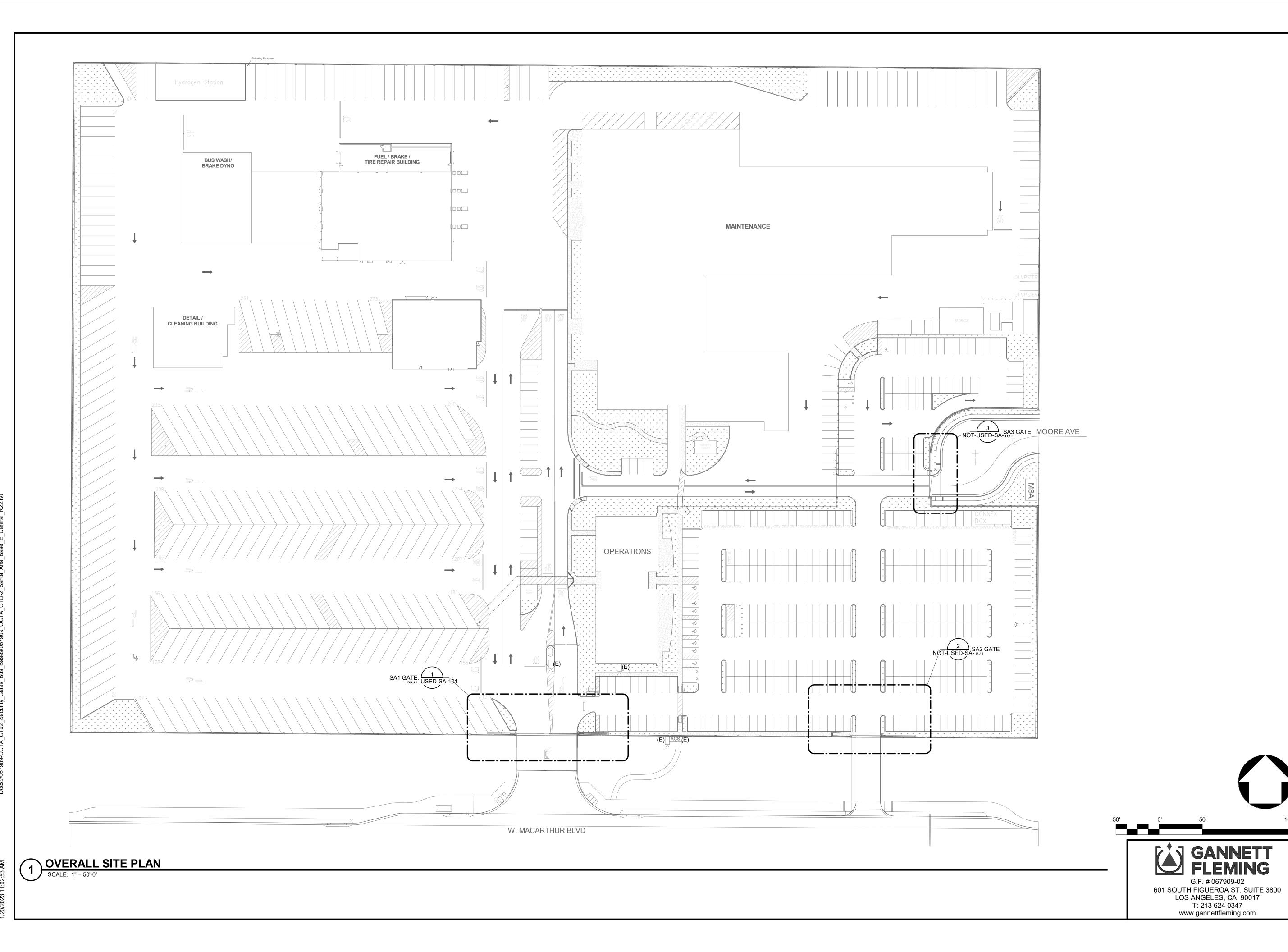
SECURITY GATES INST. AT SANTA ANA BUS

067909-02 01.20.2023 AS INDICATED

||SE-SA-010

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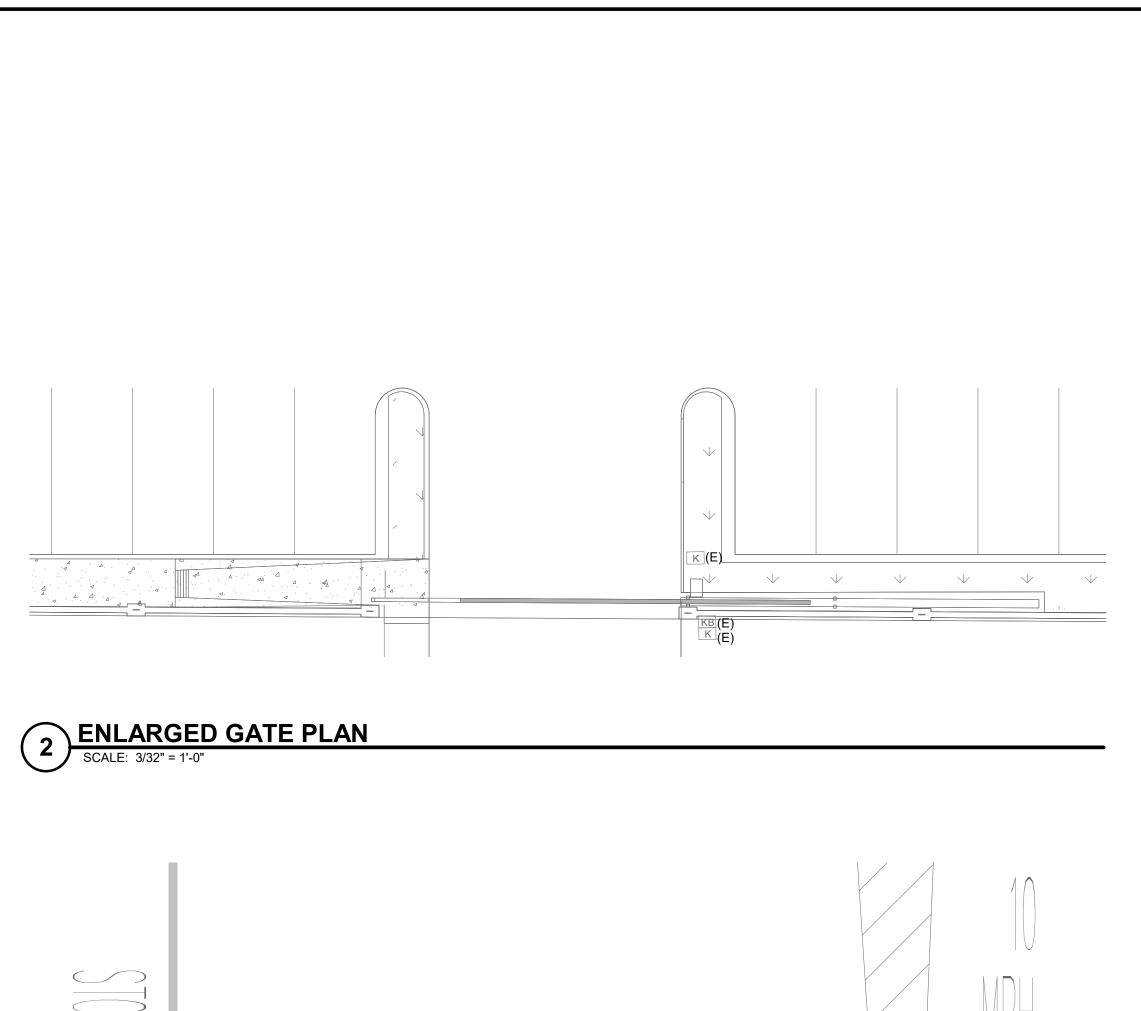
SECURITY GATES INSTALLATIO
AT SANTA ANA BUS BASE

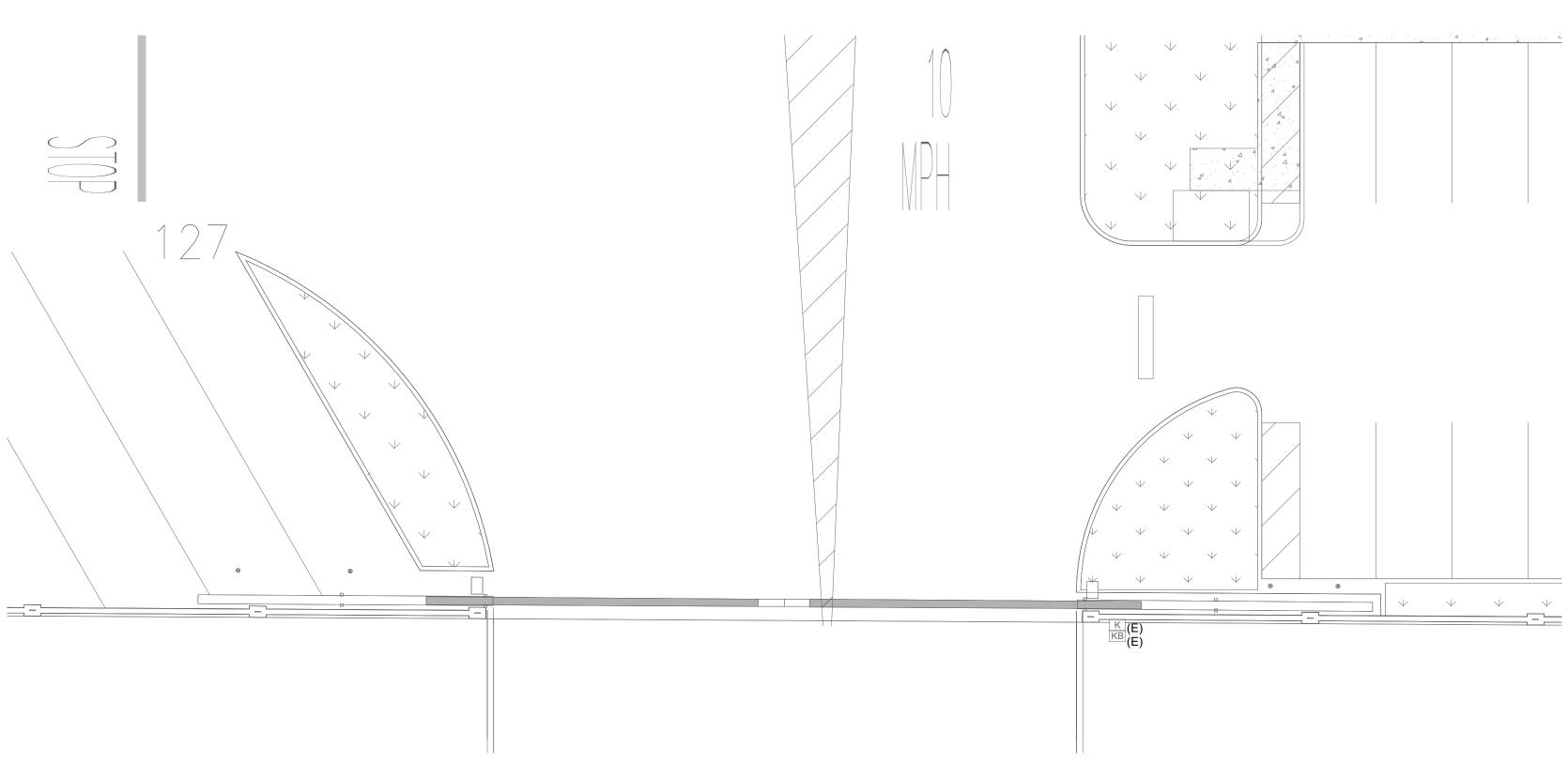
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DRAWN BY: AH
CHECKED BY: MM
DATE: 01.20.2023
SCALE: AS INDICATED
SHEET:

SE-SA-011

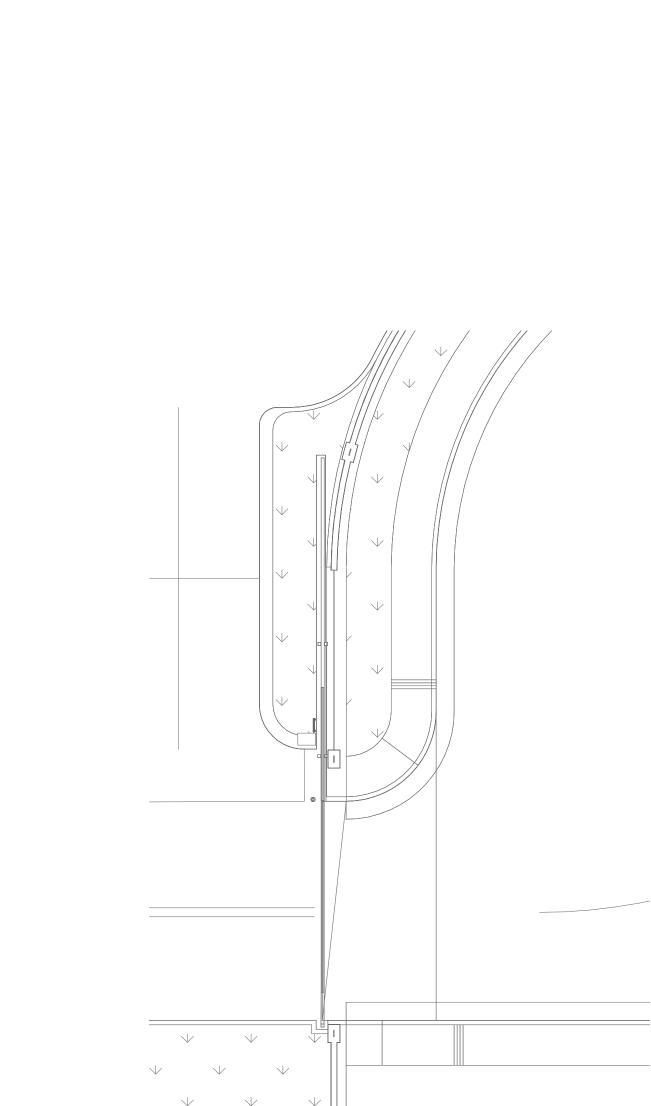
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OCTA



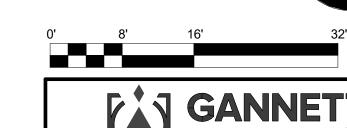


1 ENLARGED GATE PLAN
SCALE: 3/32" = 1'-0"



3 ENLARGED GATE PLAN
SCALE: 3/32" = 1'-0"





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SANTA ANA, CA 92704

714/560/OCTA

01.20.2023 AS INDICATED

CLOSED CIRCUIT TELEVISION (CCTV) CAMERA

ACS ACCESS CONTROL SYSTEM KNOX BOX

KEY CONTROL

INTERCOM ACCESS CONTROL NEDAP LONG RANGE READER

VEHICULAR EXIT LOOP/ SAFETY LOOP

LIGHTING

SYMBOLS

SECURITY SYSTEM

○── POLE MOUNTED LIGHT FIXTURE (SINGLE) POLE MOUNTED LIGHT FIXTURE (DOUBLE) MISCELLANEOUS:

