

INVITATION FOR BIDS (IFB) 2-2230
BOOK 1 OF 2

FIRE ALARM CONTROL PANELS REPLACEMENT AT SANTA ANA BUS BASE



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 16, 2022
Pre-Bid Conference/Site Visit:	February 24, 2022
Questions/Approved Equal Submittal:	March 2, 2022
Bid Submittal Date:	March 17, 2022

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February 16, 2022

**SUBJECT: NOTICE INVITING SEALED BIDS
IFB 2-2230, "FIRE ALARM CONTROL PANELS
REPLACEMENT AT SANTA ANA BUS BASE"**

TO: ALL BIDDERS

FROM: ORANGE COUNTY TRANSPORTATION AUTHORITY

The Orange County Transportation Authority (Authority) invites sealed bids for **FIRE ALARM CONTROL PANELS REPLACEMENT AT SANTA ANA BUS BASE**.

This project is for fire alarm control panels replacement at OCTA Santa Ana Bus Base Operations Building located at 4301 West MacArthur Boulevard, Santa Ana, CA 92706. The work to be performed by Contractor shall consist of the construction of the work detailed in the specifications (Exhibit B) and as shown on the drawings (Exhibit C).

The work will include but not limited to removal of existing fire alarm systems including panels, conduits, and wiring in phases. Design and installation of new Orange County Fire Authority (OCFA), California Fire Code (CFC) and NFPA compliant fire alarm systems.

The estimated cost for this project is \$620,000. Bidders will be required to hold a valid State of California C-10 and C-16 Specialty Class license.

Bids must be submitted at or before 11:00 a.m., March 17, 2022.

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, Senior 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, Senior 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:

Category:
Construction

Commodity:
Electrical Contractor
Fire Protection Contractor

A pre-bid conference will be held via teleconference on February 24, 2022, at 1:00 p.m.

The job walk will be held at OCTA Santa Ana Bus Base Operations Building located at 4301 West MacArthur Boulevard, Santa Ana, CA 92706 (Employee Parking Lot).

Prospective bidders may join or call-in using the following credentials:

- [Click here to join the meeting](#)
- OR Call-in Number: 916-550-9867
- Conference ID: 503 985 585#

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 participate in the pre-bid conference and to attend the job walk.

Immediately following the pre-bid conference a job walk will be conducted at OCTA Santa Ana Bus Base Operations Building located at 4301 West MacArthur Boulevard, Santa Ana, CA 92706 (Employee Parking Lot).

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.

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 **February 24, 2022**, at 1:00 p.m.

Prospective bidders may join or call-in using the following credentials:

- [Click here to join the meeting](#)
- OR Call-in Number: 916-550-9867
- Conference ID: 503 985 585#

Immediately following the pre-bid conference, a job walk will be conducted. All prospective bidders are strongly encouraged to attend. Safety vests are required for the job walk.

The job walk will be held at OCTA Santa Ana Bus Base Operations Building located at 4301 West MacArthur Boulevard, Santa Ana, CA 92706 (Employee Parking Lot).

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 participate in the pre-bid conference and attend the job walk.

B. EXAMINATION OF DOCUMENTS

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

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

C. ADDENDA

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

D. AUTHORITY CONTACT

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

Marjorie Morris Threats, Senior 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 2, 2022.
- b.** Requests for approved equals, clarifications, questions must be clearly labeled, "Written Questions". The Authority is not responsible for failure to respond to a request that has not been labeled as such.
- c.** Any of the following methods of delivering written questions are acceptable as long as the questions are received no later than the date and time specified above:
 - 1. U.S. Mail: Orange County Transportation Authority, P.O. Box 14184, Orange, California 92863-1584.
 - 2. Courier/Overnight: Orange County Transportation Authority, 600 South Main Street, 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, Senior Contract Administrator.

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

Category:
Construction

Commodity:
Electrical Contractor
Fire Protection Contractor

Inquiries received after 5:00 p.m. on March 2, 2022, 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 17, 2022.

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, Senior 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, Senior 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 2-2230, "FIRE ALARM CONTROL PANELS
REPLACEMENT AT SANTA ANA BUS BASE"**

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 IV 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 VIII: Level 3 Safety Specifications 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 ($\frac{1}{2}$ 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 2-2230, "FIRE ALARM CONTROL PANELS REPLACEMENT AT SANTA ANA BUS BASE"**, 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	\$
2	<u>Bid Allowance:</u> Orange County Fire Authority Plan Check and Permit Fees	\$ 10,000.00
3	<u>Bid Allowance:</u> Unforeseen Interferences	\$ 40,000
	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

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

BID FORM, PAGE 3

8. Bidder shall permit the authorized representative of the Authority to inspect and audit all data and records of bidder relating to this bid, and if awarded a contract resulting from this bid, shall permit such inspection and audit of all data and records of bidder related to bidder's performance of such contract.
9. Bidder does not employ anyone who is now, or for one (1) year immediately prior to the date of this offer was, a director, officer, member, or employee of the Orange County Transportation Authority. The undersigned has not agreed to pay a fee contingent upon the award of a contract resulting from this bid to anyone who is now, or for one (1) year immediately prior to the date of this bid was, a director, officer, member, or employee of the Orange County Transportation Authority. No member of or delegate to the Congress of the United States shall be admitted to any share of the contract or to any benefit arising therefrom.
10. If awarded a contract resulting from this bid, bidder shall not discriminate against any employee or applicant for employment because of race, religion, color, sex, age or national origin. The bidder shall take affirmative action to ensure that applicants are employed, and that employees are treated during their employment, without regard to their race, religion, color, sex, age or national origin. Such actions shall include, but not be limited to the following: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship.
11. 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 2-2230, "FIRE ALARM CONTROL PANELS REPLACEMENT AT SANTA ANA BUS BASE"**, 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 _____, 2022 Bidder _____

The above bid includes Signature _____

Addenda Nos. _____ Name _____

Title _____

Bidder's Authorized Representative _____

Title _____

Telephone # _____

Fax # _____

Email Address _____

Bidders post office address _____

Corporation organized under the laws of the State of _____

Contractor's License No. _____

Expiration Date of License _____

Surety or sureties _____

(CORPORATE SEAL)

BID SECURITY FORM
BID BOND

KNOW ALL MEN BY THESE PRESENTS:

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

THE CONDITION OF THIS OBLIGATION IS SUCH, that if the certain bid of the above named bounden principal _____

for _____ at the Orange County _____ Transportation Authority's _____ as specifically set forth in documents entitled **IFB 2-2230, "FIRE ALARM CONTROL PANELS REPLACEMENT AT SANTA ANA BUS BASE"**, shall not be withdrawn within a period of 120 calendar days after the date set for the opening of bids, (unless otherwise required by law, and notwithstanding the award of the contract to another Bidder), and that if said bid is accepted by the Authority through action of its legally constituted contracting authorities and if the above bounden _____ its heirs, executors, administrators, successors and assigns, shall execute a contract for such construction and deliver the required Performance and Payment Bonds, "Guaranty," and proof of insurance coverage within ten (10) calendar days after notification of contract award from the Authority, then this obligation shall become null and void; otherwise it shall be and remain in full force and effect.

IN WITNESS WHEREOF, we hereunto set our hands and seals this _____ day of _____, 2022.

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 2-2230, "FIRE ALARM CONTROL PANELS REPLACEMENT AT SANTA ANA BUS BASE"**. The proceeds of this check shall become the property of Authority provided this bid shall be accepted by Authority through action of its legally constituted contracting authorities and the undersigned shall fail to execute a contract and furnish the required Guaranty Form, Performance and Payment Bonds and proof of insurance coverage within ten (10) calendar days after date of notification of contract award from the Authority. The proceeds of this check shall also become the property of the Authority if the undersigned bidder withdraws the bid within the period of 120 days after the date set for the opening thereof, unless otherwise required by law, and notwithstanding the award of the contract to another bidder. Otherwise, the check shall be returned to the undersigned.

Bidder: _____

Signature: _____

Date: _____

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

INFORMATION REQUIRED OF BIDDER

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

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

INFORMATION REQUIRED OF BIDDER, PAGE 2

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

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

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

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

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

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

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

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

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

Bidder hereby certifies that it:

_____ is a certified Disadvantaged Business Enterprise as defined herein.

_____ is not a Disadvantaged Business Enterprise as defined herein.

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

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

Signature

Name

Title

Company Name

Telephone Number

Fax Number

Email Address

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

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

Timetable Goals for Minority Participation for Each Trade (11.9)

Goals for Female Participation in Each Trade (6.9)

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

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

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

BIDDER'S CERTIFICATE OF COMPLIANCE
REGARDING
WORKERS' COMPENSATION INSURANCE

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

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

Name of Bidder/Contractor: _____

Signature: _____

Title: _____

Date: _____

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

Contractor License Number: _____

Expiration Date of Contractor's License: _____

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

Name of Bidder/Contractor: _____

Signed: _____

Title: _____

Subscribed to and sworn before me, a Notary Public in and for the State of California, on _____, 2022.

Notary Public

My commission expires on:

_____, 2022
(NOTARY SEAL)

LIST OF SUBCONTRACTORS (EXHIBIT D)

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

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

Bidder's Name _____

STATUS OF PAST AND PRESENT CONTRACTS FORM

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

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

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

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

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

Name

Signature

Title

Date

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. Failure to submit the completed and signed forms will result in cancellation of the award.

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

The condition of the foregoing obligation is such that,

WHEREAS, said Contractor has been awarded and is about to enter into the annexed
Agreement with the Orange County Transportation Authority for the **IFB 2-2230, "FIRE
ALARM CONTROL PANELS REPLACEMENT AT SANTA ANA BUS BASE,"** as
specified in said Agreement, which is incorporated herein to this bond by reference, and
is required under the terms of said Agreement to give this bond in connection with the
execution thereof;

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

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

WITNESS our hands this _____ day of _____, 2022.

(SEAL)

(Contractor)
By _____

Approved:

(Title)

(SEAL)

(Surety)
By _____

PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS:

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

The Condition of the foregoing obligation is such that,

WHEREAS, said Contractor has been awarded and is about to enter into the annexed Agreement with the ORANGE COUNTY TRANSPORTATION AUTHORITY for the **IFB 2-2230, "FIRE ALARM CONTROL PANELS REPLACEMENT AT SANTA ANA BUS BASE,"** 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 _____, 2022

(SEAL)

(Contractor)

By _____

(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-2-2230, "FIRE ALARM CONTROL PANELS REPLACEMENT AT SANTA ANA BUS BASE"**.