KEYNOTE OR EQUIPMENT IDENTIFICATION

—SECTION IDENTIFICATION

SECTION NOMENCLATURE -SHEET NUMBER ON WHICH SECTION IS SHOWN

—DETAIL IDENTIFICATION DETAIL NOMENCLATURE

-SHEET NUMBER ON WHICH DETAIL IS SHOWN ----- UNDERGROUND ELECTRICAL/COMMUNICATION CONDUITS

HANDHOLE
'C' DENOTES COMMUNICATIONS HANDHOLE
'P' DENOTES POWER HANDHOLE

SYMBOLS

SECURITY SYSTEM

CLOSED CIRCUIT TELEVISION (CCTV) CAMERA

ACS

ACCESS CONTROL SYSTEM

KEY CONTROL

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ACS LRR

ACCESS CONTROL NEDAP LONG RANGE READER

VEHICULAR EXIT LOOP/ SAFETY LOOP

<u>LIGHTING</u>

○── POLE MOUNTED LIGHT FIXTURE (SINGLE) POLE MOUNTED LIGHT FIXTURE (DOUBLE)

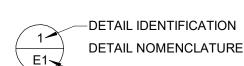
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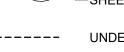


SECTION NOMENCLATURE -SHEET NUMBER ON WHICH SECTION IS SHOWN

-SECTION IDENTIFICATION



DETAIL NOMENCLATURE -SHEET NUMBER ON WHICH DETAIL IS SHOWN

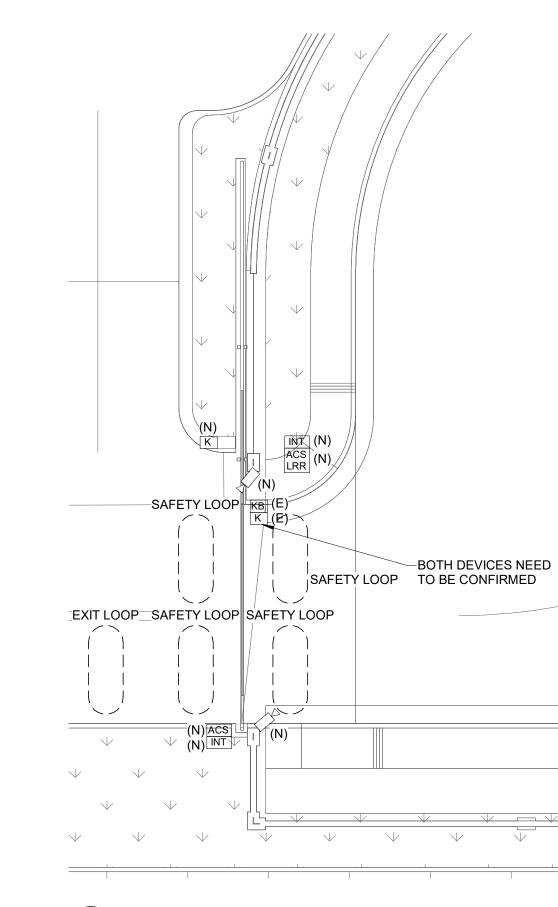


----- UNDERGROUND ELECTRICAL/COMMUNICATION CONDUITS



HANDHOLE

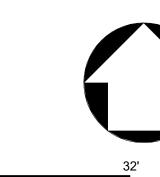
'C' DENOTES COMMUNICATIONS HANDHOLE
'P' DENOTES POWER HANDHOLE



3 ENLARGED GATE PLAN
SCALE: 3/32" = 1'-0"





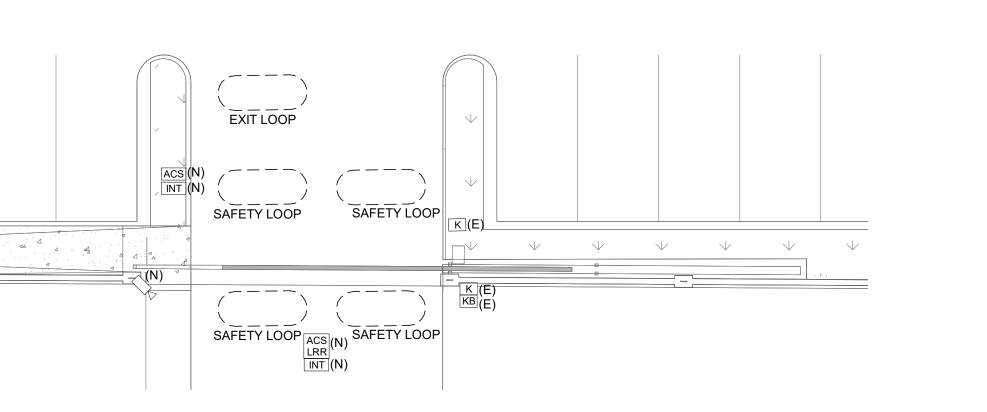




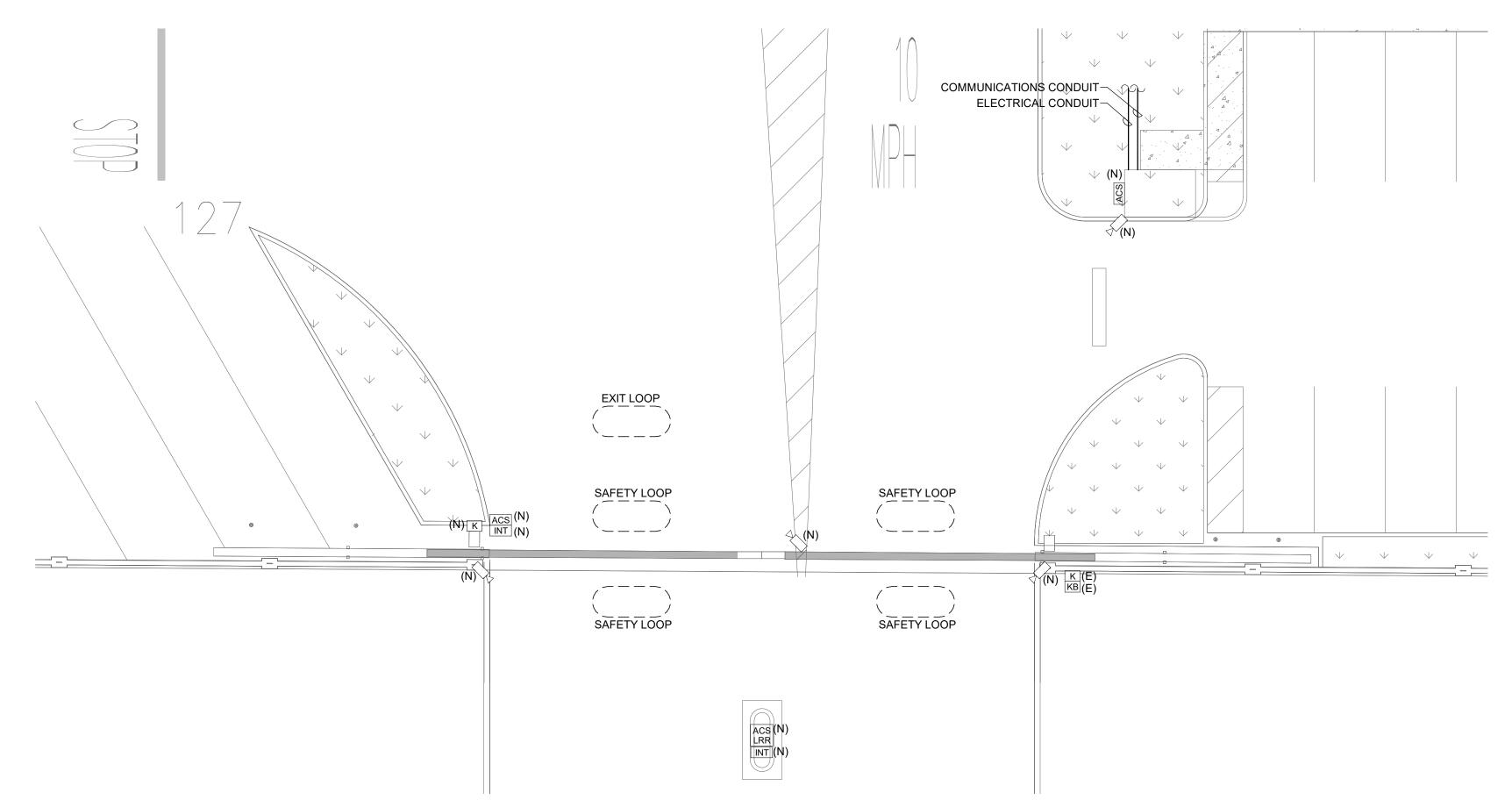


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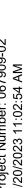
01.20.2023 AS INDICATED