- 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 _____, 2022	_____
	Title
Seal of Notary	_____
	Signature
_____	_____
	Notary PublicDate

SECTION IV: AGREEMENT

1 **AGREEMENT NO. C- 2-2230**

2 **BETWEEN**

3 **ORANGE COUNTY TRANSPORTATION AUTHORITY**

4 **AND**

5 _____
6 **THIS AGREEMENT** is effective this ____ day of _____, 2022 ("Effective
7 Date"), by and between the Orange County Transportation Authority, 550 South Main Street, P.O. Box
8 14184, Orange, CA 92863-1584, a public corporation of the State of California (hereinafter referred to as
9 "AUTHORITY"), and _____ (hereinafter referred to as "CONTRACTOR").

10 **WITNESSETH:**

11 **WHEREAS**, AUTHORITY has determined that it requires fire alarm control panels replacement
12 at the AUTHORITY's Santa Ana Bus Base; and

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

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

16 **WHEREAS**, CONTRACTOR wishes to perform these services; and

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

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

20 **ARTICLE 1. COMPLETE AGREEMENT**

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

26 /

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

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

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

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

17 **ARTICLE 2. AUTHORITY DESIGNEE**

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

20 **ARTICLE 3. SCOPE OF WORK**

21 CONTRACTOR shall provide all labor, equipment, materials and facilities necessary for all work
22 related to Fire Alarm Control Panels Replacement at Santa Ana Bus Base in strict compliance with all
23 the requirements specified herein: and in:

24 Exhibit A, entitled "General Provisions";

25 Addendum No's ;

26 Exhibit B, entitled "Project Specifications";

Exhibit C, entitled "List of Drawings";
 Exhibit D, entitled "List of Subcontractors";
 Exhibit E, entitled "Performance Bond";
 Exhibit F, entitled "Payment Bond";
 Exhibit G, entitled "Guaranty";
 Exhibit H, entitled "Level 3 Safety Specifications"; and
 Exhibit I, entitled "Contract Change Order";

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

ARTICLE 4. DELIVERY / RECOVERY SCHEDULE

A. CONTRACTOR shall fully complete the herein above described work within (**270**) 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.

1 When AUTHORITY accepts CONTRACTOR's Recovery Schedule, CONTRACTOR shall, within five
2 days after AUTHORITY's acceptance, incorporate and fully include such schedule into the Project
3 Schedule and deliver it to AUTHORITY.

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

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

10 **ARTICLE 5. START OF WORK**

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

19 **ARTICLE 6. PAYMENT**

20 A. For CONTRACTOR's full and complete performance of its obligations under this Agreement,
21 and subject to the maximum cumulative payment obligation provision set forth in Article 7, AUTHORITY
22 shall pay CONTRACTOR the firm fixed sum of _____ Dollars (\$_____ .00).

23 B. Progress payments and the final payment will be made by AUTHORITY to CONTRACTOR
24 in accordance with the terms as set forth in Exhibit A, "General Provisions," under the "Progress
25 Payments" and "Final Payment and Claims" sections therein. The acceptance by CONTRACTOR of
26 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 categories shall commence unless authorized in writing by the Engineer. Any costs which exceed, or are less than the bid allowance amount, shall required an adjustment to the maximum cumulative payment obligation amount by 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:

Title: Senior Contract Administrator

Phone:

Phone: (714) 560 - 5552

Email:

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.

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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.

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

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

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

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:

1. 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.

1 D. The Certificate of Insurance shall reference Agreement Number C- 2-2230 and, the Contract
2 Administrator's Name, Marjorie Morris-Threats.

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

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

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

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

13 **ARTICLE 11. BONDS**

14 A. By submitting Exhibit E, entitled "Performance Bond," and Exhibit F, entitled "Payment Bond,"
15 CONTRACTOR shall satisfy AUTHORITY's requirements that CONTRACTOR deposit with AUTHORITY
16 bonds with values in the sum of 100 percent of this Agreement's price to cover CONTRACTOR's failure
17 to fully perform hereunder and CONTRACTOR's failure to pay its labor, material or failure to comply with
18 Article 32 of this Agreement, in performing hereunder. If the contract price is increased in connection
19 with a Change Order, the AUTHORITY may, in its sole discretion, require a corresponding increase in
20 the amount of the Performance and Payment bonds or new bonds covering the Change Order work.

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

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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 2-2230 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.

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.

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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.

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1 C. CONTRACTOR's right to proceed shall not be so terminated nor the CONTRACTOR charged
2 with resulting damage if:

3 1. The delay in completing the work arises from unforeseeable causes beyond the
4 control and without the fault or negligence of CONTRACTOR, including but not restricted to, acts of God,
5 acts of the public enemy, acts or omissions of AUTHORITY, acts of another CONTRACTOR in the
6 performance of an Agreement with AUTHORITY, fires, floods, epidemics, quarantine restrictions, freight
7 embargoes, unusually severe weather, or delays of subcontractors or suppliers arising from
8 unforeseeable causes beyond the control and without the fault or negligence of both CONTRACTOR and
9 such subcontractors or suppliers; and

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

21 3. Should at any time extensions be included by AUTHORITY's Engineer on the Weekly
22 Statement of Contract Calendar Days, a change order covering the sum total of the time extensions will
23 be issued to CONTRACTOR at periodic intervals during the project.

24 D. If, after notice of termination of CONTRACTOR's right to proceed under the provisions of this
25 clause, it is determined for any reason that CONTRACTOR was not in default under the provisions of this
26 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.

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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.

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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. AUTHORITY shall ascertain the facts and extent of the delay and shall extend the time for performance of the Agreement when in its judgment, the findings of fact justify an extension.

ARTICLE 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

1 terms of this clause. CONTRACTOR's warranty with respect to work repaired or replaced hereunder will
2 run for one year from the date of such repair or replacement.

3 B. AUTHORITY shall notify CONTRACTOR in writing within a reasonable time after the
4 discovery of any failure, defect or damage. CONTRACTOR has seven days from receipt of notice from
5 AUTHORITY to respond to AUTHORITY's notification and indicate how CONTRACTOR will remedy the
6 failure, defect, or damage. If AUTHORITY is not satisfied with the remedy proposed by CONTRACTOR,
7 CONTRACTOR and AUTHORITY shall meet and mutually agree when and how CONTRACTOR shall
8 remedy such violation. In the case of an emergency requiring immediate corrective action,
9 CONTRACTOR shall implement such action, as it deems necessary and shall notify AUTHORITY in
10 writing of the urgency of a decision and action taken. CONTRACTOR and AUTHORITY shall, then
11 promptly meet in order to agree on a remedy. If CONTRACTOR and AUTHORITY fail to agree on the
12 remedy within a five-day period, AUTHORITY, after notice to CONTRACTOR, shall have the right to
13 perform or have performed by third parties the necessary remedy, and the costs thereof shall be borne
14 by CONTRACTOR.

15 C. Should CONTRACTOR fail to remedy any failure, defect or damage described in paragraph
16 A above within a reasonable time after receipt of notice thereof, AUTHORITY shall have the right to
17 replace, repair or otherwise remedy such failure, defect or damage at CONTRACTOR's expense and
18 CONTRACTOR shall be liable for all damages, including, but not limited to, actual or consequential
19 damages and cost of any suit to enforce AUTHORITY's rights hereunder, including reasonable attorney's
20 fees.

21 D. In addition to the other rights and remedies provided by this clause, all subcontractors,
22 manufacturers, and suppliers' warranties, expressed or implied, respecting any work and materials
23 furnished hereunder, shall, at the direction of AUTHORITY, be enforced by CONTRACTOR for the benefit
24 of AUTHORITY. In such case if CONTRACTOR's warranty under paragraph A above has expired, any
25 suit directed by AUTHORITY shall be at the expense of AUTHORITY. CONTRACTOR shall obtain any
26 warranties, which the subcontractors, manufacturers or suppliers would give in normal commercial

1 practice and shall cause all subcontractor or supplier warranties to be extend to AUTHORITY.

2 E. If directed by AUTHORITY, CONTRACTOR shall require any such warranties to be executed
3 in writing to AUTHORITY.

4 F. Notwithstanding any other provision of this clause, unless such a defect is caused by the
5 negligence of CONTRACTOR or its subcontractors or suppliers at any tier, CONTRACTOR shall not be
6 liable for the repair of any defects of material or design furnished by AUTHORITY nor for the repair of any
7 damage which results from any such defect in AUTHORITY furnished material or design.

8 G. The warranty specified herein shall not limit AUTHORITY's rights under the Inspection and
9 Acceptance clause of this Agreement with respect to latent defects, gross mistakes or fraud.

10 H. Defects in design or manufacture of equipment specified by AUTHORITY on a "brand name
11 and model" basis shall not be included in this warranty. CONTRACTOR shall require any subcontractors,
12 manufacturers or suppliers thereof to execute their warranties in writing directly to AUTHORITY.

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

15 **ARTICLE 33. GENERAL WAGE RATES**

16 A. All laborers and mechanics employed by CONTRACTOR or subcontractor at any tier working
17 on the construction site, will be paid unconditionally and not less often than once a week and without any
18 subsequent deduction or rebate on any account (except such payroll deductions as are permitted or
19 required by federal, state or local law, regulation or ordinance), the full amounts due at the time of payment
20 computed at wage rates and per diem rate not less than the aggregate of the highest of the two basic
21 hourly rates and rates of payments, contributions or costs for any fringe benefits contained in the current
22 general prevailing wage rate(s) and per diem rate(s), established by the Director of the Department of
23 Industrial Relations of the State of California, (as set forth in the Labor Code of the State of California,
24 commencing at Section 1770 et. seq.), regardless of any contractual relationship which may be alleged
25 to exist between CONTRACTOR or subcontractor and their respective mechanics, laborers,
26 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.

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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.

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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.

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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.

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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.

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.

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

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

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

13 **ARTICLE 48. FORCE MAJEURE**

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

21 **/HEALTH AND SAFETY SPECIFICATIONS**

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

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ORANGE COUNTY TRANSPORTATION AUTHORITY

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

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

hereunder.

7. The Contractor shall pay subcontractors, promptly upon receipt of each Authority progress payment; the respective amounts allowed the Contractor on account of the work performed by subcontractors, to the extent of each such subcontractor's interest therein. Such payments to subcontractors shall be based on estimates made pursuant to this Agreement. Any diversion by the Contractor of payments received for prosecution of a contract, or failure to reasonably account for the application or use of such payments, constitutes ground for termination of the Contractor's control over the work and for taking over the work, in addition to disciplinary action by the Contractor's State License Board. The subcontractor shall notify, in writing, the Contractor's State License Board and the Authority of any payment less than the amount or percentage approved for the class or item of work as set forth in this Agreement.
8. In addition to other amounts properly withheld under this Agreement, the 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,

(Name)

(Title)

(Company)

herby certifies that the claim for the additional compensation and time, if any, made herein for the work on this Contract is a true statement of the actual cost incurred and time sough, and is fully documented and supported under the Contract between the parties

Dated: _____

Signature: _____

Subscribed and sworn before this _____ day of _____, 20
_____.

Notary Public

My Commission Expires: _____

E. FINAL PAYMENT

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

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

F. EXTRA WORK AND CHANGES

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

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

a. Materials

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

b. Labor

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

c. Equipment

1. Equipment will be paid for as a rental charge whether owned by the Contractor or not, and said rental rates prevailing in the area for comparable equipment will be paid. To the direct costs of "Equipment Rental" will be added a not more than fifteen percent (15%) markup.
2. All extra work at Force Account shall be adjusted daily upon report sheets prepared by the Engineer, furnished to the Contractor and signed by both parties. Said daily reports shall thereafter be considered the true record of all extra work done. The decision of the Engineer as to whether extra work has in fact been performed shall be conclusive and binding upon both parties to the contract.

4. A contract change order approved by Authority may be issued to the Contractor at any time. Should the Contractor disagree with any terms or conditions set forth in the contract change order, the Contractor shall submit a written protest to the Authority within 15 days after the receipt of the contract change order. The protest shall state the points of disagreement and, if possible, the contract specification references, quantities and costs involved. If a written protest is not submitted within the above period, payment will be made as set forth in the approved contract change order and such payment shall constitute full compensation for all work included therein or required thereby. Such unprotested approved contract change orders will be considered as executed

contract change orders.

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

G. EXTENDED FIELD OFFICE OVERHEAD COSTS

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

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

H. ACCELERATION

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

I. VALUE ENGINEERING

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

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

1. Requires a change to the contract.

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

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

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

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

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

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

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

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

J. STOP NOTICES

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

K. ORDER OF WORK

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

L. LABOR PROVISIONS

1. Prevailing Wages

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

2. Minimum Wages

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

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

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

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

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

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

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

4. Payrolls and Basic Records

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

5. Apprentices and Trainees

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

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

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

6. Compliance With Copeland Regulations (29 CFR Part 3)

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

7. Contract Termination; Debarment

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

8. Overtime Requirements

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

9. Violation; Liability for Unpaid Wages

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

10. Withholding for Liquidated Damages

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

11. Final Labor Summary

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

12. Final Certificate

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

The undersigned, Contractor on

(Contract No.)

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

Signature and Title

13. Notice to the Authority of Labor Dispute

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

14. Disputes Clause

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

15. Convict Labor

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

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

16. Insertion in Subcontracts

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

17. Certified Payrolls

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

M. TIME EXTENSION/DELAYS

- a. Contractor may be granted an extension of time for any portion of a delay in completion of the work due to acts of God, the public enemy, wars, civil unrest, fires, quarantine restrictions, or weather more severe than normal, providing that (1) the aforesaid causes were not foreseeable and did not result from an act or omission by the Contractor, (2) Contractor has taken reasonable precautions to prevent further delays owing to such causes, and (3) Contractor notifies Authority in writing of the cause(s) for the delay within

ten (10) days from the beginning of any such delay. No claims for additional compensation or damages for the foregoing delays shall be allowed to the Contractor, and the extension of time provided for herein shall be the sole remedy of the Contractor on account of any such delays.

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

grounds for extension of time. Should the Contractor be delayed at any time for any period by two or more of the causes specified in this article, Contractor shall only be entitled to one time extension for the entire delay.

- g. Any time extension granted to Contractor shall not release the Contractor or surety from its obligations. Work shall continue and be carried on in accordance with the contract provisions, unless formally suspended or terminated by the Authority.

N. NONDISCRIMINATION

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

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

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

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

O. TITLE VI OF THE CIVIL RIGHTS ACT OF 1964

Contractor agrees to comply with and ensure compliance by all subcontractors with all requirements of Title VI of the Civil Rights Act of 1964, as amended, 42 U.S.C. §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);
 - 4) American Indians and Alaskan Native (all persons having origins in any of the original peoples of North America and maintaining identifiable tribal affiliations through membership and participation or community identification);
 - 5) Women regardless of ethnicity.

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

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

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

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

5. A single goal for minorities and a separate single goal for women have been established. The Contractor, however, is required to provide equal employment opportunity and to take affirmative action for all minority groups, male and female, and all women, both minority and nonminority. Consequently, the Contractor may be in violation of the Executive Order if a particular group is employed in a substantially disparate manner (for example, even though the Contractor has achieved its goals for women generally, the Contractor may be in violation of the Executive Order 11246 if a specific minority group of women is underutilized.)
6. The Contractor shall not use the goals and timetables or affirmative action standards to discriminate against any person because of race, color, religion, sex or national origin.
7. The Contractor shall not enter into any subcontract with a person or firm debarred from Government contracts pursuant to Executive Order 11246.
8. The Contractor shall carry out such sanctions and penalties for violation of these specifications and of the Equal Opportunity Clause, including suspension, termination and cancellation of existing subcontracts as may be imposed or ordered pursuant to Executive Order 11246, as amended, and its implementing regulations by the Office of Federal Contract Compliance Programs. Any Contractor who fails to carry out such sanctions and penalties shall be in violation of these specifications and Executive Order 11246, as amended.
9. The Contractor, in fulfilling its obligations under these specifications, shall implement specific affirmative action steps, at least as extensive as those standards prescribed in item 7 of these specifications, so as to achieve maximum results from its efforts to ensure equal employment opportunity. If the Contractor fails to comply with the requirements of the Executive Order, the implementing regulations, or these specifications, the Director shall proceed in accordance with 41 C.F.R. 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 inquiries from the news media or other public sources to the Authority's Project Manager, or designated representative, relating to this project.

Y. COORDINATION AND ACCESS

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

Z. UTILITIES RELATED DELAYS

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

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

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

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

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

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

AA. UTILITIES AND SUBSURFACE STRUCTURES

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

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

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

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

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

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

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

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

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

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

Contractor's construction operations or delays due to a strike or labor dispute). These delays will be considered utilities related delays within the meaning of Section 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

Fire Alarm Control Panels Replacement

AT

Santa Ana Bus Base

PROJECT SPECIFICATIONS

C-2-2230

February 9, 2022

ORANGE COUNTY TRANSPORTATION AUTHORITY

FIRE ALARM CONTROL PANELS REPLACEMENT AT SANTA ANA BUS BASE

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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

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AT SANTA ANA BUS BASE**

**C-2-2230
EXHIBIT B**

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
- G. Work Plan process (SSWP)
- H. Ownership of Materials:
 - 1. Materials furnished by the Contractor under this contract shall become the property of the OCTA.
- I. General Summary of Work:

This project is classified as "Facility Modification Project" and Contractor is required to meet all Facility Modification Project safety requirements specified in OCTA's Level 3 Health Safety and Environmental Specifications.

- 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 the following items at Santa Ana Bus Base located at 4301 West MacArthur Boulevard, Santa Ana, CA 92706.
 - 3.1 Removal of existing fire alarm systems including panels, conduits, and wiring in phases.
 - 3.2 Design and installation of new fire alarm systems fully compliant with Orange County Fire Authority (OCFA), California Fire Code (CFC) and NFPA requirements.
 - 3.3 NEC Class I Division I installation in areas with presence of Hydrogen gas.
 - 3.4 NEC Class I Division II installation in areas with presence of Methane gas.
 - 3.5 Integration with, monitoring of, and reporting on operations of existing Hydrogen gas detection systems.
 - 3.6 Integration with, monitoring of, and reporting on operations of existing Methane gas detection systems.
 - 3.7 Monitoring of and reporting on operations of an existing HFC-227ea system that protects Server Room of I-405 Toll Operations Center.

- J. Other features of the work include, but are not limited to, the following:
1. Complete mobilization and demobilization.
 2. Obtaining of necessary construction and related permits from various jurisdictional agencies. Contractor shall be responsible for all related fees from various jurisdictional agencies.
 3. 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 3:30 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

**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 3:30 pm Monday through Friday unless approved in writing in advance by OCTA and appropriate regulatory agencies.

**FIRE ALARM CONTROL PANELS REPLACEMENT
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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

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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) day 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 implement BMP's during work. See Section 01 57 13, Temporary Erosion and Sedimentation Control, for additional requirements.
- B. Use best management practices (BMPs) Contractor proposes in connection with the execution of construction activity at the project site. Use applicable BMPs included in the Construction Site Best Management Practices (BMPs) Manual prepared by the California Stormwater Quality Association, www.cabmphandbooks.com.
- C. Provide copies of the approved
- D. SWPPP and BMP to subcontractors and keep a copy available onsite at the project office. Provide amendments to the 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 plan to the OCTA for review and approval as soon as practicable, and retain the amended plan on site.
- E. Preparation and implementation of an OCTA-approved 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.
- I. 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 RWQCB. 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

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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.

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5. 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 ultra-low 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

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 fire-sensitive 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 from 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 storm water 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:
 1. 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

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SECTION 01 25 00

SUBSTITUTION PROCEDURES

PART 1 - GENERAL

1.01 SUMMARY

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.
 - b. 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.
2. 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 require 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.
 - l. 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:

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1. Requested substitution is submitted within the time frame stated herein above.
 2. 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.

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- 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.

END OF SECTION

SECTION 01 26 00

CONTRACT MODIFICATION PROCEDURES

PART 1 – GENERAL

1.01 SUMMARY

A. Section Includes:

1. 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.
1. 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:
 - 1. 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) 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.

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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 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. 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.

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- B. Submit, under the provisions of Section 01 33 00, Submittals, and a Schedule of Values including the following information:
1. 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. 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.
 3. 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).
 4. Upon request by OCTA, support values given with data, which will substantiate the correctness of the values.
 5. 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 pre-construction 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

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SECTION 01 31 00

PROJECT MANAGEMENT AND COORDINATION

PART 1 – GENERAL

1.01 SUMMARY

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.
 - j. Responsibility for temporary facilities and controls.
 - k. Procedures for disruptions and shutdowns.
 - l. 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:
- a. 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.
- l. 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.

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PART 4 - MEASUREMENT AND PAYMENT

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

END OF SECTION

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)

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- 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.
 2. 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's 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.