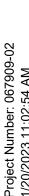


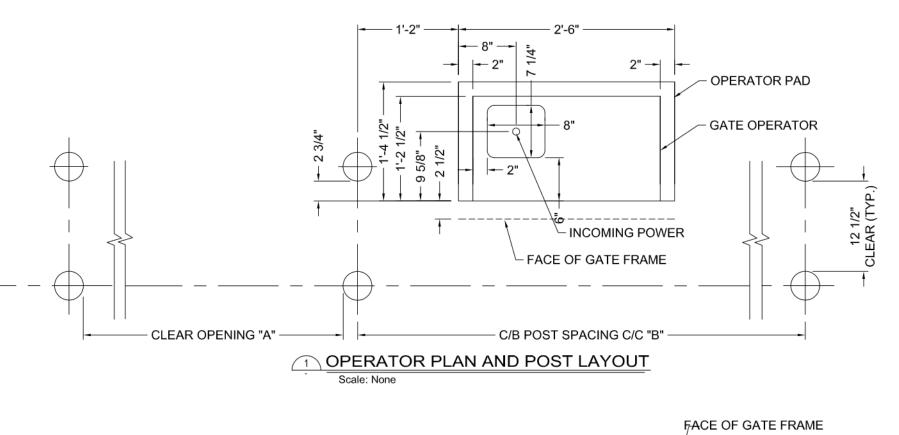
ENLARGED GATE PLAN

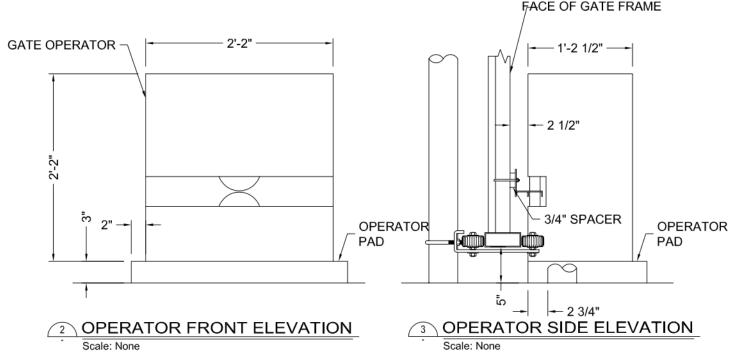


ENLARGED GATE PLAN

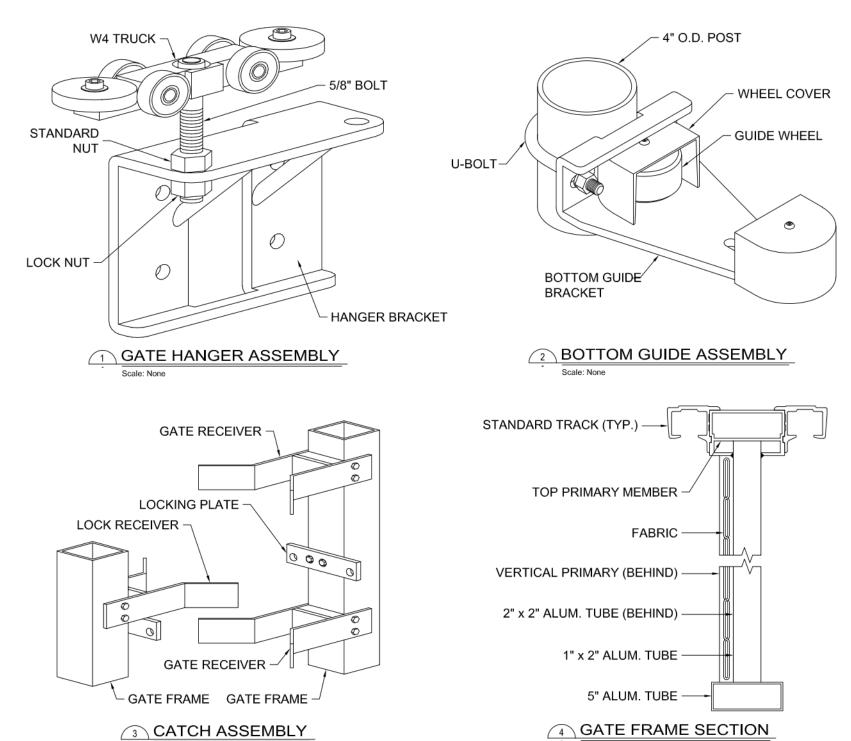




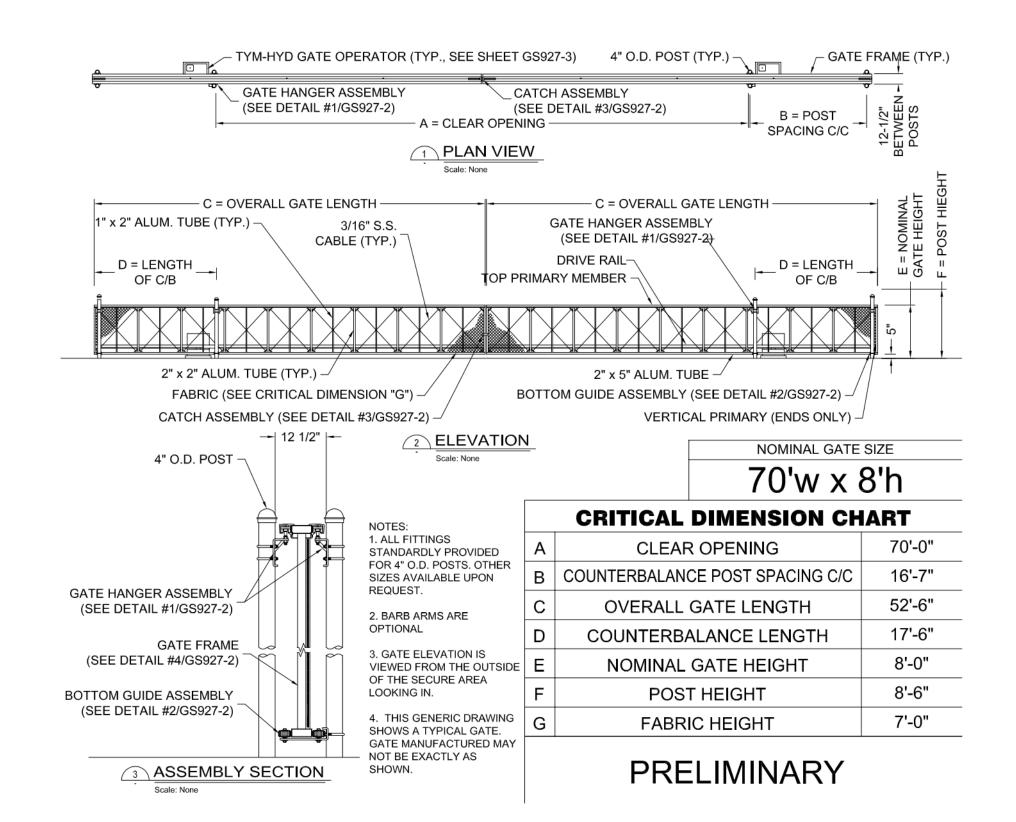




TYM-HYD HYDRAULIC GATE OPERATOR SA1



2 STRUCTURAL CANITLEVER SLIDE GATE DETAILS SA1
SCALE: NTS



DOUBLE STRUCTURAL CANTILEVER SLIDE GATE WITH TYM-HYD HYDRAULIC **GATE OPERATOR SA1**

NOIL

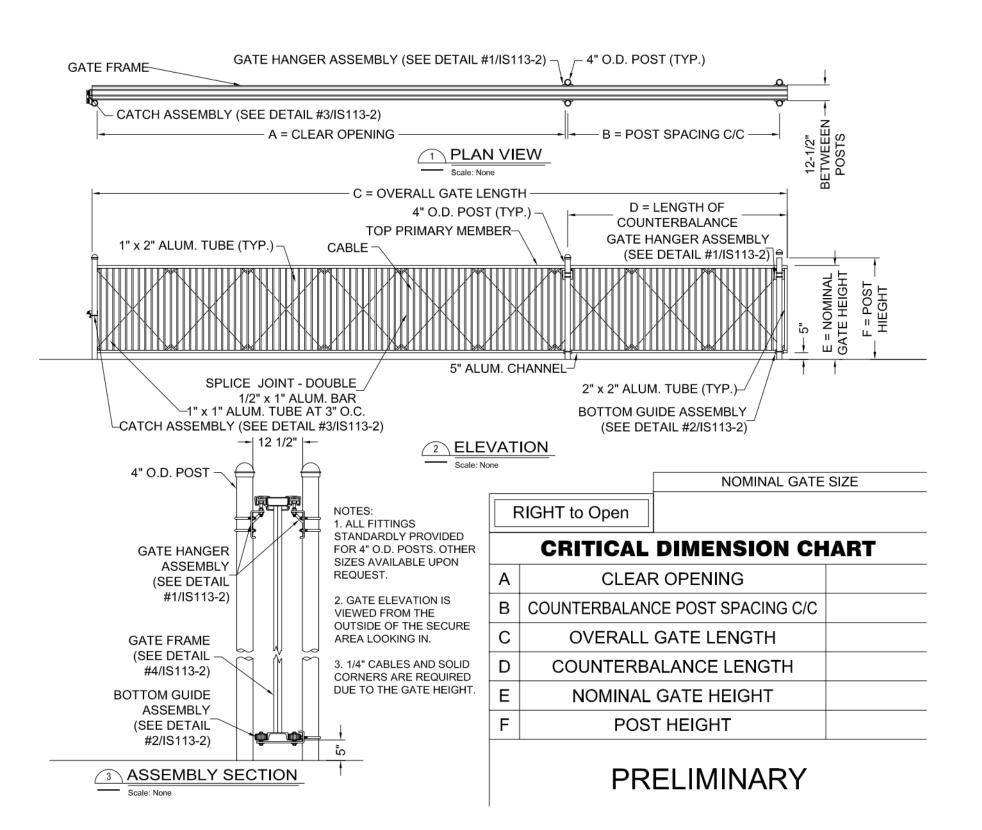
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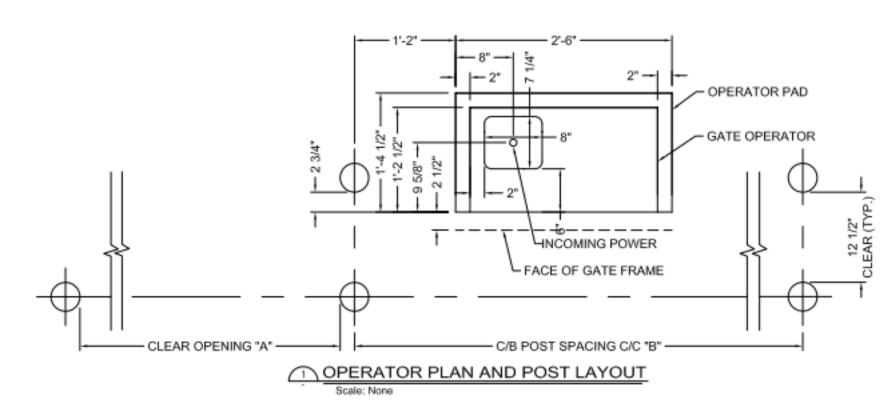
4301 W. MACARTHUR BLVD. SANTA ANA, CA 92704 714/560/OCTA

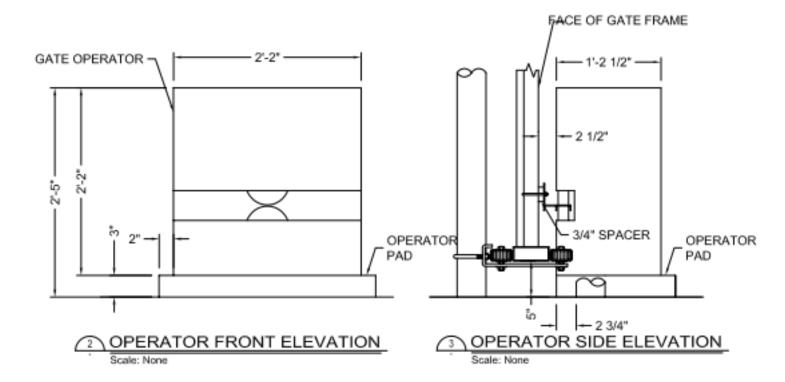




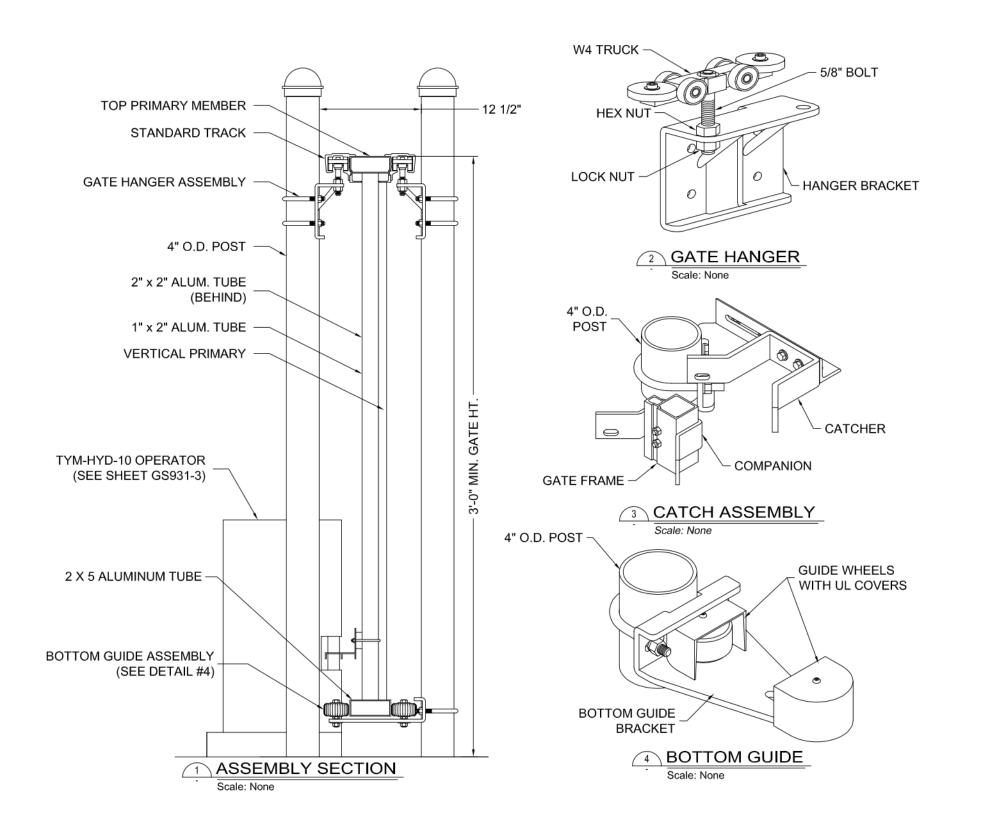


INTERNAL PICKET STRUCTURAL CANTILEVER SLIDE GATE RIGHT OPEN

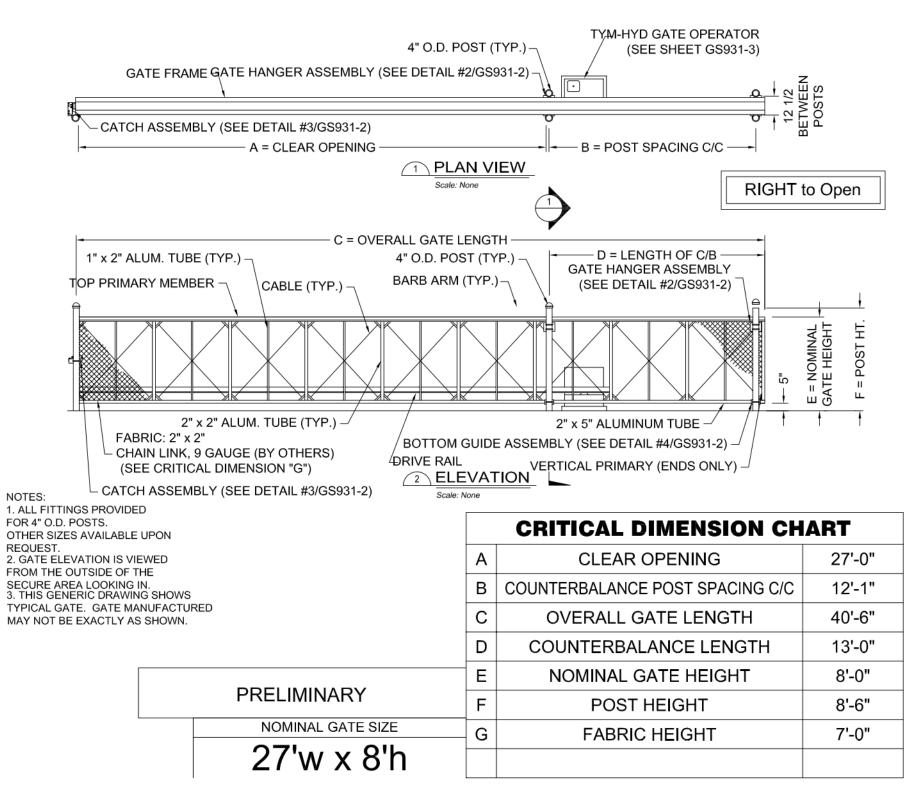




TYM-HYD-10 HYDRAULIC GATE OPERATOR DETAILS SA2



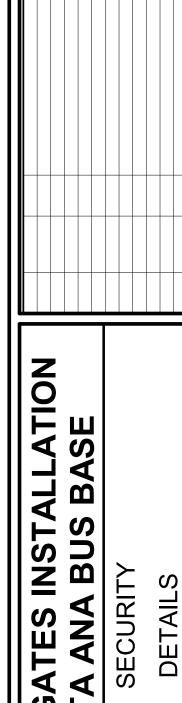
STRUCTURAL CANTILEVER SLIDE GATE DETAILS SA2



DOUBLE STRUCTURAL CANTILEVER SLIDE GATE WITH TYM-HYD HYDRAULIC GATE OPERATOR SA2







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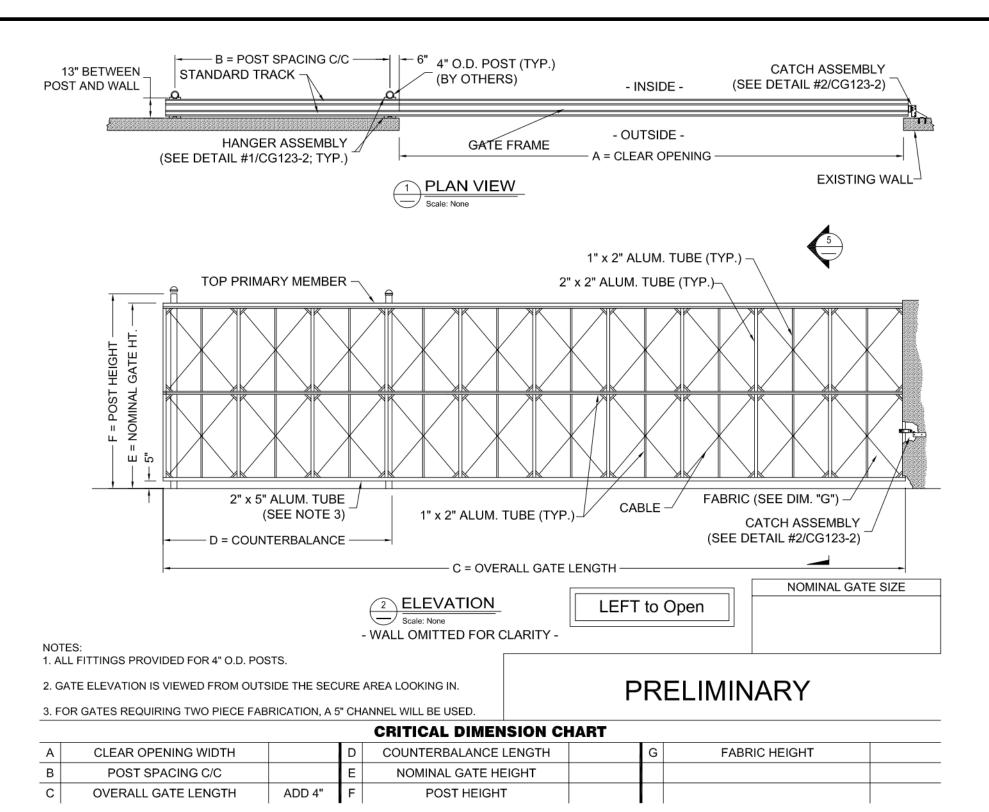
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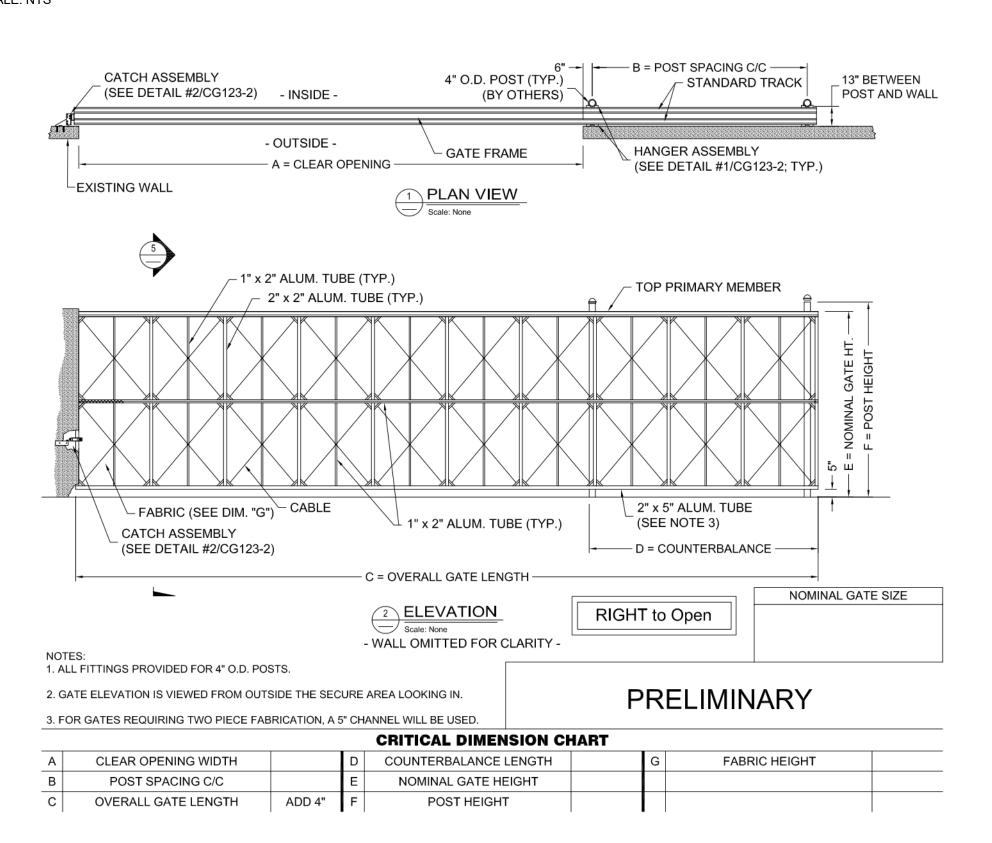
4301 W. MACARTHUR BLVD.