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- 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.
 - 3. 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 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 provide, unless otherwise indicated, five (5) hard copies of each submittal.
- F. Contractor shall, before making submittals, ensure that products will be available in the quantities and in the time required by the Contract.
- G. 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.
- H. Contractor shall maintain a file of all approved submittal documents on work site.
- I. 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.
- J. 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.
- K. Submittals Identification: Identify each submittal by Specification Section number followed by a number indicating sequential submittal for that Section. Re-submittals shall use same number as original submittal, followed by a letter R and a number indicating sequential re-submittal. For example:
 - 3300-1 First submittal for Section 3300 – Asphalt Concrete Mix Design
 - 3300-2 Second submittal for Section 3300 – Asphalt Concrete Mix Design.
 - 3300-2-R1 Re-submittal of second submittal for Section 3300 – Asphalt Concrete Mix Design.
 - 3300-2-R2 Second re-submittal of second submittal for Section 3300 – Asphalt Concrete Mix Design.
- 1. Title each submittal with Project name, the Authority's Project number, Submittal number, Sequence number of Submittal, 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.
- L. 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.
- M. 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".
- N. Contractor shall be responsible for timely delivery of submittals in the proper specified format for each submittal category.
- O. Except as otherwise indicated in individual work sections, the Contractor shall comply with requirements specified herein for each indicated category of submittal.
- P. The Contractor shall include an up-to-date log of submittals in each submittal package.
- Q. 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.
- R. Unsolicited Submittals: Unsolicited submittals will be returned un-reviewed.
- S. 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 SHOP DRAWINGS

- A. 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.

- B. 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.
- C. 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.
- D. 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.
- E. 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.
- F. 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. Conforms with Corrections as Noted
 3. Revise as Noted and Resubmit.
 4. Rejected. Resubmit
 5. 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" or "Conforms with Corrections as Noted". 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" OR "CONFORMS WITH CORRECTIONS AS NOTED"

- 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" or "Conforms with Corrections as Noted" by OCTA Project Manager.
- E. Where drawings are stamped " Conforms with Corrections as Noted" OCTA Project Manager shall indicate the corrected detail or information as required.
- F. 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. Re-submittals shall use the same number as original submittal but will be modified by R and number of re-submittal in the suffix.
- 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:

1. 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.
3. 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.
- B. When finished surfaces are cut so that a smooth transition is not possible, terminate existing surface along a straight line at a natural line of division. Refer to Section 01 73 29 - Cutting and Patching.

3.05 ADJUSTMENTS

- A. Where removal of materials results in adjacent spaces becoming one, rework to a smooth plane without breaks, steps or bulkheads.
- B. Where a change of plane of 1/4-inch or more occurs, submit recommendation for providing a smooth transition for the Engineer's review.
- 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.

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END OF SECTION

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. Material 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.

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- 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

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.

1.05 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.

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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

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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:
1. 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 City of Laguna Beach.

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 DEFINITIONS OF TERMS

- A. Words and Terms Used on Drawings and in Specifications: Additional words and terms may be used in the Drawings and Specifications and are defined as follows:
1. Applicable: As appropriate for the particular condition, circumstance or situation.
 2. Approved: Limited to duties and responsibilities of the Authority and the Engineer as stated in the Conditions of the Contract, for actions performed in the professional judgment of the Engineer or the Engineer's responsible design consultant, in conjunction with submittals, applications, and requests. Approvals shall be valid only if obtained in writing and shall not apply to matters regarding the means, methods, techniques, sequences and procedures of construction. Approval action shall not relieve the Contractor from responsibility to fulfill Contract requirements.
 3. And/or: If used, shall mean that either or both of the items so joined are required.
 4. Authority or Owner: The Orange County Transportation Authority, a legal entity organized and existing in the County of Orange under and by virtue of the laws of the State of California. All necessary action by the Authority pertaining to the contract will be taken by legally constituted authorities empowered to on behalf of the Orange County Transportation Authority.
 5. Contractor: shall mean the individual, partnership, corporation, or other legal entity entering into contract with the Authority to perform the work covered by the contract documents, and these specifications.
 6. Directed: Limited to duties and responsibilities of the Engineer as stated in the Conditions of the Contract, and meaning as instructed by the Engineer, in writing, regarding matters other than the means, methods, techniques, sequences and procedures of construction. Terms such as "directed", "requested", "authorized", "selected", "approved", "required", and "permitted" mean "directed by the Engineer", "requested by the Engineer", and similar phrases. No implied meaning shall be interpreted to extend the Engineer's responsibilities into the Contractor's supervision of construction.
 7. Equal or Equivalent: As determined by the Engineer as being equivalent, considering such attributes as durability, finish, function, suitability, quality, utility, performance, and aesthetic features.
 8. Engineer: shall mean the Project Manager of the Orange County Transportation Authority, acting either directly or through properly authorized agents or representatives acting within the scope of the particular duties entrusted to them.
 9. Furnish: Means "supply and deliver, to the Project site, ready for unloading, unpacking, assembly, installation, and similar operations."
 10. Indicated: The term "indicated" refers to graphic representations, notes, or schedules on the Drawings, or other Paragraphs or Schedules in the

Specifications, and similar requirements in the Contract Documents. Terms such as "shown", "noted", "scheduled", and "specified" are used to help the reader locate the reference. There shall be no limitation on location.

11. Install: Describes operations at the Project site including the actual unloading, unpacking, assembly, erection, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning and similar operations.
12. Installer:
 - a. "Installer" refers to the Contractor or an entity engaged by the Contractor, such as an employee, subcontractor, or sub-subcontractor, for performance of a particular construction activity, including installation, erection, application and similar operations. Installers shall be adequately skilled and experienced in the operations they are engaged to perform.
 - b. Experienced Installer: The term "experienced," when used with "installer" shall mean having a minimum of 5 previous projects similar in size to this Project, knowing the precautions necessary to perform the Work, and being familiar with requirements of authorities having jurisdiction over the Work.
13. Jobsite: Same as "Site."
14. Necessary: With due consideration of the conditions of the Project and, as determined in the professional judgment of the Engineer as being necessary for performance of the Work in conformance with the requirements of the Contract Documents, but excluding matters regarding the means, methods, techniques, sequences and procedures of construction.
15. Noted: Same as "Indicated."
16. Per: In accordance with or in compliance with.
17. Products: Material, system or equipment.
18. Project Site: Same as "Site."
19. Proper: As determined by the Engineer as being proper for the Work, excluding matters regarding the means, methods, techniques, sequences and procedures of construction, which are solely the Contractor's responsibility to determine.
20. Provide: "Furnish and install, complete, and ready for the intended use."
21. Regulation: Includes laws, ordinances, statutes and lawful orders issued by authorities having jurisdiction, as well as and rules, conventions and agreements within the construction industry that control performance of the Work.
22. Required: Necessary for performance of the Work in conformance with the requirements of the Contract Documents, excluding matters regarding the

means, methods, techniques, sequences and procedures of construction, such as:

- a. Regulatory requirements of authorities having jurisdiction.
- b. Requirements of referenced standards.
- c. Requirements generally recognized as accepted construction practices of the locale.
- d. Notes, schedules and graphic representations on the Drawings.
- e. Requirements specified or referenced in the Specifications.
- f. Duties and responsibilities stated in the Bidding and Contract Requirements.

23. Scheduled: Same as "Indicated."

24. Selected: As selected by the Engineer or Authority from the full selection of the manufacturer's products, unless specifically limited in the Contract Documents to a particular quality, color, texture, or price range.

25. Shown: Same as "Indicated."

26. Site: Same as "Jobsite", "Site of the Work" or "Project Site;" the area or areas or spaces occupied by the Project and including adjacent areas and other related areas occupied or used by the Contractor for construction activities, either exclusively or with others performing other construction on the Project. The extent of the Project Site is shown on the Drawings, and may or may not be identical with the description of the land upon which the Project is to be built.

27. Subcontractor: The individual, partnership, corporation or other legal entity entering into a contract with the Contractor to perform a portion of the work.

28. Testing Laboratory or Laboratories: Same as "Testing and Inspection Agency."

29. Testing and Inspection Agency: An independent entity engaged to perform specific inspections or tests, at the Project Site or elsewhere, and to report on, and, if required, to interpret, results of those inspections or tests.

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
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	(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
FT or ft	Foot or feet
Gal or gal	Gallons
GPM or gpm	Gallons per minute
IN or in	Inch or inches
Kip or kip	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. Dictionary of Architecture and Construction, (Cyril M. Harris, McGraw-Hill Book Company, 1975).

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4. Encyclopedia of Associations, 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 Sanitary Engineering
ASTM	ASTM International (formerly American Society for Testing and Materials)
AWI	Architectural Woodwork Institute
AWPA	American Wood Protection Association (formerly American Wood-Preservers' Association)
AWS	American Welding Society
BHMA	Building Hardware Manufacturers Association
Cal/EPA	California Environmental Protection Agency
Cal/OSHA	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

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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

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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

1.03 REFERENCE STANDARDS

A. General

1. 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

1. 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.

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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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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.
1. 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.

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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 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

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 in-service 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.

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- f. When testing is complete, remove test specimens, assemblies, mockups, and laboratory mockups; do not reuse products on project.
2. 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.

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.

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END OF SECTION

SECTION 01 43 01

CONTRACTOR QUALIFICATIONS AND REQUIREMENTS

PART 1 – GENERAL

1.01 CONTRACTOR DUTIES

- A. Except as specifically noted otherwise, provide:
 - 1. 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

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- 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.

END OF 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.

1.03 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.

1.04 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.

1.05 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.

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- 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.

1.05 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.
- F. Inspections by Independent Testing and Inspection Agency or Agencies: The following applies to tests and inspections:
1. The Authority will select and pay for an independent testing and inspection laboratory or agency, to conduct tests and inspections as indicated on Drawings or Specifications, and as required by authorities having jurisdiction.
 2. Costs for additional tests, inspections and related services, due to the following, shall be reimbursed to the Authority by the Contractor and no change in Contract Time shall result.

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- a. Failure to properly schedule or notify testing and inspection agency or authorities having jurisdiction.
 - b. Changes in sources, lots or suppliers of products after original tests or inspections.
 - c. Changes in means methods, techniques, sequences and procedures of construction which necessitate additional testing, inspection and related services.
 - d. Changes in material after review and acceptance of submittal.
3. 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.
- G. 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.
- H. After examination, Contractor shall restore the work to the standard required by the contract documents. If the work examined proves acceptable, uncovering, removal, and replacement of the work in question will be paid for by OCTA by change order to

the Contractor; but if the work proves unacceptable, the uncovering or removal and replacement of the work in question shall be at the Contractor's expense. 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.

- I. 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.
- J. 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.

- K. 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.
- L. 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.
- M. 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.
- N. 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.
- O. 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.

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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:
 - 1. 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:

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1. 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.
 2. 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).

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 Caltrans standard plans, 2010 edition.
2. Temporary Fiber Rolls and Straw Bales: Provide fiber rolls and straw bales with staking per Caltrans standard plans, 2010 edition. 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 Caltrans standard plans, 2010 edition.
4. Gravel bags per Caltrans standard plans, 2010 edition.

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.
- 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:

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1. 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:

1. 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:

1. 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 Caltrans standards plans, 2010 edition:
 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.
3. 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.
5. 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.

5. 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 power-operated equipment. Nameplates shall contain identifying information and essential operating data such as the following example:

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

1. 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.
3. 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 - MEASUREMENT AND PAYMENT

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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:

1. 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.

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- 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 begin of demolition work. 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

**FIRE ALARM CONTROL PANELS REPLACEMENT
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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:
 - 1. 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

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damage to OCTA buses, property, equipment, utilities, and OCTA personnel. All precautions are to be 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

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

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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

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.
- I. 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.

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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 49 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-through 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:
1. 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.
 4. 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.
 3. 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.
 2. 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

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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 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:
1. 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 title 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.

5. 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.
 5. 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 the shop drawings 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.
 3. 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.

2. 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, cross-referenced 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 contact.
 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. As-Built drawings and photographs will be reviewed each month by the OCTA Project Manager. The monthly payment will be reduced by 5% if, in the opinion of the OCTA Project Manager, the Contractor is not in conformance with the requirements of this section.

**FIRE ALARM CONTROL PANELS REPLACEMENT
AT SANTA ANA BUS BASE**

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**FIRE ALARM CONTROL PANELS REPLACEMENT
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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.

**FIRE ALARM CONTROL PANELS REPLACEMENT
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EXHIBIT B**

SAMPLE

Preventive Maintenance and Operating Requirement Sheets

Preventive Maintenance Program		Equipment Record Number	
EQUIPMENT DESCRIPTION		ELECTRICAL OR MECHANICAL DATA	
Name: Pump No. 1 Tag No.: P01-1		Size: 15 hp	
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*
1. 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.		D	
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.

**FIRE ALARM CONTROL PANELS REPLACEMENT
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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*
4. Lubricate bearing frame and motor bearings (consult manufacturer's instructions for type of grease or oil).			Q
5. Disassemble and change or repair the following a) 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.

**FIRE ALARM CONTROL PANELS REPLACEMENT
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END OF SECTION

SECTION 01 78 36

WARRANTIES, GUARANTEES, AND BONDS

PART 1 - GENERAL

1.01 DESCRIPTION

A. Work Included:

1. 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.

1.02 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 through 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.
 - 2. 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.

1.04 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.

1.05 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.

**FIRE ALARM CONTROL PANELS REPLACEMENT
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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, Manufacturer, or Supplier)

By_____

Title_____

State License No._____ Date_____

(Contractor)

By_____

State License No._____ Date_____

Local Representative. For maintenance, repair, or replacement service, contact:

Name:_____

Address:_____

Phone Number:_____

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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.
 - 2. Transcript: Prepared on 8-1/2-by-11-inch paper, punched and bound in heavy-duty, 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. Pre-Instruction 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:
 - a. 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.
 - l. 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

1.1 REFERENCE STANDARDS

- A. The following is a list of standards which may be referenced in this Section:
 - 1. American National Standards Institute (ANSI): A10.6, Safety Requirements for Demolition Operations.
 - 2. Standard Specifications for Public Works Construction ("Standard Specifications"), 2018 Edition.

1.2 SUBMITTALS

- A. Existing Conditions: Contractor shall provide documentation of existing items, adjoining construction and site improvements, actual locations of capped conduits and equipment abandoned in place that establishes preconstruction conditions that might be misconstrued as damage caused by site clearing.
 - 1. Use sufficiently detailed photographs or video, which shall be submitted digitally.
 - 2. Include plans and notations to indicate damage.
- C. Weight Tickets: Submit weight tickets provided by the receiving Landfill.

1.3 QUALITY ASSURANCE

- A. Regulatory Requirements: Contractor shall comply with hauling and disposal regulations of authorities having jurisdiction.

1.4 PROJECT CONDITIONS

- A. Contractor shall not commence demolition or earth moving operations until temporary erosion and sedimentation control measures, specified in Section 312000 "Earthwork", Subsection 3.1 "Temporary Erosion and Sedimentation Control" are in place.
- B. Contractor shall maintain dust control at all times by watering.

- C. Contractor shall accurately locate all existing utilities to identify any conflicts with the proposed work.
- D. Contractor shall scan the work area using a metal detector of adequate strength prior to any excavation. Contractor shall be responsible for locating, protecting, and documenting on Record Drawings, all manholes, water valves, utility access frames and covers or other metal appurtenances buried below the existing pavement surface whether shown on the plans or not. Contractor shall notify Engineer immediately of any existing utility found that is not shown on the plans.
- E. Contractor shall protect in place existing improvements and utilities if specified to be protected in place in the plans.
- F. Any existing site improvements (not indicated on the plans to be removed) that are damaged during demolition operations shall be restored (at the expense of the contractor) to their original conditions, as acceptable to Engineer.
- G. Contractor shall remove all existing site improvements indicated on plans and as required for installation of new improvements.
- H. Contractor shall remove or abandon all existing utilities indicated on plans.
- I. Contractor shall comply with federal, state, and local hauling and disposal regulations. In addition to the requirements of the General Conditions, Contractor's safety requirements shall conform to ANSI A10.6.
- J. Contractor shall conduct demolition to minimize interference with adjacent building and parking lot areas.
- K. Contractor shall restore and clean-up site once site clearing operations are completed.
- L. If any material found within the Contractor's work area appears to be contaminated, it shall be handled per the contract documents.

1.5 DEFINITIONS

- A. ACM: Asbestos-containing material.
- B. ACP: Asbestos Cement Pipe
- C. Demolition: Dismantling, razing, destroying, or wrecking of any fixed building, structure, surface or subsurface feature, site element, or any part thereof.
- D. Remove: Detach items from existing construction and legally dispose of them to land fill off-site unless indicated to be removed and salvaged or removed and reinstalled.
- E. Modify: Provide all necessary material and labor to modify an existing item to the condition indicated or specified.

- F. Relocate: Remove, protect, clean and reinstall equipment, including electrical, instrumentation, and all ancillary components required to make the equipment fully functional, to the new location identified on the Drawings.
- G. Salvage/Salvageable: Remove and deliver, to the specified location(s), the equipment, building materials, or other items so identified to be saved from destruction, damage, or waste; such property to remain that of Engineer. Unless otherwise specified, title to items identified for demolition shall revert to Contractor.

PART 2 - PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.1 PROTECTION

- A Protection of Existing Site Improvements:
 - 1. Survey the site and examine the Drawings and Specifications to determine the extent of the Work before beginning construction operations.
 - 2. Take necessary precautions to avoid damage to existing items scheduled to remain in place, to be reused, or to remain the property of Engineer; any Contractor-damaged items shall be repaired or replaced as directed by Engineer.
 - 3. Do not overload pavements to remain. Pavement outside work area damaged by Contractor due to Contractor operations shall be restored to preconstruction conditions at no cost to OCTA. Contractor shall ensure that condition of existing pavement outside of work area is documented and included as part of the existing conditions submittal (1.3.A) to the Engineer.
 - 4. Do not overload already stabilized areas until Engineer agrees it is acceptable to do so.
- B. Protection of Personnel:
 - 1. During demolition, continuously evaluate the condition of the existing improvement being demolished and take immediate action to protect all personnel working in and around the demolition site.
 - 2. Provide temporary barricades and other forms of protection to protect OCTA personnel, subcontractor personnel, and any other people who may be present from injury due to demolition Work.
 - 3. Provide protective measures as required to provide free and safe passage of OCTA personnel, subcontractor personnel, and any

other people who may be present to occupied portions of the structure.

3.2 RELOCATION OF EMERGENCY MATERIAL STORAGE CONTAINER

- A. Survey the site for existing improvements and utilities necessary for demolition, relocation and new work.
- B. Relocate the existing emergency material storage container as shown on plans prior to surveying and scanning for the existing underground utilities.
- C.

3.3 SAWCUT AND REMOVAL OF EXISTING PCC CURB, PAVEMENT AND SLAB

- A. Sawcut existing PCC curb, pavement and slab as required for new improvements.
- B. Legally remove, dispose, and recycle PCC waste materials as required.

3.4 BACKFILLING VOIDS LEFT BY REMOVALS

- A. All voids left by removals of shall be backfilled with properly compacted engineering fill per Section 312000 "Earthwork". The cost to place this fill material shall be incidental to the removal items of work.

3.5 CLEAN UP

- A. Debris and rubbish shall be removed from excavations, and shall be removed and transported in a manner that prevents spillage on streets or adjacent areas. Local regulations regarding hauling and disposal shall apply.

3.6 HAUL ROUTE AND DISPOSAL OF MATERIALS

- A. The Contractor shall make every effort to recycle demolished materials. Items required to be removed shall become the property of the contractor and shall be removed from Project site and be lawfully hauled and disposed of. The cost to haul and dispose removed items shall be included in the cost of the items of work.
- B. Contractor shall secure a Haul Route Permit from the City for all transport of import and export material on public streets.
- C. The transport of import and export material on public streets shall be in accordance with all local governing agency standards.

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END OF SECTION 02 41 00

SECTION 26 01 20

GENERAL ELECTRICAL PROVISIONS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Special Conditions and Division 1 - Specification sections, apply to the work of this section.

1.02 SCOPE

- A. The Construction Documents shall include the drawings and specifications covering all related work in addition to the electrical. The Contractor shall carefully examine all of the Construction Documents to acquaint himself with the responsibilities of the various Contractors regarding the supply, installation and connection of the Components of the various electrical and other systems.
- B. It is intended that all systems shall be complete and shall include all components necessary for the operation of the system. If components are indicated on the drawings or inferred from the system requirements but not specified by catalogue number, such components shall be furnished by the manufacturer furnishing the remainder of the system.
- C. In the event of a conflict of the requirements detailed in the drawings and any sections of the specification the Contractor shall inform the Owner's Rep of such conflict in writing before ordering equipment. If such notification is not provided, the Contractor shall accept the Owner's Rep decision on the resolution of such conflict without any further compensation.