SANTA ANA, CA 92704

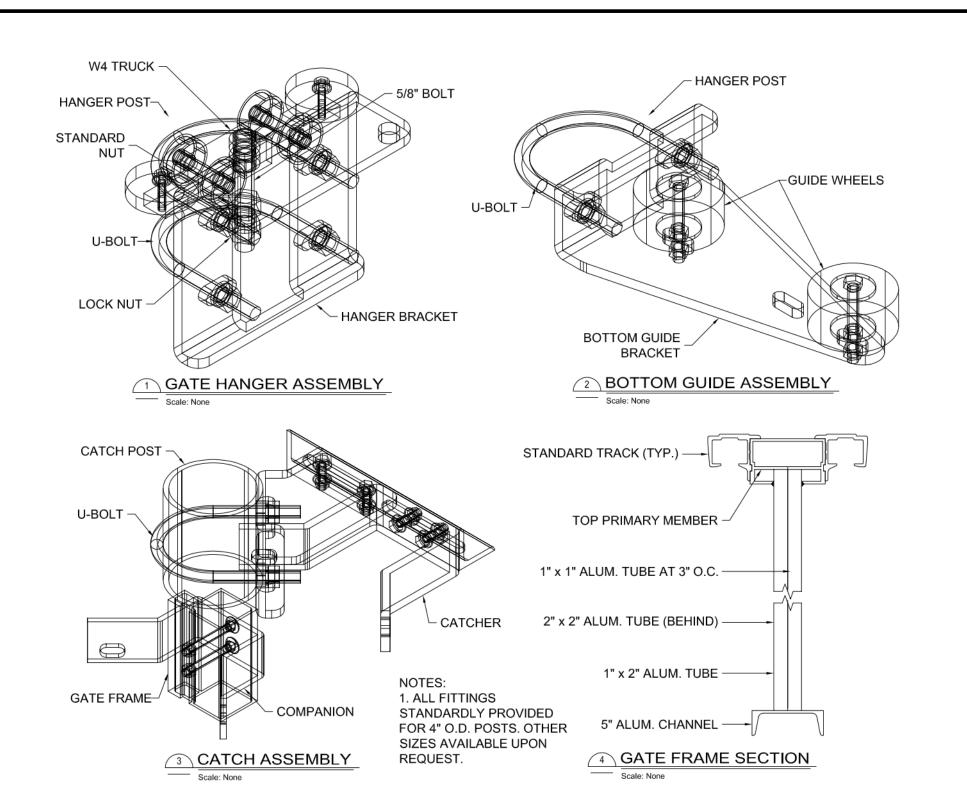
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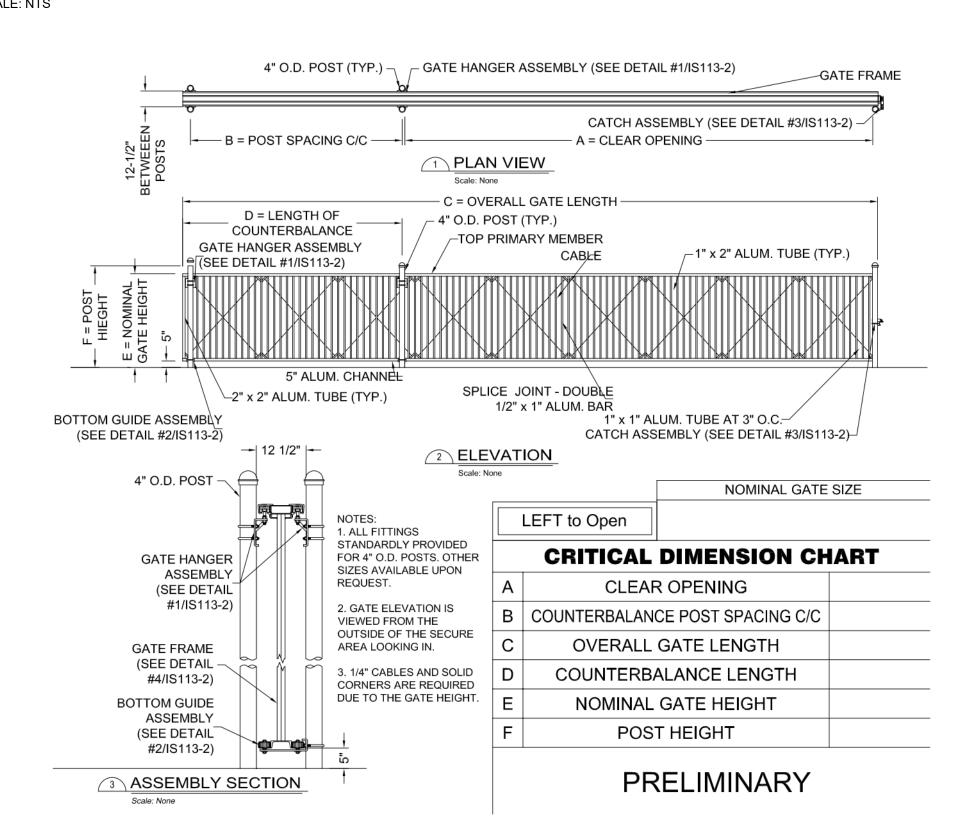
WALL MOUNTED STRUCTURAL CANTILEVER SLIDE GATE LEFT OPEN



WALL MOUNTED STRUCTURAL CANTILEVER SLIDE GATE RIGHT OPEN



\ INTERNAL PICKET STRUCTURAL CANTILEVER SLIDE GATE



\INTERNAL PICKET STRUCTURAL CANTILEVER SLIDE GATE LEFT OPEN

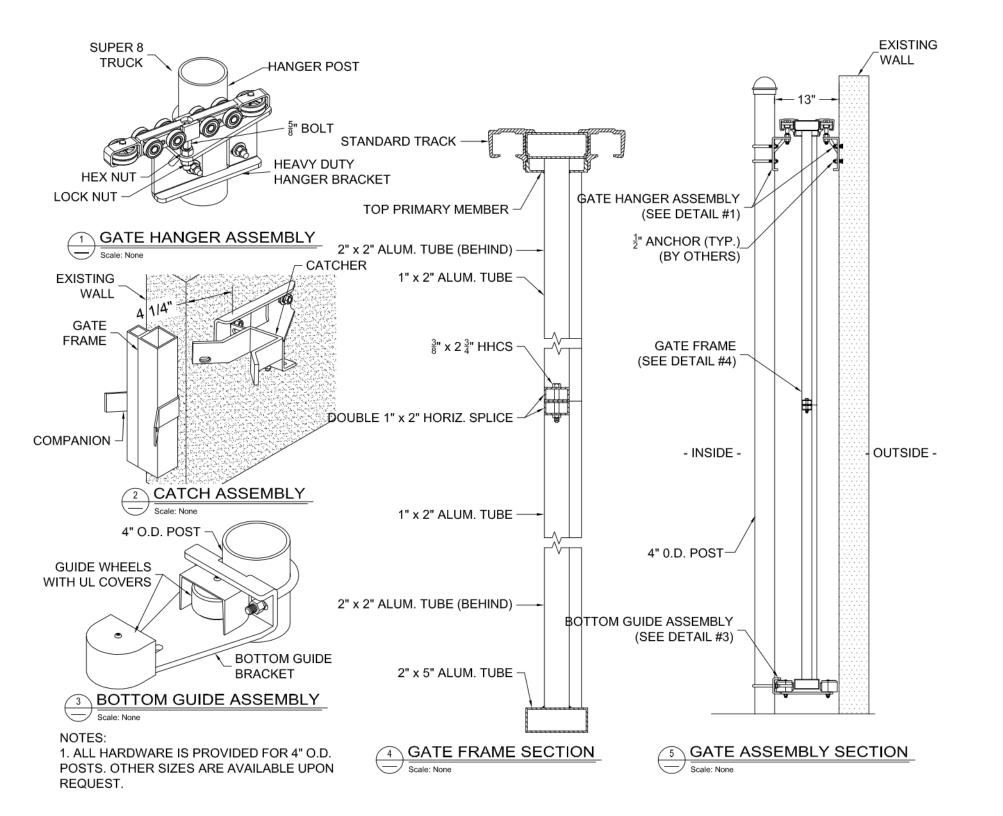




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WALL MOUNTED STRUCTURAL CANTILEVER SLIDE GATE DETAILS
SCALE: NTS

SECURITY AT SAI	
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CALE:	AS INDICATE

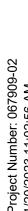
SCALE: AS INDICATED SHEET:

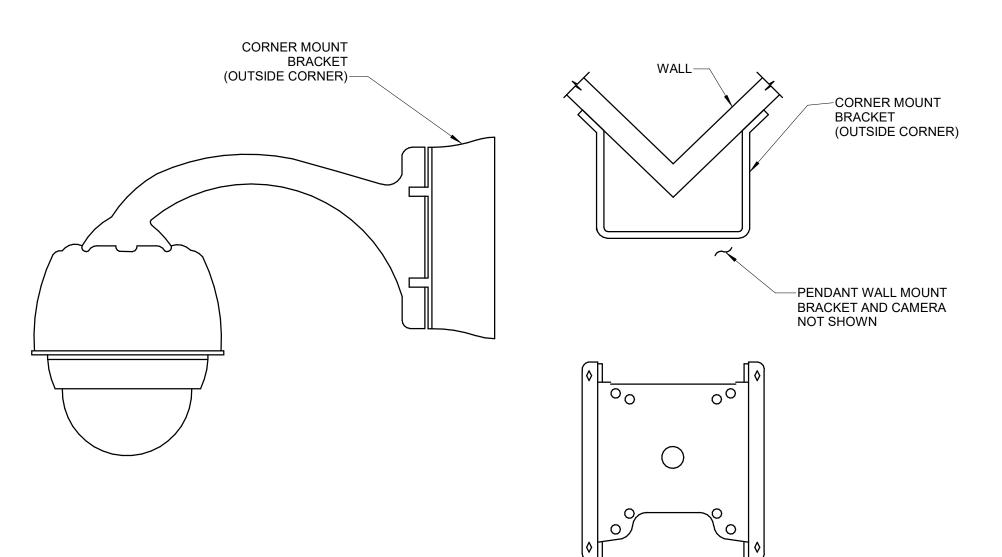
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4301 W. MACARTHUR BLVD.

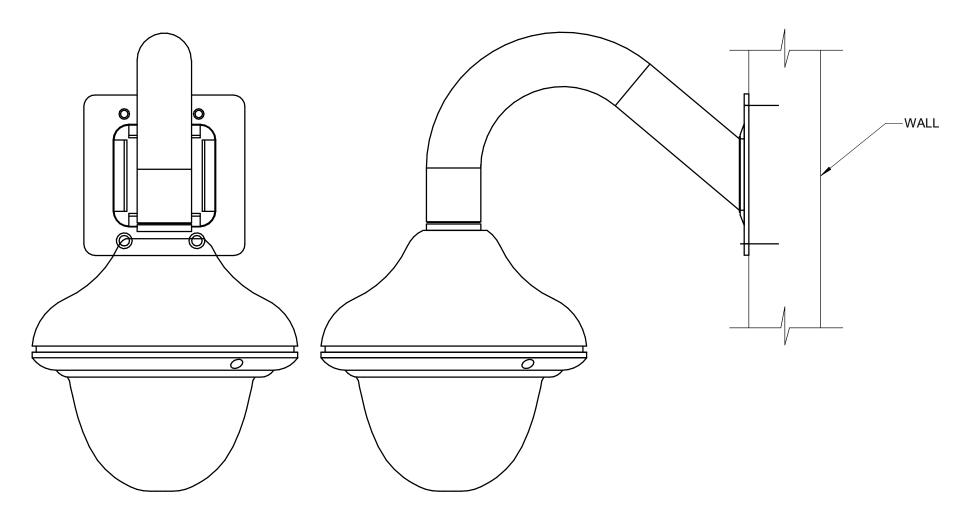
4301 W. MACARTHUR BLVI SANTA ANA, CA 92704 714/560/OCTA



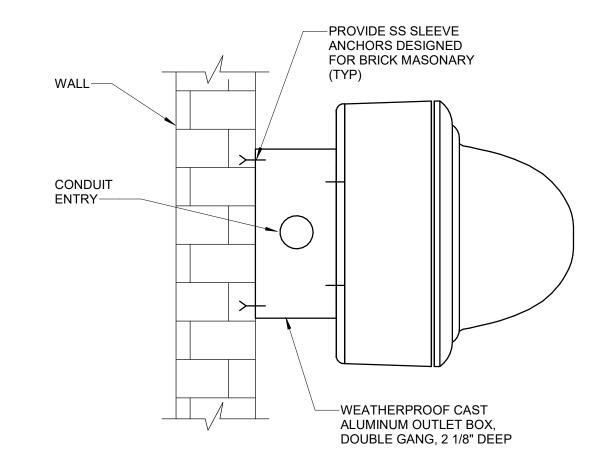




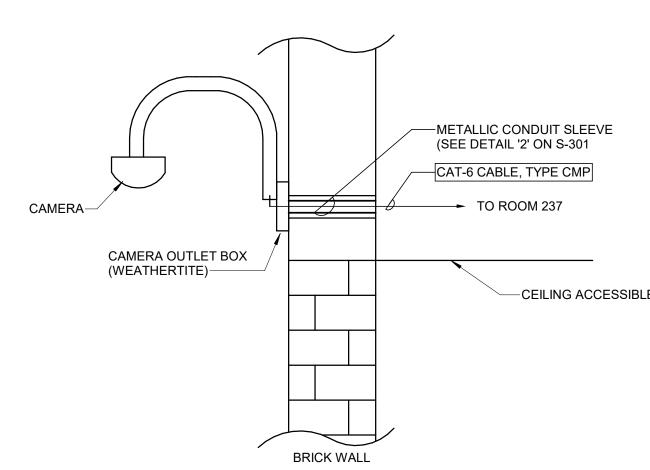
SECURITY CAMERA CORNER MOUNTING DETAIL



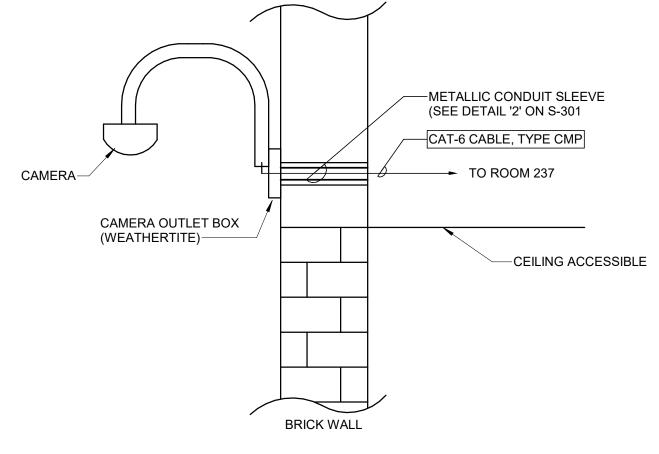
2 SECURITY CAMERA WALL MOUNTED DETAIL
SCALE: NTS

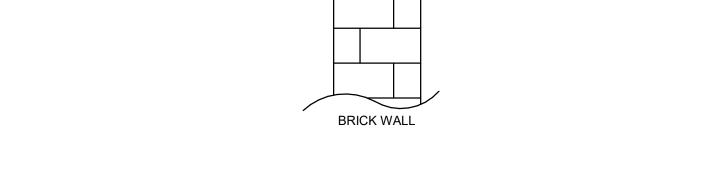


3 FIXED WALL MOUNTING DETAIL
SCALE: NTS



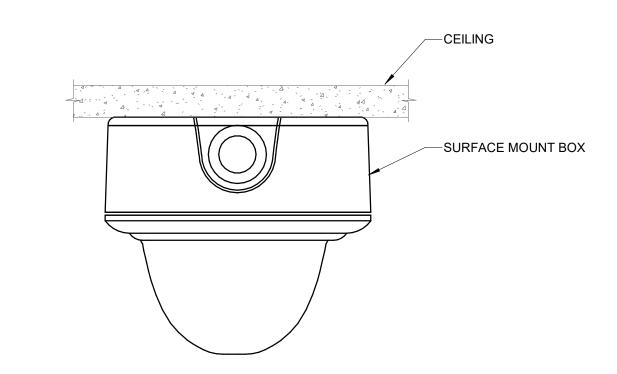
ADMIN BUILDING CAMERA/CONDUIT PENETRATION DETAIL



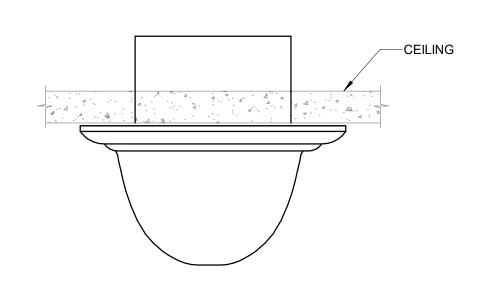


1. IF PENETRATING AT OTHER THAN CAMERA LOCATION, PROVIDE LIQUIDTITE FLEXIBLE METALLIC FROM PENETRATION TO CAMERA OUTLET BOX.

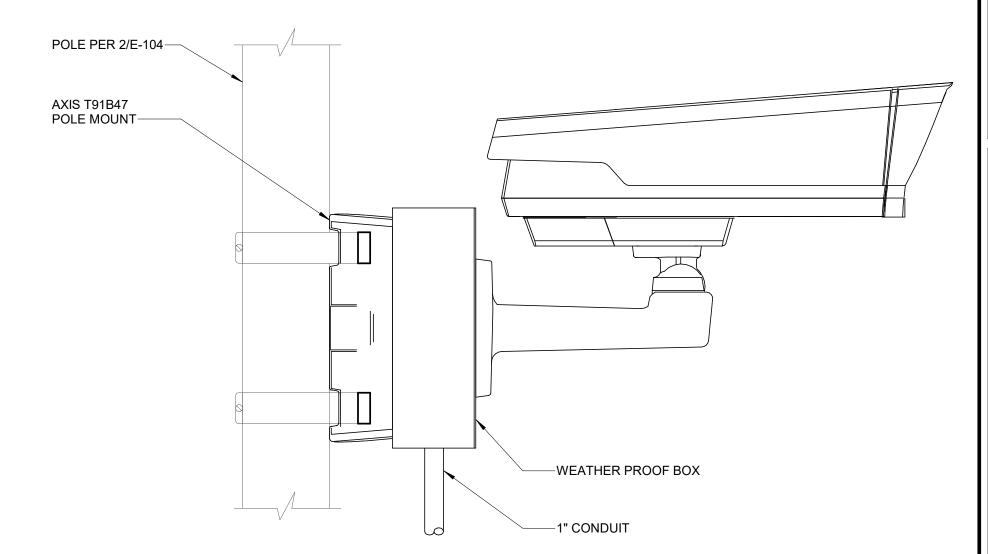
DETAIL NOTES



5 CEILING-SURFACE MOUNTING DETAIL
SCALE: NTS



CEILING FLUSH MOUNTING DETAIL



7 CCTV POLE MOUNTING DETAIL

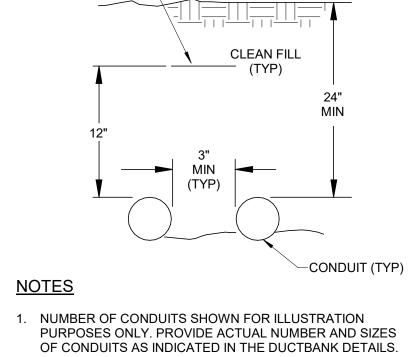
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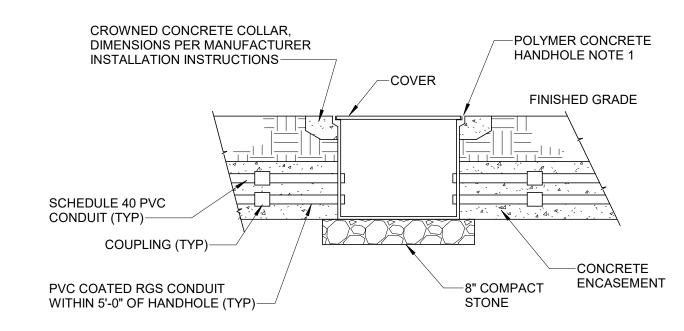




2. ALLOWABLE CONDUIT TYPES PER SPECS.

WARNING TAPE—

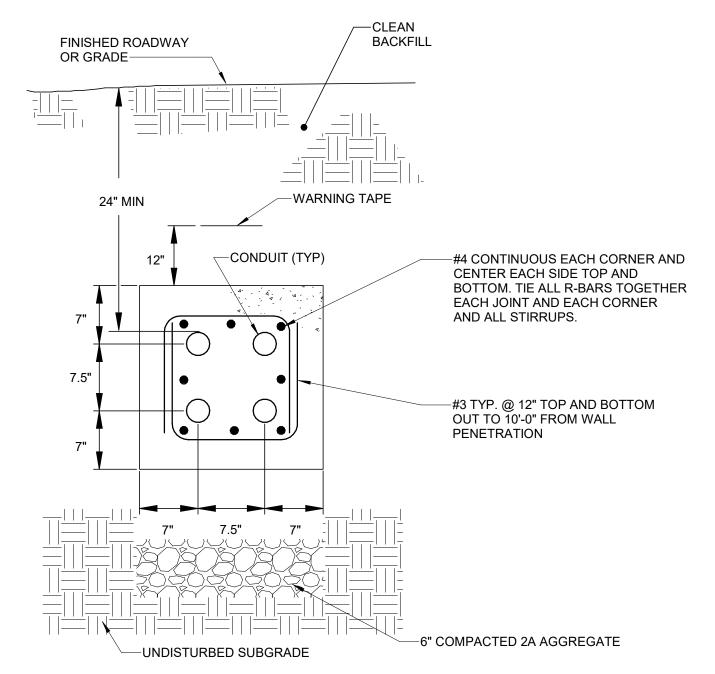




<u>NOTES</u>

1. STACK BOXES AS REQUIRED TO MATCH CONDUIT DEPTH.





<u>NOTES</u>

- NUMBER OF CONDUITS SHOWN FOR ILLUSTRATION PURPOSES ONLY. PROVIDE ACTUAL NUMBER AND SIZES OF CONDUITS AS INDICATED IN THE DUCTBANK
- 2. ALLOWABLE CONDUIT TYPES PER SPECS.



067909-02

AS INDICATED ||SE-SA-506 4301 W. MACARTHUR BLVD.

01.20.2023

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CHECKED BY:



SECTION VIII: LEVEL 3 HEALTH, SAFETY AND ENVIRONMENTAL SPECIFICATIONS – EXHIBIT H

SECTION VIII

LEVEL 3 HEALTH, SAFETY AND ENVIRONMENTAL (HSE) SPECIFICATIONS

REQUIRED HSE SUBMITTAL SUMMARY

The contractor shall submit copies of the items listed below for contract scope work on OCTA projects and property. Copies shall be provided prior to contractor's mobilization onto OCTA projects and property. Contractor shall provide compliant written Health, Safety & Environmental (HSE) submittals within 30 days of the contract notice to proceed.

HSE submittals shall comply with the 1988 Drug Free Workplace Act, or the Department of Transportation (DOT), or the Federal Transportation Administration (FTA) requirements (according to OCTA procurement funding guidelines) and comply with the California Code of Regulations (CCR) Title 8 regulatory standards.

Contractor's established written programs/plans shall comply with CCR Title 8 regulatory standards. All HSE related programs/plans submitted to OCTA for acceptance shall be prepared and submitted by a qualified HSE professional who is recognized by an organization of industry standard (i.e., CSP, CIH, CHST, CHMM, etc.) and is experienced in developing compliant written HSE programs. The site safety HSE representative shall participate in the HSE submittal process.

- 1. Contractor shall provide a copy of Company's Injury Illness Prevention Program in accordance with CCR Title 8, Section 3203.
- 2. Contractor shall provide a copy of their Company HSE Policy/Procedure Manual, in compliance with CCR Title 8 Standards for awarded scope.
- 3. Contractor shall provide a copy of their Policy or Substance Abuse Prevention Program.
- 4. Contractor shall provide a copy of their Hazard Communication Program and SDS Management Program in compliance with CCR Title 8, Section 5194, Hazard Communication Standard.
- On-Site HSE Representative:
 - On Facility Modification Projects, The Contractor shall submit a resume of the designated on-site qualified HSE Representative. The HSE Representative shall possess a current certification from the Board of Certified Safety Professionals (BCSP), plus five (5) years construction or scope agreement HSE experience enforcing HSE compliance on heavy or industrial construction project sites, the last two years of which have been administering HSE in the construction or scope discipline for which the Contractor is contracting with the Authority. The designated HSE Representative shall participate in all HSE related submittals through completion of scope.

On Capital Programs, The Contractor's on-site qualified HSE Representative shall be a Certified Safety Professional (CSP) with current standing from the Board of Certified Safety Professionals (BCSP) or a Construction Health and Safety Technician (CHST) with current standing from the (BCSP) or a Certified Industrial

Hygienist (CIH) with current standing from the American Board of Industrial Hygiene (ABIH), or an equal professional HSE Certificate of standing from The National Examination Board in Occupational Safety and Health (NEBOSH), that is acceptable to the Authority. The Contractor's on-site HSE Representative(s) shall provide a resume and have a minimum of seven (7) years heavy construction experience in administering HSE programs on heavy construction project sites, the last two years of which have been administering HSE in the construction/scope discipline for which Contractor is contracting with the Authority.

6. A Detailed Site Specific HSE Work Implementation Plan:

This plan shall be prepared and submitted by a recognized HSE professional experienced in developing compliant written HSE programs. Indicate the methods and procedures, and include the sequence of tasks as listed on the project schedule, include the hazards, tools and equipment, and the safe work practices to mitigate the hazards in a format acceptable OCTA. Specify safety measures in accordance with applicable Cal/OSHA standards, South Coast Air Quality Management District (SCAQMD) rules, National Fire Protection Association (NFPA), National Electric Code (NEC), American National Standards Institute (ANSI) codes and regulations, job hazard analysis, policies, procedures, HSE training requirements and known and potential hazards of Contractor's scope. Plans shall be prepared as specified above, and may require if necessary a professional engineer licensed to practice in the state of California, when so required by the provisions of the California Board for Professional Engineer and Surveyors.

PART I - GENERAL

- 1.0 GENERAL HEALTH, SAFETY AND 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 including California Department of Transportation safety requirements and special provisions. Additionally, manufacturer requirements are considered incorporated by reference, as applicable, to this scope of work.
 - B. Observance of unsafe acts or conditions, serious violation of health and safety standards, non-conformance of Authority HSEC requirements, or disregard for the intent of these safety specifications to protect people and property, by Contractor may be reason for termination of scope or agreements with the Authority, at the sole discretion of the Authority.
 - C. 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.

- D. 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.
- E. The Contractor shall provide all necessary tools, equipment, and related safety protective devices to execute the scope of work in compliance with the Authority's HSEC requirements, CCR Title 8 Standards, and recognized safe work practices.
- F. The Contractor shall instruct all its employees, and all associated subcontractors under contract with the Contractor who works on Authority projects in the following; recognition, identification, and avoidance of unsafe acts and/or conditions applicable to its work.

PART II - SPECIFIC REQUIREMENTS

2.0 While these safety specifications are intended to promote safe work practices, Contractors are reminded of their obligation to comply with all federal (Code of Federal Regulations (CFR) Sections 1926 & 1910 Standards), state (CCR Title 8 Standards), local and municipal safety regulations, and Authority health, safety and environmental requirements applicable to their project scope. Failure to comply with these standards may be cause for termination of scope or agreements with the Authority, at the sole discretion of the Authority.

2.1 REQUIRED DOCUMENTATION / REPORTING REQUIREMENTS

The Contractor at a minimum shall provide the following documents to the Authority's Project Manager. Items A through E below shall be submitted and accepted by the Authority's Project Manager prior to Contractor mobilization. Item F upon each occurrence, and for items G through K, contractor shall verify the following documentation is in place, prior to and during contract scope and make the same available to the Authority upon request within 72 hours.

Contractor's established written programs/plans shall comply with CCR Title 8 regulatory standards. All new programs/plans shall be prepared and submitted by a qualified HSE professional who is recognized by an organization of industry standard (i.e., CSP, CIH, CHST, STS, CHMM, etc.) and is experienced in developing compliant written HSE programs. The site safety HSE representative shall participate in the scope submittal process.