1.03 DEMOLITION, ALTERATION AND EXTENSION WORK IN AN EXISTING STRUCTURE.

- A. Contractor shall survey the entire project site and become thoroughly familiar with actual existing conditions. Check the locations of all existing structures, equipment, wiring, etc. The intent of the work is shown on the drawings and described hereinafter.
- B. While the existing facility is being altered, keep the present power service and necessary life safety systems intact.
- C. Provide and perform demolition, alteration, extension, preparatory and

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miscellaneous work as indicated, specified or as required, complete. The work shall include:

1. Demolition and removal of existing electrical conduit, wiring and equipment required to complete the project.
 2. Preparation of the existing building and electrical distribution to receive or connect the new work including relocation of existing electrical conduit, wiring, equipment, etc. where new work interferes with existing conditions.
 3. Miscellaneous demolition, cutting, patching, alteration, and repair work in the existing building necessary for the completion of the entire project while maintaining electrical circuit continuity to all equipment, outlets, fixtures, etc. scheduled to remain.
 4. Disconnecting, relocating, and reconnecting of electrical equipment as required by the construction modifications.
 5. Coordination of power interruption with the Owner's representative or utility company where necessary.
- D. Salvage and Disposal: All removed material other than items to be reused shall be returned to the Owner or disposed of in accordance with instructions from the Owner's representative. Dispose all hazardous materials per guideline of State of California Department of Health Services and other agencies having jurisdiction.

1.04 ELECTRICAL SPECIFICATIONS AND DRAWINGS

- A. The documents are written in a brief form for the purpose of work economy. For example: "Motor starters" is used in place of "The Contractor shall provide all motor starters". Omitted words shall be determined by inference.
- B. It should be particularly noted that the terms "furnish", "provide", and "install" are interchangeable and that each of these terms means to furnish, install, and connect, unless otherwise stated.
- C. When a catalog or series numbers are shown they are intended to indicate the type and quality of product. The product furnished shall meet all specification requirements even if the product conforming to the given catalog number does not.
- D. In the event of conflict between requirements, whether shown on drawings or in specifications the most stringent requirements shall govern.

- E. Wherever tables or schedule show quantities of materials they shall not be used as the final count. These figures serve only as an aid to Contractor. Each Contractor shall be responsible for furnishing all material noted on drawings or specified.
- F. A minimum size or performance requirement specified shall be superseded by requirements specified in other technical specification sections or shown on drawings. For example: A minimum control wire size specified for an alarm system shall take precedence over the minimum wire sizes listed in Section 16120 - Conductors.
- G. When short circuit currents or interrupting capacities are indicated on drawings or specified they shall be considered as minimum R.M.S. symmetrical unless otherwise stated.
- H. The electrical drawings are diagrammatic and show the general arrangement of all raceways, equipment and appurtenances. They shall be followed as closely as actual building construction, field conditions and the work of other trades will permit. The electrical work shall conform to the requirements shown on the drawings.
- I. Architectural drawings shall take precedence over electrical drawings, because of the small scale of the electrical drawings it is not possible to indicate all offsets, fittings, and accessories which may be required. The Contractor shall investigate the existing conditions affecting the work and shall arrange his work accordingly, providing such fittings and accessories as may be required to meet such conditions.

1.05 CODE AND STANDARDS

- A. Code Compliance
 - 1. Installation must conform to all applicable National, State and local codes, rules, ordinances, regulations and manufacturer's recommendations which will govern the quality and the character of work, style and size of materials.
 - 2. In case of difference between building codes, state laws, local ordinances, industry standards and utility company regulations the Contractor shall bear all costs arising in correcting the deficiencies.
 - 3. Should the Contractor perform any work that does not comply with the requirements, ordinances, industry standards and utility company regulations he shall bear all costs arising in correcting the

deficiencies.

B. Building Codes

1. Comply with the latest editions of the following Codes promulgated by governing authority for the specific job site:
 - a. California State Safety Orders
 - b. California State Fire Prevention Commission Official Regulations
 - c. California Electrical Code – CEC
 - d. California Energy Regulations, Title 24
 - e. National Electrical Code - NFPA 70
 - f. Life Safety Code NFPA 101

C. Industry Codes

1. All electrical equipment shall be listed by Underwriters' Laboratories, Inc. and shall meet all requirements established by NEC, NEMA and ANSI, and as specified hereinafter.
2. Materials and installation procedures shall comply with all applicable requirements of the following nationally accepted codes and standards.

ANSI	American National Standards Institute, Inc.
ASTM	American Society of Testing Materials
ETL	Electrical Testing Laboratories
IEEE	Institute of Electrical and Electronic Engineers
IPCEA	Insulated Power Cable Engineers Association
ITL	Independent Testing Laboratories
NBS	National Bureau of Standards
NECA	National Electrical Contractor Association
NEMA	National Electrical Manufacturer's Association
NFPA	National Fire Protection Association
NRTL	Nationally Recognized Testing Laboratory
UL	Underwriters' Laboratories
USASI	United States of America Standards Institute

1.06 WORK AND WORKMANSHIP

A. General

1. These specifications may not include every detail or operation considered to be standard high grade installation procedure as it is

assumed that the Contractor is familiar with these procedures. In the absence of specified details in the Contract Documents regarding installation procedure, the National Electrical Contractors Association "Standard of Installation" manual and the latest edition of Crofts "American Electricians, Handbook" shall be considered as minimum requirements.

2. The Contractor shall comply with all applicable provisions of NFPA-70, National Electrical Code.
3. Locations of all equipment connections are shown for bidding purposes only. Contractor shall verify erection and connection requirements and details.
4. The Contractor shall read the specifications and drawings of all other trades and verify erection and connection requirements and details.
5. The Contractor shall take all field measurements as necessary for his work, and shall be responsible for the accurate location and size of all openings, recesses, slots, ferrules, and the like.
6. Should any structural difficulties prevent the setting of cabinets, running of conduit, etc., at points shown on drawings, necessary minor deviations as determined by the Owner's Rep may be permitted only if authorized in writing.
7. Specific emphasis must be made that if the equipment other than that which the drawings were designed around does not properly adapt to the space allotted or is not easily accessible for repair and maintenance the Contractor is responsible for providing all additional access panels, pipe, fittings, all materials, labor, etc. to achieve the desired end result.
8. Any extra costs which might result from deviations from the drawings to avoid interference shall be considered a "job condition" and no additional compensation will be considered applicable. In the event that any such interference occur in the course of the work due to an error, omission or oversight by the Contractor, no additional compensation shall be allowed.
9. Interference which may occur during the course of construction shall be brought to the immediate attention of the Owner's Rep and his decision confirmed in writing shall be final as to which trade shall take preference.
10. The finished job shall be functional and complete in every detail including any and all such items required for a complete system whether or not these items be specified or shown on drawings.
11. Special attention shall be given to the accessibility of working and controlling parts. Adjustable parts shall be within easy reach. Removable parts shall have space for removal.
12. Underground utilities: Known underground services are shown at approximate locations on drawings. Contractor shall exercise

extreme care to avoid damage in exposing underground services:

- a. Where an underground facility is encountered which is not shown on drawings or mentioned in any other contract document, Contractor shall immediately notify the Owner and Architect and responsible utility agency for direction.
- b. Do not proceed with Work until direction is received.

B. Quality Assurance:

1. Perform work in accordance with NECA Standard of Installation.
2. Manufacturer to be a company specialized in fabrication of respective production with a minimum of 10 years documented experience, or as indicated in the respective spec section.
3. Manufacturer to provide quality control production testing for each unit of major equipment in accordance with applicable standards.
4. Maintain one copy of each testing document on site.

1.07 COORDINATION BETWEEN CONTRACTORS

- A. The Contractor shall acquaint himself with details of all work to be performed by other trades and take necessary steps to integrate and coordinate his work with these trades.
- B. Special attention shall be given to points where ducts cross other ducts or piping, where lighting fixtures fit into ceilings and where pipes, ducts and conduit pass through walls and columns.
- C. Each Contractor shall be responsible for informing himself of the nature and arrangement of the materials and construction to which his work attaches or passes through.

1.08 PROTECTION AND REPAIR

- A. In addition to the provisions and stipulations of the General and Supplementary General Conditions of the Contract each Contractor and Subcontractor shall provide various types of protection as follows:
 1. Protect finished floors from chips and cutting oil by the use of metal receiving pans and an oil proof floor covering.
 2. Protect equipment and finished surfaces from welding and cutting spatters with baffles and spatter blankets.
 3. Protect equipment and finished surfaces from paint droppings, insulation adhesive and size droppings, etc. by use of drop cloths.
 4. Maintain fire rating of walls and structures; provide fire proof enclosure where required.

1.09 RUBBISH

- A. All rubbish resulting from the work herein specified shall be removed from the premises by the trade which produced it, as fast as it accumulates.
- B. On completion of his work each Contractor shall remove and see that each of his Subcontractors removes from the site all tools, equipment, surplus material and rubbish pertaining to his own operations. Each Contractor or Subcontractor shall pay all costs for such removal and disposition and shall cooperate with the General Contractor in final cleaning.
- C. Disposal of hazardous material shall be per guideline of the state of California, Department of Health Services and other authorities having jurisdiction.

1.10 ELECTRICAL CONNECTIONS TO EQUIPMENT

- A. Connections and wiring diagrams shown on drawings or described in the specifications are typical and are for reference purposes only. Detailed diagram instructions and construction shop drawings will be required from the Contractor supplying the equipment.

1.11 PRODUCTS AND MATERIAL

- A. General
 - 1. Electrical equipment shall be new, listed by Underwriters' Laboratories and shall conform to the standard of the National Electrical Manufacturer's Association.
 - 2. Materials used for like service shall be by the same manufacturer, e.g., all motor starters to be from the same manufacturer.
- B. Prefabricated Equipment: Unless noted as field fabricated all equipment shall be delivered completely factory assembled and wired.
- C. Approval: A specification followed by one or more manufacturer "or approved equal" is open to all equal products or materials unless otherwise noted. However, the Contractor shall supply one of the listed manufacturers' at no additional cost if the Engineer finds the substituted product unsatisfactory.
- D. Material: The Contractor shall submit to the Owner's Rep, for his approval

within 48 hours after request, a list of all materials he proposes to use.

E. Storage

1. Provide suitable protection from weather and vandalism for all materials and equipment to be installed. Storage shall be dry, clean and safe. Any materials or equipment damaged, deteriorated, rusted or defaced due to improper storage shall be fully repaired, refinished or replaced as directed by the Engineer.
2. Cover and protect all equipment, materials, raceways, etc., before and after installation to prevent injury and to prevent entrance of grit, dirt and foreign matter.