- A. A Comprehensive Project Specific Health, Safety, and Environmental (HSE) Work Plan.
 - a. The Contractor shall develop a site project plan that may include, but is not limited to: Permits, Evacuation, Emergency Plan, Roles and

Responsibilities, Scope and Construction Activity Details, Constructability Review, Contractor Coordination Process, Safe Work Methods, Hazard Identification & Risk Control, First Aid and Injury Management, Emergency Procedures, Public Protection, Authority and Contractor Site Rules, Incident Reporting and Investigation, Specialized Work or Licensing, Training and Orientation Requirements, Chemical Management, and Subcontractor Management.

- b. A Detailed Site Specific HSE Implementation Plan: This plan shall be prepared and submitted by a recognized HSE professional (current BCSP Certification in good standing, i.e., CSP, CHST, OHST) experienced in developing compliant written HSE programs, acceptable to OCTA. Indicate the methods and procedures, and include the sequence of tasks as listed on the project schedule, include the hazards, tools and equipment, and the safe work practices to mitigate the hazards in a format acceptable OCTA. Specify safety measures in accordance with applicable Cal/OSHA standards, SCAQMD rules, NFPA, NEC, ANSI codes and regulations, job hazard analysis, policies, procedures, HSE training requirements and known and potential hazards of Contractor's scope. Plans shall be prepared as specified above, and may require if necessary a professional engineer licensed to practice in the state of California, when so required by the provisions of the California Board for Professional Engineer and Surveyors.
- B. Contractor shall provide a copy of their Company HSE Policy/Procedure Manual, in compliance with CCR Title 8 Standards for awarded scope.
- C. Contractor shall provide a copy of Company's Injury Illness Prevention Program in accordance with CCR Title 8, Section 3203.
- D. Contractor shall provide a copy of their Policy or Substance Abuse Prevention Program that complies with the 1988 Drug Free Workplace Act.
- E. Contractor shall provide the resume and qualifications/certifications of assigned project designated Onsite HSE Representative for this scope as identified in section 2.3 of this specification.
- F. Accident/Incident investigation report within 24 hours of event (immediate verbal notification to Authority Project Manager, followed by Written Report).

The following required documentation shall be provided to the Authority's Project Manager, upon Authority request, within 72 hours.

- G. A copy of Contractor weekly site safety inspection report with status of corrections, upon request, within 72 hours.
- H. Contractor shall provide a copy of the Contractors and subcontractors competent person list (submit to Authority Project Manager, upon Authority request, within 72 hours).

- I. Contractors and subcontractors training records for qualified equipment operators, electrical worker certification (NFPA 70E), confined space training, HAZWOPER training, and similar personnel safety training certificates as applicable to the agreement scope and as requested by the OCTA Project Manager and/or HSEC department, upon Authority request, within 72 hours and prior to starting or during the scope activity (submit to Project Manager).
- J. A monthly report that includes number of workers on project, a list of subcontractors, work hours (month, year to date, & project cumulative) of each contractor, labor designation, OSHA Recordable injuries and illnesses segregated by medical treatment cases, restricted workday cases, number of restricted days, lost workday cases, and number of lost work days, and recordable incident rate. Contractor shall provide to the Authority, upon request, within 72 hours.

K. TRAINING DOCUMENTATION

To ensure that each employee is qualified to perform their assigned work, when applicable to scope work, Contractor shall verify training documentation is in place, prior to and during contract scope, and make available to the Authority, upon request, within 72 hours. Training may be required by the Authority or CCR Title 8 Standards and required for activity on Authority's property and/or Authority projects. Contractor shall provide to Authority, upon request, within 72 hours.

2.2 HAZARD COMMUNICATION (CCR Title 8, Section 5194)

- A. Contractor shall comply with CCR Title 8, Section 5194 Hazard Communication Standard. Prior to chemical use on Authority property and/or project work areas the Contractor shall provide to the Authority Project Manager copies of Safety Data Sheet (SDS) for all applicable products used, if any.
- B. All chemicals including paint, solvents, detergents and similar substances shall comply with SCAQMD Rules 103, 1113, and 1171.

2.3 DESIGNATED HEALTH, SAFETY, ENVIRONMENTAL (HSE) REPRESENTATIVE

- A. Before beginning on-site activities, the Contractor shall designate an On-site HSE Representative. 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.
- B. The Contractor's on-site qualified HSE Representative for all Authority projects is subject to acceptance by the Authority Project Manager and the HSEC Department Manager. All contact information of the On-site HSE Representative (name, phone, and fax and pager/cell phone number) shall be provided to the Authority Project Manager.

QUALIFICATIONS - On Capital Programs, the Contractor shall submit a resume of the full time, on-site qualified HSE Representative(s) who reports directly to the Contractor's Project Manager or Superintendent, and who is responsible for HSE oversight for field operations on the project no later than ten (10) days after receipt of Notice to Proceed, and prior to mobilization. The Contractor's On-site HSE Representative(s) shall have a minimum of seven (7) years heavy construction experience in administering HSE programs on heavy construction project sites, the last two years of which have been administering HSE in the construction discipline for which Contractor is contracting with the Authority. The Contractor's On-site HSE Representative shall be a Certified Safety Professional (CSP) with current standing from the Board of Certified Safety Professionals (BCSP), or a Construction Health and Safety Technician (CHST) with current standing from the BCSP or a Certified Industrial Hygienist (CIH) with current standing from the American Board of Industrial Hygiene (ABIH), or an equal professional HSE Certificate of standing from The National Examination Board in Occupational Safety and Health (NEBOSH), that is acceptable to the Authority. The Contractor's On-site HSE Representatives(s) shall be on site during all operational hours. The On-site HSE Representative(s) shall set up, carry forward and aggressively and effectively maintain the project specific safety program and IIPP covering all phases of the work. If at any time the Contractor wishes to replace their On-site HSE Representative(s), the Contractor must provide written notice thirty (30) days prior to change of personnel to the Authority. The Contractor shall take all precautions and follow all procedures for the safety of, and shall provide all protection to prevent injury to, all persons involved in any way in the scope work and all other persons, including, without limitation, the employees, agents, guests, visitors, invitees and licensees of the Authority who may be involved. This requirement applies continuously and is not limited to normal working hours. The designated HSE Representative shall participate in all HSE related submittals. The Authority reserves the right to allow for an exception to modify these minimum qualification requirements for unforeseen circumstances, at the sole discretion of the Authority Project Manager and HSEC Department Manager.

On Facility Modification Projects, the Contractor shall submit a resume of the full time qualified on-site HSE Representative who reports directly to the Contractor's Project Manager or Superintendent, and who is responsible for safety oversight for field operations on the project no later than ten (10) days after receipt of Notice to Proceed, and prior to mobilization. The Contractor's On-Site HSE Representative shall hold a current certification from the BCSP. plus five (5) years construction or scope HSE experience enforcing HSE compliance on heavy construction or industrial construction project sites, the last two years of which have been administering HSE in the construction or scope discipline for which Contractor is contracting with the Authority. The Contractor's On-site HSE Representative(s) shall be on site during all operational hours. The designated HSE Representative shall participate in all 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.

- 1. Capital Programs may include, but are not limited to, projects involving demolition and construction of; heavy construction, rail projects, highway projects, parking lots and structures, fuel stations, building construction, facility modifications, bus base construction, EPA/DTSC remediation, AQMD air or soil monitoring, fuel tank removal or modification, major bus base modifications, handling potential hazardous waste projects, and similar projects as deemed a Capital Program at the sole discretion by the Authority.
- 2. Facility Modification Projects may include, but are not limited to, projects involving minor demolition and construction or improvement projects for transportation centers, bus base sites and/or building modifications, equipment and/or building upgrades, and similar projects as deemed a Facility Modification Project at the sole discretion by the Authority.
- 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.
- 4. 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.
- C. The Contractor shall designate a Competent Individual for each task, as required by Cal-OSHA standards or laws. The task Competent Individual shall be responsible for the prevention of accidents. If the Authority or any public agency with jurisdiction notifies the Contractor of any claimed dangerous condition at the site that is within the Contractor's care, custody or control, the Contractor shall take immediate action to rectify the condition at no additional cost to the Authority. The Contractor shall be responsible for the payment of all fines levied against the Authority for deficiencies relating to the Contractor's supervision or conduct and/or control of the scope agreement.
- D. On Facility Modification Projects, the Authority Project Manager reserves the right to require the Contractor to provide one additional full-time safety representative with qualifications as identified in section 2.3 (C), above whenever the number of individuals from the Contractor, its subcontractors, suppliers, and vendors meets or exceeds 15 workers, there are multiple scope work sites, or as warranted by the scope of work at the sole discretion by the Authority.
- E. On Capital Programs, the Authority's Project Manager reserves the right to require the Contractor to provide one additional full-time safety representative with qualifications as identified in item 2.3 (C) above whenever the number of individuals from the Contractor, its subcontractors, suppliers, and vendors meets or exceeds 50 workers, or is warranted by the scope of work.

2.4 SITE HSE ORIENTATION

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, a copy of the HSE orientation attendance list shall be provided to the Authority Project Manager. The safety orientation, at a minimum, shall include, as applicable, Personal Protection Equipment (PPE) requirements, eye protection, ANSI class 2 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.

2.5 INCIDENT NOTIFICATION AND INVESTIGATION

- A. The Authority shall be promptly notified of any of the following types of incidents:
 - 1. Damage to Authority property (or incidents involving third party property damage);
 - 2. Reportable and/or recordable injuries (as defined by the U. S. Occupational Safety and Health Administration);
 - 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 general public that arise from the performance of Authority contract work. An initial immediate verbal notification, followed by a written incident investigation report shall be submitted to Authority's Project Manager within 24 hours of the incident.

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, the contributing factors that led to the incident occurrence, a copy of the company policy or procedure associated with the incident and evaluation of effectiveness, copy of the task planning documentation, and the corrective action initiated to prevent recurrence. This information shall be considered the minimum elements required for a comprehensive incident report acceptable to OCTA.

C. A Serious Injury, Serious Incident, OSHA Recordable Injury / Illness, or 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 senior executive from the Contractors' organization to participate in the presentation. The serious incident presentation shall include action taken for the welfare of the injured, a status report of the injured, causation factors leading to the incident, a root cause analysis, and a detailed recovery plan that identifies corrective actions to prevent a similar incident, and actions to enhance safety awareness.

- 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.
- 2. <u>Serious Incident:</u> includes 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, 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. <u>Significant Near Miss Incident</u>; 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.

2.6 REGULAR INSPECTIONS & THIRD PARTY INSPECTIONS

- A. Frequent and regular inspections of the project jobsite shall be made by the Contractor's On-site HSE Representative, or another Competent Individual designated by the Contractor. Unsafe acts and/or conditions noted during inspections shall be corrected immediately.
- B. The Contractor is advised that representatives of regulatory agencies (i.e., CAL-OSHA, EPA, SCAQMD, etc.), upon proper identification, are entitled to access onto Authority property and projects. The Authority Project Manager shall be notified of their arrival as soon as possible.

2.7 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 prewetting 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.
- E. If the Contractor encounters on the site material reasonably believed to be asbestos, polychlorinated biphenyl (PCB) or other Hazardous Substance (as defined in California Health and Safety Code, and all regulations pursuant thereto) which has not been rendered harmless, the Contractor shall immediately stop work in that area affected and report the condition to the Authority in writing. The work in the affected area shall not thereafter be resumed except by written agreement of the Authority and Contractor if in fact the material is asbestos or polychlorinated biphenyl (PCB) or other hazardous substance and has not been rendered harmless. The work in the affected area shall be resumed in the absence of asbestos or polychlorinated biphenyl (PCB) or other hazardous substance, or when it has been rendered harmless, by written agreement of the Authority and the Contractor, or in accordance with a final determination by an Environmental Consultant employed by the Authority.
- F. The Contractor shall not permit any hazardous substances to be brought onto or stored at the Project Site or used in the construction of the work, except for specified materials and commonly used construction materials for which there are no reasonable substitutes. All such materials shall be handled in accordance with all manufacturers' guidelines, warnings and recommendations and in full compliance with all applicable laws. All notices required to be given with respect to such materials shall be given by the Contractor. The Contractor shall not intentionally release or dispose of hazardous substances at the Project Site or into the soil, drains, surface or ground water, or air, nor shall the Contractor allow any Sub-Contractor, subcontractor or supplier or any other person for whose acts the Contractor or any subcontractor, vendor or supplier may be liable, to do so. For purposes of Contract Documents, "hazardous

substance" means any substance or material which has been determined or during the time of performance of the work is determined to be capable of posing a risk of injury to health, safety, property or the environment by any federal, state or local governmental authority.

2.8 VEHICLE AND ROADWAY SAFETY REQUIREMENTS

- A. The Contractor shall ensure that all Contractor vehicles, including those of its subcontractors, suppliers, vendors and employees are parked in designated parking areas, are identified by company name and/or logo, and comply with traffic routes, and posted traffic signs in areas other than the employee parking lots.
- B. Personal vehicles belonging to Contractor employees shall not be parked on the traveled way or shoulders including any section closed to public traffic, or areas of the community that may cause interference or complaints
- C. The Contractor shall comply with California Department of Transportation safety requirements and special provisions when working on highway projects.
- D. The Contractor shall conform to American Traffic Safety Services Association (Quality Standard for Work Zone Control Devices 1992).

2.9 LANGUAGE REQUIREMENTS

For safety reasons, the Contractor shall ensure employees that do not read, or understand English, shall be within visual and hearing range of a bilingual supervisor or responsible designee at all times when on the Authority property or projects.

2.10 PERSONAL PROTECTIVE EQUIPMENT AND CLOTHING

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.

- A. RESPIRATORS (CCR Title 8, Section 5144) The required documentation for training and respirator use shall be provided to the Authority's Project Manager upon request within 72 hours. All compliance documentation as required by CCR Title 8, Section 5144, Respiratory Protective Equipment.
- B. EYE PROTECTION The Authority requires eye protection on construction projects and work areas that meet ANSI Z-87.1 Standards.
- C. BUS BASE Minimum PPE required includes but is not limited to; Eye protection, class 2 reflective vest, steel toe or construction type footwear that meets ANSI Z41 1991 are recommended.

- D. CONSTRUCTION PROJECTS Minimum PPE required includes but is not limited to; hard hat, eye protection, hand protection, class 2 reflective vest, safety toe footwear that meets ANSI Z41 1991 are recommended.
- E. HARD HATS: Approved hard hat that meet ANSI Z89. 1 (latest revision). Hard hats should be affixed with the company/agency logo and/or name. The bill shall be worn forward. Metal hard hats and cowboy style are forbidden on Authority projects.
- F. FOOTWEAR: Enclosed leather that covers the ankles, such as a construction type boot. Employees shall not wear casual dress shoes, open toe, sneakers, sandals, canvas-type shoes, or other shoes that have thin soles or heels that are higher than normal in construction work areas. Safety toe footwear that meets ANSI Z41 1991 are recommended on construction sites and in operating facilities.
- G. CLOTHING/SHIRTS: minimum or waist length shirts with sleeves (4" minimum).
- H. CLOTHING/TROUSERS: Cover the entire leg. If flare-legged trousers are worn, the trouser bottoms must be tied to prevent catching. No sweat pants, or trousers with holes.