1.12 SHOP DRAWINGS

A. General

1. Drawings shall be accurately drawn large scale drawings, adequately dimensioned, showing external and internal features, mechanical provisions, materials, gauges, electrical characteristics, wiring diagrams and such other information necessary to show compliance with the intent of the specifications and drawings.
2. Generalized diagrams having several alternate methods of connection will not be acceptable.
3. Catalog data in lieu of certified prints shall be submitted for standard specialties, wire and cable, switches, starters, insulation and similar items.
4. Contractor's responsibility includes coordination of his work with all other trades, fabrication process and technique of construction. Contractor shall check all shop drawings for correct performance, size, capacity, clearance, and finish prior to submittal to Engineer. Drawings must be stamped or marked to indicate Contractor has reviewed these drawings.
5. Contractor review shall insure that equipment will fit into available space.
6. The Engineer will review submitted shop drawings as a further check and as a service to the Contractor. Such review does not relieve the Contractor of responsibility for correct ordering of material and equipment.

B. Shop Drawings

1. Contractor shall submit shop drawings of the following systems or equipment and other equipment requested by Owner's Rep within ten days after the award of Contracts:

- a. Switchboards and Panelboards
 - b. Cabinets and Pull Boxes
 - c. Devices and Conductors
 - d. Transformers
2. Each submitted item shall refer to the specification section and paragraph number in which the item is specified.
3. Approval of a specific item does not include approval of the assembly of which the item is a component.

1.13 DELIVERY SCHEDULE

- A. The Contractor shall submit, upon request, a schedule listing the equipment and materials required to complete the installation, quantity ordered, the date of placing the order and the promised delivery date.

PART 2 - PRODUCT

2.01 GENERAL

- A. All equipment and materials shall be new and the current model or type of a manufacturer regularly engaged in their production. Where two or more units of the same class of equipment are required, they shall be products of the same manufacturer.
- B. Equipment shall fit into the space allotted and shall have adequate and acceptable clearances for entry, servicing and maintenance. The work shall be provided in an arrangement which will not necessitate cutting of structural members which will not interfere with lighting, HVAC equipment or doors, and which will present the best appearance possible.
- C. Where equipment or materials are specified to be approved by and constructed and/or tested in accordance with the published standard of the UL, NRTL, ANSI, ASTM, ETL or any similar nationally recognized agency, the Contractor shall submit proof that the items furnished under this specification conform to such requirements.

2.02 COLOR SCHEDULE AND SAMPLES

- A. The Contractor shall submit, upon request, a list of available finishes, together with color samples, for all equipment where color finishes are requested by the Architect. The list of equipment will be made available to the Contractor before equipment delivery authorization is required.

PART 3 - EXECUTION

3.01 PROJECT CLOSE-OUT

A. AC Switchgear Test and Inspection

1. New breakers in the main switchboard shall be tested and inspected as follows:
 - a. Circuit breakers shall be tested and inspected for proper trip operations on long delay, short delay and instantaneous trip. Test current for long delay tripping shall be 300% of rate trip. All circuits shall have Ductor readings made where possible.
 - b. All bolted connections shall be checked and tightened for proper torque.
 - c. A written report showing test results shall be submitted to Architect.

B. Tests

1. The Contractor shall furnish all necessary instruments and equipment required for making tests and shall make test of all wiring for shorts, open circuits, grounds, etc., and shall immediately correct any defective work.
2. When the entire installation has been completed and all lighting fixtures installed, test out all circuits and switching and demonstrate that the operation of the system is in accordance with the Contract Documents.

C. Spares

Fuses-Provide Owner with three (3) fuse refills for each size fuse used in the installation. Mount fuse clip in spare fuse cabinet. Locate in main electrical room or maintenance shop.

D. Cleaning and Touch-Up

1. All panelboards, cabinets, switchboards, motor controllers, control panels and other enclosures shall be cleaned and the paint touched up as necessary to duplicate a factory finished appearance. Touch-up paint shall match the color, composition and quality of the factory applied finish.
2. Label all electrical equipment or controls by means of engraved

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laminated plastic plates screwed or riveted to device. Height of letters to be not less than 1/4" unless otherwise specified or directed. Items to be labeled include the following:

- a. Main circuit breakers and switches
 - b. All circuit breakers and switches in switchboards and distribution panels
 - c. All panel boards (labeled on inside)
 - d. Printed card labels may be used on items of equipment furnished with plastic windows. Labeling of the cards shall be neatly printed using a lettering device such as a "KROY" instrument.
 - e. Directories on inside of panelboards shall be type-written and shall show list of circuits and points, equipment of areas supplied (1/8" letter height acceptable).
 - f. Labels or tags inside the covers of safety switches or motor starters noting interlocks, conductor sizes, etc., may be of the embossed adhesive type.
- E. Record Drawings - At the end of the project the Contractor's working drawings shall be brought up to date and a set of prints delivered to the Owner's Rep with written material certification that all corrections are true and accurately noted installed thereon. Each drawing shall be labeled Record Drawings, dated and signed by the Contractor.
- F. Operation and Maintenance (O&M) Manuals
1. These requirements are supplemental to those listed or referred to in any foregoing sections of these specifications.
 2. Contractor shall prepare suitable bound volumes pertaining to his systems and equipment. Submit one (1) copy to the Owner's Rep for approval. After approval, submit three (3) copies to the Owner's Rep for delivery to the Owner.
 3. Volumes shall be properly bound, indexed and contained in hard, heavy duty 3 ring binders. The following shall be clearly printed on the front cover:
 - a. Project name, address and date
 - b. Name and address of Architect-Engineer
 - c. Telephone number of Contractor, including night or emergency
 4. Bind the written operating instructions, shop drawings, equipment catalog cuts and manufacturer's instructions into the binder. Material to be assembled as follows:

- a. First page - Title of job, Owner, address, date of submittal, name of Contractor and name of Owner's Rep. Emergency operating instructions and/or list of service organizations (including address and telephone numbers) capable of rendering emergency service on 24 hour calls.
 - b. Second page - Table of Contents.
5. Material shall be assembled in divisions according to the systems which are on the project (e.g., emergency distribution system, etc.). Each division shall include the following sections:
 - a. First Section - Written description of system contents, where actually located in building, how each part functions individually and how system works as a whole. Conclude with a list of items requiring services and either state the service needed or refer to the manufacturer's data in the binder that describes the proper service.
 - b. Second Section - A copy of each approved shop drawing (clearly marked for item furnished) with an index at the beginning of the section.
 - c. Third Section - A copy of each manufacturer's operating instructions with an index at the beginning of the section.
 - d. Fourth Section - A list of all equipment used in the system, Contractor's purchase order numbers, suppliers name and address.
 - e. Field replacement parts list.

G. Guarantee and Warranty

1. These requirements are supplemental to those listed or referred to in any foregoing section of these specifications.
2. All wiring and conduit systems provided under Division 16 shall be guaranteed for a period of three (3) years.
3. Warranty period shall also apply to services, including instruction, adjustment, testing, noise control, etc.

H. Special Requirements

1. No work shall be performed "HOT".
2. Any power outages shall be performed on an after-hours on an overtime basis, generally after midnight on weekends between the hours of 12:01 a.m. and 6:00 a.m. The Contractor shall coordinate the outage with the Owner, giving at least twenty (20) days notice. All overtime costs shall be included in the Contractors Bid.

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3. Temporary service or service jumper to be provided when outage will be expected to last more than three hours. The cost of this service shall be addressed and shall be included in contract.

END OF SECTION 26 01 20

SECTION 26 05 19

CONDUCTORS

PART 1- GENERAL

1.1 SECTION INCLUDES

- A. Building wires and cables.
- B. Underground power and control wires and cables.
- C. Wiring connectors and connections.

1.2 RELATED SECTIONS

- A. Section 26 05 33.13 - Conduits.
- B. Section 26 05 33.16 - Boxes.

1.3 REFERENCES

- A. ANSI/NFPA 70 - National Electrical Code.

1.4 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this Section with minimum three years of experience.

1.5 REGULATORY REQUIREMENTS

- A. Conform to requirements of ANSI / NFPA 70.

1.6 PROJECT CONDITIONS

- A. Verify that field measurements are as shown on Drawings.
- B. Wire and cable routing shown on Drawings is approximate unless dimensioned. Route wire and cable as required to meet Project Conditions.
- C. Where wire and cable routing is not shown, and destination only is indicated, determine exact routing and lengths required.

1.7 COORDINATION

- A. Determine required separation between cable and other work.
- B. Determine cable routing to avoid interference with other work.

PART 2- PRODUCTS

2.1 EXTERIOR AND UNDERGROUND WIRE AND CABLE - #6 and SMALLER

- A. Description: Single conductor insulated wire.
- B. Conductor: Copper.
- C. Insulation Voltage Rating: 600 volts.
- D. Insulation: ANSI / NFPA 70, Type XHHW-2.

2.2 EXTERIOR AND UNDERGROUND WIRE AND CABLE - #4 and LARGER

- A. Description: Single conductor insulated wire.
- B. Conductor: Aluminum or Copper-Clad Aluminum.
- C. Insulation Voltage Rating: 600 volts.
- D. Insulation: ANSI / NFPA 70, Type XHHW-2.

PART 3- EXECUTION

3.1 EXAMINATION

- A. Verify that interior of building has been protected from weather.
- B. Verify that mechanical work likely to damage wire and cable has been completed.

3.2 PREPARATION

- A. Completely and thoroughly swab raceway before installing wires.

3.3 INSTALLATION

- A. Install products in accordance with manufacturer's instructions.

- B. Use solid conductor for feeders and branch circuits 10 AWG and smaller.
- C. Use stranded conductors for control circuits.
- D. Use conductor not smaller than 12 AWG for power and lighting circuits.
- E. Use conductor not smaller than 16 AWG for control circuits.
- F. Use #10 AWG conductors for 20 ampere, 120 volt branch circuits longer than 75 feet (23 m).
- G. Use #10 AWG conductors for 20 ampere, 277 volt branch circuits longer than 200 feet (61 m).
- H. Pull all conductors into raceway at same time.
- I. Use suitable wire pulling lubricant for building wire 4 AWG and larger.
- J. Match existing wiring color scheme.
- K. Protect exposed cable from damage.
- L. Support cables above accessible ceiling, using spring metal clips or plastic cable ties to support cables from structure. Do not rest cable on ceiling panels.
- M. Neatly train and lace wiring inside boxes, equipment, and panelboards.
- N. Clean conductor surfaces before installing lugs and connectors.
- O. Make splices, taps, and terminations to carry full ampacity of conductors with no perceptible temperature rise.
- P. Use solderless pressure connectors with insulating covers for copper conductor splices and taps, #8 AWG and smaller.
- Q. Use insulated spring wire connectors with plastic caps for copper conductor splices and taps, #10 AWG and smaller.
- R. Wiring connections to terminal blocks shall be made with crimp type locking-fork terminals for conductors #8 AWG or smaller.
- S. All conductors #6 AWG or larger shall be terminated with compression type lugs.