2.11 AERIAL DEVICES (CCR Title 8, Section 3648)

Aerial devices are defined in CCR Title 8 as any vehicle-mounted or self-propelled device, telescoping extensible or articulating, or both, which is primarily designed to position personnel. If aerial devices are to be used, the required documentation in CCR Title 8, Section 3648 shall be provided to the Authority's Project Manager, upon request, within 72 hours.

2.12 CONFINED SPACE ENTRY (CCR Title 8, Section 5157)

Before any employee will be allowed to enter a confined space, the required documentation as required by CCR Title 8, Section 5157 shall be provided to the Authority's Project Manager, upon request, within 72 hours.

A. RECOMMENDED: a copy of the most recent calibration record for each air monitoring unit, 3-gas monitor or "sniffer" to be used by the Entry Supervisor prior to entering permit-required confined spaces.

2.13 CRANES

A. Crane activity shall comply with 29 CFR 1926.550, CCR Title 8 Standards, manufacture's recommendations and requirements, applicable American Society of Mechanical Engineers (ASME), and ANSI Standards. In addition, Contractor shall comply with the following requirements: Prior to using mobile cranes, the Contractor shall provide to the Authority Project Manager, items I,

- 2 & 3 of the following documentation a minimum of seven (7) days prior to activity, and item 4 on each day of crane activity.
- 1. Cranes require a submittal of the annual certification, and copy of the cranes most recent quarterly inspection.
- 2. A copy of each crane operator's qualification (NCCCO or equivalent) of company-authorized crane operators that have been properly trained in the equipment's use and limitations. Operator certification as required by CCR Title 8, Section 5006.1.
- 3. A rigging plan is required for all lifts. Critical lifts require an engineered plan designed by a registered professional engineer licensed in the State of California.
- Contractor shall provide the name and qualifications of each "Qualified Rigger" as defined by OSHA.
- 5. Rigging scope activity shall comply with 29 CFR Subparts1926.250, 1929.753 and CCR Title 8 Standards.
- 6. All rigging equipment shall be free from defects, in good operating condition and maintained in a safe condition.
- 7. Rigging equipment shall be inspected by a designated, competent employee prior to initial use on the project, prior to each use, and documented inspections performed regularly. Records shall be kept on jobsite of each of these inspections by contractor and be made available to the Authority upon request within 72 hours.
- 8. Only one (1) sling eye should be in a hook, for multiple slings a shackle shall be used to prevent separation of slings, and prevent stress on weak points of the hook.
- 9. Contractor shall prepare a documented daily crane inspection report.
- B. Pick and carry with rubber tired cranes is forbidden on Authority projects.
- C. Engineered Critical Lifts

A critical lifts is established where any one of the following conditions are created:

- 1. Where in the crane's current configuration at any point during the lift, a gross load weight exceeds 75% of the capacity of the crane.
- 2. A gross weight equal to, or greater than 10 tons.
- 3. Lifts over buildings, equipment, public roadways, structures, or power lines.

- 4. A single lift where two or more cranes are used, including tandem lifts and tailing cranes.
- 5. Lifts made in close proximity of power lines, as defined by CCR Title 8 voltage clearance specifications.
- 6. Lifts involving helicopters, and specialized or unique and complex rigging equipment.
- 7. Hoisting of suspended work platforms.
- 8. Static tower crane erection and dismantlement.
- 9. Making lifts below the ground level where the crane is positioned.

 Note: Where the below the ground lift is minimal (evaluated by California registered professional engineer), a critical lift plan may not be required.

D. Critical Lift Plan

Where a critical lift will be performed, a written critical lift plan shall be submitted to the Authority Project Manager prior to commencing with the lift. The written plan shall include the following:

- 1. Crane manufacturer, capacity, and all specifications for the configuration to be used for the lift.
- 2. Load chart data for the crane to be used to make the lift. Total calculated weight of the load to be lifted including all rigging and other deductions consistent with the manufacturer's load chart.
- Engineering data shall be provided on the hook assembly (manufacture's certification or independent laboratory testing and load testing within the past 60 days), below-the hook rigging, and all specialized below-the-hook lifting devices.
- 4. Diagrams of the lift that provides geometrical conditions of the load, rigging, and all crane positions during the lift. The drawing shall provide the following:
 - A. Locations of all components to be lifted prior, during and after the lift is completed.
 - B. Radius points.
 - C. Swing patterns.

- D. In the event that the lift must be aborted, positions where the load may be safely landed.
- E. Areas where any personnel, public, and vehicles must be evacuated during the lift.
- 5. Potential ground loading for each point of contact by the crane in selected locations in which the crane will perform the critical lift.
- 6. Soil and subsurface data and information pertaining to the location on which the crane used for the critical lift will be positioned. This information shall be procured from an authoritative source such as a geotechnical engineer or a professional civil engineer registered in the state of California.

Note: This information may be available from the Authority for selected locations on some projects.

- 7. An engineer shall use the data provided in #5 and #6 above to verify and confirm the following:
 - A. That the soil and subsurface conditions are capable of supporting all loads imposed during the critical lift.
 - B. That the designs of cribbing and other supports used under the crane load points are appropriate to safely transfer such loads.
- 8. Signature and stamp on the plan by a California registered professional engineer, evidencing review of the plan as meeting the requirements that all loads and load information and calculations contained in the plan are approved, acceptable and safe to perform.
- 9. Operator qualifications.
- 10. Method by which communication will be provided to the crane operator. (Designated signal person, two-way radio, hard wire phone system, etc.).
- 11.A critical lift hazard analysis which identifies the particular hazards (including weather, wind, obstructions, etc.) associated with the lift and the means and methods to reduce, mitigate, or eliminate the hazards.
- 12. Emergency action plan.
- 13. Documentation of lift and pre-job meeting shall be conducted by Contractor's Project Manager.

The written plan shall be submitted 7 days prior to any critical lift for review by the Authority Project Manager and the Authority HSEC department. No critical lifts shall be conducted prior to such review.

E. OVERHEAD CRANES

Before using the Authority overhead cranes, each Contractor shall designate a limited number of employees to attend a training session on the use and limitations of overhead cranes with designated Authority personnel.

2.14 DEMOLITION OPERATIONS (CCR Title 8, Section 1734)

Before starting demolition activities the required documentation shall be provided to the Authority's Project Manager, upon request, within 72 hours. Contractor shall provide all compliance documentation as required by CCR Title 8 Article 31.

- A. The Contractor shall be responsible for visiting and examining the project site to assess and personally determine the extent of demolition, associated work, debris removal, disposal and general work to be done under this section.
- B. The Contractor shall take possession of all demolished materials, except as noted otherwise in the Contract Documents, and be responsible for disposing of them in accordance with applicable laws and regulations. On-site burning or burial of demolition materials will not be permitted.
- C. Provide continuous noise and dust abatement as required, preventing disturbances and nuisances to the public, workers, and the occupants of adjacent premises and the surrounding areas. Dampen areas affected by demolition operation as necessary to prevent dust nuisance.
- D. Site demolition plan: Indicate methods, procedures, equipment, and structures to be employed. Specify safety measures in accordance with applicable codes including signs, barriers, and temporary walkways. Plans shall be prepared by a qualified person (CSP, CIH, CHST, CHMM, etc.), or as necessary by a professional engineer licensed to practice in the State of California, when so required by the provisions of the California Board for Professional Engineer and Surveyors.
- E. Equipment, haul routes, and disposal sites to be used in the demolition and disposal work. Copy of manifests showing delivery of disposed materials in accordance with the plan and permit conditions. Certification that all demolished materials removed from the site have been disposed of in accordance with applicable laws and regulations.

2.15 EXCAVATION OPERATIONS (CCR Title 8, Section 1541)

Before starting excavation activities more than 5 feet deep into which people shall enter, the required documentation shall be provided to the Authority's Project Manager, upon request, within 72 hours. All compliance documentation shall comply with the following CCR Title 8, Section 1541 requirements:

- A. A copy of the Contractor's Excavation Permit.
- B. Attention is directed to the applicable sections of the Labor Code concerning trench excavation safety plans, "Trench Safety." Excavation for any trench 5 feet or more in depth shall not begin until the Contractor has received approval from the Engineer of the Contractor's detailed plan for worker protection from the hazards of caving ground during the excavation of that trench and any design calculations used in the preparation of the detailed plan. Excavations 20 feet or greater shall be engineered and plan stamped by a California registered professional engineer.
- C. The detailed plan shall show the details of the design of shoring, bracing, sloping or other provisions to be made for worker protection during the excavation. No plan shall allow the use of shoring, sloping or a protective system less effective than that required by the Construction Safety Orders of the Division of Occupational Safety and Health. If the plan complies with the shoring system standards established by the Construction Safety Orders, the plan shall be submitted at least five (5) days before the Contractor intends to begin excavation for the trench.
- D. Excavations and trenches shall be inspected by a "Competent Person" daily and after every rainfall to determine if they are safe. Daily inspections shall be recorded. Documentation is to be kept on site and available for review upon request.
- E. Excavations are considered class 'C' soil unless documented testing in accordance with 29 CFR Subpart P, Section 1926.650 and CCR Title 8 Standards supports a class 'B' soil classification and is confirmed and stamped by a California registered professional engineer. In no case will excavations be classified as class 'A' soil.
- 2.16 FALL PROTECTION (CCR Title 8, Sections 1669-1671)

The following standards are required when performing work on Authority property. The required documentation shall be provided to the Authority's Project Manager, upon request, within 72 hours.

- A. Fall protection is required for workers exposed to falls in excess of six (6) feet.
- B. When conventional fall protections methods are impractical or create a greater hazard, a written plan in conformance with CCR Title 8, Article 24, shall be submitted to the Authority a minimum of seven (7) days in advance of the scheduled activity.
- 2.17 FORKLIFTS, BACKHOES AND OTHER INDUSTRIAL TRACTORS (CCR Title 8, Section 3664)

CCR Title 8 defines backhoes as "industrial tractors". All compliance documentation shall be provided as required by CCR Title 8, Section 3664. The following required documentation shall be provided to the Authority's Project Manager, upon request, within 72 hours:

A. A copy of each operator's certificate or a list of company-authorized industrial tractor operators that have been properly trained in the equipment's use and limitations. Please state which equipment, and model each operator has been authorized to operate (i.e. forklifts, backhoe, bulldozer, front-end loader, etc.).

2.18 ELECTRICAL OPERATIONS

HIGH VOLTAGE (CCR Title 8, Sections 2700-2974)

Any work on electrical equipment defined by OSHA as high-voltage, at or above 600 volts, requires specialized training certifications and personal protective equipment. Before any high-voltage work commences, the Authority Project Manger must be notified and must provide approval. The following required NFPA 70E certification and a certificate of training from a recognized organization of a two day high voltage safety training course shall be provided to the Authority's Project Manager, upon request, within 72 hours:

A. A list of the name(s) of the company-designated high voltage Qualified Electrical Worker(s)

LOW VOLTAGE (CCR Title 8, Sections 2299-2599)

Only qualified persons shall work on electrical equipment or systems.

A. <u>Electrical Certification of Training</u>; Contractor employees working on or around electrical panels, wiring, motors, electrical energy sources or similar electrical devices shall have attended a NFPA 70E, Electrical Safety Course and provide to the OCTA Project Manager a copy of employees' NFPA 70E qualification certificate of training for each employee assigned to electrical tasks on OCTA property or projects.

2.19 POWDER-ACTUATED TOOLS (CCR Title 8, Section 1685)

Before using tools such as "Hilti guns" or other powder-actuated tools, the following required documentation shall be provided to the Authority's Project Manager, upon request, within 72 hours.

A. A copy of each qualified person's valid operator card.

2.20 SCAFFOLDS (CCR Title 8, Sections 1635.1-1677)

Scaffold erection shall be in compliance with CCR Title 8 Standards. All compliance documentation shall be provided as required by CCR Title 8, Sections 1635.1-1677. In addition, the Contractor shall comply with the following additional requirements.

A. All scaffolds on Authority project shall be inspected by a competent person qualified for scaffolds in accordance with CCR Title 8 Standards.

- B. Contractor shall arrange for a third party inspection, at least quarterly, by a credentialed professional (insurance carrier, scaffold manufacturer representative, or similar) in addition to the contractors daily self inspections.
- C. A proper scaffold inspection and tagging system shall be maintained identifying compliance status (Example: Green/safe, Yellow/modified-fall protection required, Red/unsafe-do not use).
- D. Contractor shall have a fall protection plan that meets CCR Title 8 Standards for scaffold erectors, an erection/dismantling plan shall be submitted to Authority Project Manager for review prior to start of activity.
- E. Scaffold erection/dismantling shall install handrails beginning on the first level above ground erected, and erectors shall plan erection and dismantling in a manner to maximize handrail protection and minimize employees at unprotected areas.

2.21 WARNING SIGNS AND DEVICES

Signs, signals, and/or barricades shall be visible at all times when and where a hazard exists. Overhead tasks, roofing tasks, excavations, roadwork activity, demolition work, and other recognized hazards shall have guardrail protection, warning barricades, or similar protective measures acceptable to the Authority's Project Manager. Signs, signals, and/or barricades shall be removed when the hazard no longer exists.

2.22 STEEL ERECTION

Steel Erection scope activity shall comply with 29 CFR Subpart R, Section 1926.750, and CCR Title 8 Standards. In addition to OSHA Standards, Contractor shall comply with the following requirements.

- A. Erection planning should incorporate installation methods using aerial devices (man-lifts) and elevated work platforms (scissor lift) to minimize fall hazards of climbing steel where possible. A detailed written job safety analysis (JSA) shall identify installation methods, equipment, and control methods to minimize potential fall hazards.
- B. The Contractor shall not allow any employee to walk the steel unprotected from falls. Contractor employees must be tied-off and "coon" the beam until safety cables are provided to which employees shall use 100% tie-off protection. Two lanyards are required to ensure 100% tie-off protection.
- C. A safe means of access to the level being worked shall be planned. Climbing and sliding down columns are not considered safe access and are forbidden on Authority projects.
- D. A qualified rigger shall inspect the rigging prior to each shift and each lift.

E. Multiple lift rigging (Christmas Treeing) lifts are forbidden on Authority property and controlled projects.

2.23 AUDITS

- A. The Authority may make periodic patrols of the project site as a part of its normal security and safety program. The Contractor shall not be relieved of its aforesaid responsibilities and the Authority shall not assume same, nor shall it be deemed to have assumed, any responsibility otherwise imposed upon the Contractor, as a result of safety patrols by the Authority.
- B. The Authority may audit the Contractor's safety program for HSE compliance at various intervals of the project, at the sole discretion of the Authority. Elements may include, but are not limited to: OSHA injury & illness records and logs, Job Safety Analysis and safety plans, equipment operator licenses and training records, incident reports, meeting minutes, engineered plans, safety meeting records, crane and rigging plans, equipment inspection records, qualifications of and interviews with key Contractor management personnel, and other similar information. The Contractor shall support and cooperate with these audits at no additional compensation or schedule impacts with this contract.

2.24 RAILWAY SAFETY PRECAUTIONS

- A. Work on operating railways shall be in compliance with 49 CFR, Part 214, CCR Title 8 Standards, and the Southern California Regional Rail Authority (SCRRA).
- B. New construction rail projects require that all employers and contractors are responsible to assure employees are trained and understand on-track safety procedures, and follow roadway worker rules identified in 49 CFR, Part 214, CCR Title 8, SCRRA, the California Department of Transportation (CalTrans), and OCTA HSE Construction Management Requirements (i.e., item E references).
- C. Minimum PPE for workers include hard hat, safety glasses, orange (i.e., rail company approved color) class 2 reflective vest, safety toe footwear that meets ANSI Z41 1991 (lace-up type over the ankle) and hearing protection (on person and worn as necessary).

2.25 FINES

The Contractor shall be responsible for the payment of all fines levied against the Authority for HSE violations arising from or related to activities over which Contractor has responsibility per the contract..

2.26 COMPLIANCE COSTS

Compliance with Health, Safety and Environmental Compliance identified in these aforementioned Authority Safety Specifications shall be at the expense of the Contractor, and included in Bid Documents to the Authority for the Contractor's scope. The Authority shall incur no additional cost or schedule impacts by Contractor, for compliance with California Construction Safety Orders, CCR Title 8 Standards, Federal OSHA Standards, and the Authority Safety Specifications for the protection of persons and property.

2.27 REFERENCES

- A. CCR Title 8 Standards (Cal/OSHA)
- B. CFR Including 1910 and 1926 Standards
- C. NFPA, NEC, ANSI, NIOSH Standards
- D. USACE Construction Quality Management Manuel (EM-385-1-1)
- E. Construction Industry Institute (CII)
- F. OCTA Construction Management Procedures Manual
- G. OCTA Yard Safety Rules

END OF DOCUMENT

BID BOOKLET INVITATION FOR BID (IFB) 3-2279 BOOK 2 OF 2

SECURITY GATES INSTALLATION AT ANAHEIM, GARDEN GROVE, AND SANTA ANA BUS BASES



ORANGE COUNTY TRANSPORTATION AUTHORITY

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

Key IFB Dates

Issue Date: February 27, 2023

Pre-Bid Conference/Site Visit: March 9, 2023

Questions/Approved Equal Submittal: March 14, 2023

Bids Submittal Date: March 27, 2023

BID DOCUMENT SUBMISSION CHECKLIST

IFB NO.: 3-2279

PROJECT TITLE: Security Gates Installation at Anaheim, Garden Grove, and Santa Ana Bus Bases

The Orange County Transportation Authority has prepared this checklist as a reminder of the documents required to be submitted with the bid. These documents must be complete, fully executed, notarized where appropriate as required in the bid documents in order to render the bid responsive.

THE FOLLOWING CHECKED DOCUMENTS MUST BE SUBMITTED WITH THE BID:

General IFB Forms:

Bid Form – include all pages 1 through 4.
All addenda must be acknowledged, signed, dated, corporate seal
Bid Security Form: Bid Bond or Check (circle one)
Correct bid number, signed, dated, notarized (bid bond)
Information Required of Bidder
Provide all information, signed
Bidders Certificate of Compliance Regarding Workers Compensation
Insurance
Signed and dated
Bidders Certificate of Compliance Regarding State of California Business
and Professions Code Section 7028.15
Signed, dated, notarized
List of Subcontractors (Exhibit D)
License Number- address/ name should match that associated with License #
on CSLB website, DIR Registration Number, Description of work (one
subcontractor for each portion), Dollar amount and Bidders name at bottom of
form
Status of Past and Present Contracts Form
Signed, dated
Non-Collusion Declaration Form
Signed, dated
Iran Contracting Act Certification Applicable (Bids over \$1,000,000 only)
Signed, dated, (select one option only)

Signature on this Bid Document Submission Checklist is affirmation that items marked above are hereby submitted with the bid. I understand that failure to complete and/or submit any of the required documents may deem my bid non-responsive.

Authorized Signature	Print Name and Title
Firm Name	 Date



BID FORM

The undersigned hereby proposes to perform all work for which a contract may be awarded and to furnish any and all plant, labor, services, material, tools, equipment, supplies, transportation, utilities, and all other items and facilities necessary therefore as required in the IFB 3-2279, "SECURITY GATES INSTALLATION AT ANAHEIM, GARDEN GROVE, AND SANTA ANA BUS BASES", and to do everything required therein; and further proposes that, if this bid is accepted, will contract in the form and manner stipulated to perform all the work in strict conformity therewith within the time limits set forth therein, and will accept as full payment therefore, the following price:

1	Bid Amount	\$
	Bid Amount Allowance:	
2	Unforeseen Interferences	\$ 60,000.00
	Total Lump Sum Bid	
	Amount	\$

A cashier's check/certified check/bid bond (circle applicable term) properly made payable to Orange County Transportation Authority, hereinafter designated as the Owner, for the sum of

Dollars			
(\$			
· · ————			

which amount is not less than ten percent (10%) of the total amount of this bid, is attached hereto and is given as a guarantee that the undersigned will execute the Agreement and furnish the required bonds, "Guaranty" and "Certificate of Insurance", if awarded the contract, and in case of failure to do so within the time provided, (a) the proceeds of said check shall be forfeited to the Authority; or (b) surety's liability to the Authority for forfeiture of the face amount of the bond shall be considered as established [circle (a) or (b)].

The undersigned hereby represents that:

BID FORM, PAGE 2

- Bidder has thoroughly examined and become familiar with the work required and documents included under this IFB. The bidder understands that the award of the contract, if it is awarded, will be based on the lowest total bid submitted by a responsive and responsible bidder, and further, that the amounts and the total on the Bid Form will be subject to verification by the Authority.
- 2. By investigation at the site of the work and otherwise, it is satisfied as to the nature and location of the work and is fully informed as to all conditions and matters, which can in any way affect the work or the cost thereof.
- 3. Bidder fully understands the scope of the work/specifications and has checked carefully all words and figures inserted in said Invitation For Bids (IFB) and further understands that the Authority will in no way be responsible for any errors or omissions in the preparation of this bid. Bidder further asserts that it is capable of performing quality work to meet Authority's requirements.
- 4. Bidder will execute the Agreement and furnish the required Performance and Payment Bonds, Guaranty and proof of insurance coverage within ten (10) calendar days after notice of acceptance of bid by the Authority; and further, that this bid may not be withdrawn for a period of 120 calendar days after the date set for the opening thereof, unless otherwise required by law. If any bidder shall withdraw its bid within said period, the bidder shall be liable under the provisions of the Bid Security, or the bidder and the surety shall be liable under the Bid Bond, as the case may be.
- 5. Bidder hereby certifies that this bid is genuine and not a sham or collusive or made in the interest or on behalf of any person not herein named, and the undersigned has not directly or indirectly induced or solicited any other bidder to put in a sham bid, or any other person, firm, or corporation to refrain from bidding; the undersigned has not in any manner sought by collusion to secure for himself an advantage over any other bidder.
- In conformance with current statutory requirements of Section 1860, et. seq., of the Labor Code of the State of California, the Bidder shall execute the document included in this IFB entitled "Bidder's Certificate of Compliance Regarding Workers' Compensation Insurance."
- 7. Bidder hereby further certifies that each, and every representations made in this

bid are true and correct and made under penalty of perjury.

BID FORM, PAGE 3

- 8. Bidder shall permit the authorized representative of the Authority to inspect and audit all data and records of bidder relating to this bid, and if awarded a contract resulting from this bid, shall permit such inspection and audit of all data and records of bidder related to bidder's performance of such contract.
- 9. Bidder does not employ anyone who is now, or for one (1) year immediately prior to the date of this offer was, a director, officer, member, or employee of the Orange County Transportation Authority. The undersigned has not agreed to pay a fee contingent upon the award of a contract resulting from this bid to anyone who is now, or for one (1) year immediately prior to the date of this bid was, a director, officer, member, or employee of the Orange County Transportation Authority. No member of or delegate to the Congress of the United States shall be admitted to any share of the contract or to any benefit arising therefrom.
- 10. If awarded a contract resulting from this bid, bidder shall not discriminate against any employee or applicant for employment because of race, religion, color, sex, age or national origin. The bidder shall take affirmative action to ensure that applicants are employed, and that employees are treated during their employment, without regard to their race, religion, color, sex, age or national origin. Such actions shall include, but not be limited to the following: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship.
- 11. Bid will be in effect for 120 calendar days after the bid closing date.

BID FORM, PAGE 4

Now: In compliance with the **Invitation For Bids (IFB) 3-2279**, "**SECURITY GATES INSTALLATION AT ANAHEIM, GARDEN GROVE, AND SANTA ANA BUS BASES**", the undersigned, with full cognizance thereof, hereby proposes to perform the entire work in strict compliance with all of the said requirements and provisions for the prices set forth herein upon which award of contract is made. The undersigned affirms that the information provided herein is true and accurate and that any misrepresentations are made under penalty of perjury.

Dated, 202_	Bidder
The above bid includes	Signature
Addenda Nos.	Name
	Title
Bidder's Authorized Representative	
Title	
Telephone #	
Fax#	
Email Address	
Bidders post office address	
Corporation organized under the laws of t	he State of
Contractor's License No.	
Expiration Date of License	
Surety or sureties	
	(CORPORATE SEAL)

BID SECURITY FORM BID BOND

KNOW ALL MEN BY THESE PRESENTS:

That,	as	princip	al and
Bidder and as Sure			
bound unto the Orange County Transportation Authority, of State of			
referred to as "Authority," in the sum of			
Dollars (\$), to be paid to the Authority, its suc	cesso	rs, and a	assigns;
for which payment, well and truly to be made, bind themselves, t			
administrators, successors, and assigns, jointly and severally, firm	ily by	these p	resents,
this amount being ten percent (10%) of the total amount of the Bid.			
THE CONDITION OF THIS OBLIGATION IS SUCH, that if the ce	rtain b	id of the	e above
named bounden principal			
for at t	tho C)rango	County
for at t Transportation Authority's	ile C	nange	as
specifically set forth in documents entitled IFB 3-2279, "	SECI	IDITV	
INSTALLATION AT ANAHEIM, GARDEN GROVE, AND SANTA			
shall not be withdrawn within a period of 120 calendar days afte			
opening of bids, (unless otherwise required by law, and notwithstan			
contract to another Bidder), and that if said bid is accepted by the Au	_		
· · · · · · · · · · · · · · · · · · ·	d if		above
bounden	<i>.</i>	its	heirs,
executors, administrators, successors and assigns, shall execute			,
construction and deliver the required Performance and Payment Bo			
proof of insurance coverage within ten (10) calendar days after n			
award from the Authority, then this obligation shall become null and			
be and remain in full force and effect.			
IN WITNESS WHEREOF, we hereunto set our hands and seals	this _		_ day of
, 202			

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

BID SECURITY FORM CHECK TO ACCOMPANY BID

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

Accompanying this bid is a Certified or Cashiers check (circle the appropriate one) payable to the order of Orange County Transportation Authority, hereinafter referred to as "Authority" for
dollars (\$), this amount being ten percent (10%) of the total
amount of the Bid submitted in response to IFB 3-2279, "SECURITY GATES
INSTALLATION AT ANAHEIM, GARDEN GROVE, AND SANTA ANA BUS BASES".
The proceeds of this check shall become the property of Authority provided this bid shall
be accepted by Authority through action of its legally constituted contracting authorities
and the undersigned shall fail to execute a contract and furnish the required Guaranty
Form, Performance and Payment Bonds and proof of insurance coverage within ten (10)
calendar days after date of notification of contract award from the Authority. The proceeds of this check shall also become the property of the Authority if the undersigned bidder
withdraws the bid within the period of 120 days after the date set for the opening thereof,
unless otherwise required by law, and notwithstanding the award of the contract to
another bidder. Otherwise, the check shall be returned to the undersigned.
Bidder:
Signature:
Date:

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

INFORMATION REQUIRED OF BIDDER

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

1.	Name of Bidder:		
2.	Business Address:		
3.	Telephone ()	Fax ()	E-Mail:
4.	Type of Firm - Individual, Partnership	or Corporation:	
5.	Corporation organized under the laws	of state of:	
6.	Contractor's License No.:	Class	_Years of Experience:
7.	Expiration Date of License:		
8.	Is your firm a certified small business	in California? Yes	_ No
9.	List the names and addresses of all ow	ners of the firm or nan	nes and titles of all officers
	of the corporation:		

INFORMATION REQUIRED OF BIDDER, PAGE 2

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

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

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

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

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

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

•							
12. List the name	e, address and pho	one numb	per of Supe	erintendent for this	s project:		
	truction projects rices as a Superin				perintendent has		
Contract Type (Public or Private)	Project Description	Dates of Service	Total Cost	Name and Address of Owner	Contact Name and Phone Number		
Bidder hereby ce	ertifies that it:						
	is a certified Disa	dvantag	ed Busines	ss Enterprise as d	efined herein.		
	is not a Disadvar	ntaged Bu	usiness En	terprise as define	d herein.		
financial data, or	sted by the Author other information s current financial	and ref	erences su				
I hereby certify th	ne above is true a	nd correc	ct to the be	st of my belief.			
Signature							
Name							
Title							
Company	Name						
Telephone	e Number						
Fax Numb	Fax Number						
Email Add	 Iress						

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

- 1. The Bidders' attention is called to the "Equal Opportunity Clause" and the "Standard Federal Equal Employment Opportunity Construction Contract Specifications" set forth herein.
- 2. The goals and timetables for minority and female participation, expressed in percentage terms for the Contractor's aggregate work force in each trade on all construction work in the covered area, are as follows:

Timetable Goals for Minority Participation for Each Trade (11.9)

Goals for Female Participation in Each Trade (6.9)

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

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

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

BIDDER'S CERTIFICATE OF COMPLIANCE REGARDING WORKERS' COMPENSATION INSURANCE

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

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

Bidder/Contractor:
Signature:
Name and Title:
Date:

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

Contractor License Number:
expiration Date of Contractor's License:
each, every and all of the representations made by Bidder in the attached bid are true and correct.
Name of Bidder/Contractor:
Signed:
Title:
Subscribed to and sworn before me, a Notary Public in and for the State of California, on, 202
Notary Public
My commission expires on:
, 202
(NOTARY SEAL)

LIST OF SUBCONTRACTORS (EXHIBIT D)

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

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

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:	
Term or contract.	
(1) Litigation, claims, settlen	ents, arbitrations, or investigations associated with contract:
(2) Summary and Status of co	ıtract:
(3) Summary and Status of ac	ion identified in (1):
(3) Summary and Status of ac	on identified in (1).
(4) Reason for termination, if	pplicable:
	tatus of Past and Present Contracts," I am affirming that all of the
information provided is true and	ccurate.
Name	Signature
	<u>-</u>
Title	Date

Revised. 03/16/2018

Non-Collusion Affidavit

To the Orange County Transportation Authority

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

Name of Bidder:	 	
Signature:	 	
Date:		