3.4 INTERFACE WITH OTHER PRODUCTS

- A. Identify each conductor with its circuit number or other designation indicated on Drawings.

3.5 FIELD QUALITY CONTROL

- A. Inspect wire and cable for physical damage and proper connection.
- B. Measure tightness of bolted connections and compare torque measurements with manufacturer's recommended values.
- C. Verify continuity of each branch circuit conductor.
- D. Verify that all circuits are free from grounds and short circuits.

END OF SECTION 26 05 19

SECTION 26 05 26

GROUNDING

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Grounding electrodes and conductors.
- B. Equipment grounding conductors.
- C. Bonding.

1.2 RELATED SECTIONS

- A. Section 26 01 20 - General Electrical Provisions.

1.3 REFERENCES

- A. ANSI/NFPA 70 - National Electrical Code.

1.4 SUBMITTALS

- A. Product Data: Provide data for grounding electrodes and connections.
- B. Test Reports: Indicate overall resistance to ground.
- C. Manufacturer's Instructions: Include instructions for storage, handling, protection, examination, preparation and installation of exothermic connectors.

1.5 PROJECT RECORD DOCUMENTS

- A. Accurately record actual locations of grounding electrodes.

1.6 GROUNDING ELECTRODE SYSTEM

- A. Metal underground water pipe.
- B. Concrete-encased electrode.
- C. Rod electrode.

1.7 PERFORMANCE REQUIREMENTS

- A. Grounding System Resistance: 25 ohms maximum.

PART 1 - PRODUCTS

1.1 ROD ELECTRODE

- A. Material: Copper.
- B. Diameter: 3/4 inch.
- C. Length: 20 feet.

1.2 MECHANICAL CONNECTORS

- A. Material: Bronze.

1.3 WIRE

- A. Material: Stranded copper.
- B. Grounding Electrode Conductor: Size to meet NFPA 70 requirements.

PART 2 - EXECUTION

2.1 EXAMINATION

- A. Verify that final backfill and compaction has been completed before driving rod electrodes.

2.2 INSTALLATION

- A. Install Products in accordance with manufacturer's instructions.
- B. Install rod electrodes in addition to other required ground electrodes where required to achieve specified resistance to ground.
- C. Equipment Grounding Conductor: Provide separate, insulated conductor within each feeder circuit raceway. Terminate each end on suitable lug, bus, or bushing.

2.3 FIELD QUALITY CONTROL

- A. Inspect grounding and bonding system conductors and connections for tightness and proper installation.
- B. Use suitable test instrument to measure resistance to ground of system. Perform testing in accordance with test instrument manufacturer's recommendations using the fall-of-potential method.
- C. Provide the owner with one copy of the test results

END OF SECTION 26 05 26

SECTION 26 05 29

SUPPORT DEVICES AND SEISMIC RESTRAINTS

PART 1- GENERAL

1.1 SECTION INCLUDES

- A. Conduit and equipment supports.
- B. Anchors and fasteners.

1.2 REFERENCES

- A. NECA - National Electrical Contractors Association.
- B. ANSI/NFPA 70 - National Electrical Code.

1.3 SUBMITTALS

- A. Product Data: Provide manufacturer's catalog data for fastening systems.
- B. Manufacturer's Instructions: Indicate application conditions and limitations of use stipulated by Product testing agency specified under Regulatory Requirements. Include instructions for storage, handling, protection, examination, preparation, installation, and starting of Product.

1.4 REGULATORY REQUIREMENTS

- A. Conform to requirements of ANSI/NFPA 70.
- B. Conform to SMACNA - Guidelines for seismic restraints of mechanical systems.

PART 2- PRODUCTS

2.1 PRODUCT REQUIREMENTS

- A. Materials and Finishes: Provide adequate corrosion resistance.
- B. Provide materials, sizes, and types of anchors, fasteners, supports and seismic supports to carry the loads of equipment and conduit. Consider weight of wire in conduit when selecting products.
- C. Anchors and Fasteners:

1. Concrete Structural Elements: Use Epoxy stainless steel anchors.
2. Steel Structural Elements: Use stainless steel beam clamps, ramset fasteners and welded fasteners.
3. Concrete Surfaces: Use Epoxy stainless steel anchors.
4. Hollow Masonry, Plaster, and Gypsum Board Partitions: Use stainless steel toggle bolts and hollow wall fasteners.
5. Solid Masonry Walls: Use Epoxy anchors.
6. Sheet Metal: Use stainless steel sheet metal screws.
7. Wood Elements: Use stainless steel wood screws.

2.2 STEEL CHANNEL

- A. Description: Stainless steel.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install products in accordance with manufacturer's instructions.
- B. Provide stainless steel anchors, fasteners, and supports in accordance with NECA "Standard of Installation".
- C. Do not fasten supports to pipes, ducts, mechanical equipment, and conduit.
- D. Do not use spring steel clips and clamps.
- E. Do not use powder-actuated anchors.
- F. Do not drill or cut structural members.
- G. Fabricate supports from structural stainless steel beam, angle or channel. Rigidly weld members or use hexagon head bolts to present neat appearance with adequate strength, flexibility and/or rigidity. Use spring lock washers under all nuts.
- H. Install surface-mounted cabinets and panelboards with minimum of four anchors.
- I. In wet and damp locations use stainless steel channel supports to stand cabinets and panelboards one inch off wall.
- J. Use stainless steel sheet metal channel to bridge studs above and below cabinets and panelboards recessed in hollow partitions.

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EXHIBIT B**

- K. Use neoprene washers, vibration isolators and seismic restraints where required.

END OF SECTION 26 05 29

SECTION 26 05 33.13

CONDUITS

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Metal conduit.
- B. Liquid tight flexible metal conduit.
- C. Electrical metallic tubing.
- D. Nonmetal conduit.
- E. Fittings and conduit bodies.

1.2 RELATED SECTIONS

- A. Section 26 05 33.16 - Boxes.
- B. Section 26 05 26 - Grounding.
- C. Section 26 05 29 - Support Devices.

1.3 REFERENCES

- A. ANSI C80.1 - Rigid Steel Conduit, Zinc Coated.
- B. ANSI C80.3 - Electrical Metallic Tubing, Zinc Coated.
- C. ANSI/NEMA FB 1 - Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit and Cable Assemblies.
- D. ANSI/NFPA 70 - National Electric Code.
- E. NECA "Standard of Installation".

1.4 DESIGN REQUIREMENTS

- A. Conduit Size: ANSI/NFPA 70.

1.5 PROJECT RECORD DOCUMENTS

- A. Accurately record actual routing of conduits larger than 2 inches (51 mm).

1.6 REGULATORY REQUIREMENTS

- A. Conform to requirements of ANSI/NFPA 70.

1.7 PROJECT CONDITIONS

- A. Verify that field measurements are as shown on Drawings.
- B. Verify routing and termination locations of conduit prior to rough-in.

PART 2 - PRODUCTS

2.1 CONDUIT REQUIREMENTS

- A. Minimum Size: 1 inch (19 mm) unless otherwise specified.
- B. Underground Installations:
 - 1. More than Five Feet from Foundation Wall: Use Schedule 80 PVC
 - 2. Within Five Feet from Foundation Wall: Use Schedule 80 PVC
 - 3. In or Under Slab on Grade: Use Schedule 80 PVC
 - 4. Minimum Size: 2 inch (25 mm).
- C. Outdoor Locations, Above Grade: Use rigid steel.
 - 1. Roof location: Refer to Section 3.2 part Y.
- D. Wet and Damp Locations: Use Schedule 80 PVC conduit.
- E. Dry Indoor Locations:
 - 1. Concealed: Use rigid galvanized steel conduit (RGS).
 - 2. Exposed: Use rigid galvanized steel conduit (RGS).

2.2 METAL CONDUIT

- A. Rigid Steel Conduit: ANSI C80.1.
- B. Fittings and Conduit Bodies: ANSI/NEMA FB 1; material to match conduit. Conduit fittings shall be zinc coated and shall be of the threaded type. Double lock nuts with bushing caps shall be used on all conduit termination except where threaded hubs exist. For PVC coated conduit use plastic jacketed fittings.

2.3 LIQUIDTIGHT FLEXIBLE METAL CONDUIT

- A. Description: Interlocked steel construction with PVC jacket.
- B. Fittings: ANSI/NEMA FB 1. Zinc coated steel type with insulated bushings by Burndy, Condulet, Steel City or Thomas & Betts.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install conduit in accordance with NECA "Standard of Installation."
- B. Install nonmetallic conduit in accordance with manufacturer's instructions.
- C. Arrange supports to prevent misalignment during wiring installation.
- D. Support conduit using stainless steel or Aluminum straps, lay-in adjustable hangers, clevis hangers, and split hangers.
- E. Group related conduits; support using conduit rack. Construct rack using stainless steel or Aluminum channels; provide space on each for 25 percent additional conduits.
- F. Fasten conduit supports to building structure and surfaces under provisions of Section 16190.
- G. Do not support conduit with wire or perforated pipe straps. Remove wire used for temporary supports
- H. Do not attach conduit to ceiling support wires.
- I. Arrange conduit to maintain headroom and present neat appearance.
- J. Route conduit parallel and perpendicular to walls.
- K. Route conduit installed above accessible ceilings parallel and perpendicular to walls.
- L. Maintain adequate clearance between conduit and piping.
- M. Maintain 12 inch (300 mm) clearance between conduit and surfaces with temperatures exceeding 104 degrees F (40 degrees C).
- N. Cut conduit square using saw or pipe cutter; de-burr cut ends.

- O. Bring conduit to shoulder of fittings; fasten securely.
- P. Use conduit hubs to fasten conduit.
- Q. Install no more than equivalent of three 90-degree bends between boxes. Use conduit bodies to make sharp changes in direction, as around beams. Use hydraulic one-shot bender to fabricate bends in metal conduit larger than 2 inch (50 mm) size.
- R. Avoid moisture traps; provide junction box with drain fitting at low points in conduit system.
- S. Provide suitable fittings to accommodate expansion and deflection where conduit crosses seismic, control and expansion joints.
- T. Provide suitable pull string and caps on both ends in each empty conduit except sleeves and nipples.
- U. Use suitable caps to protect installed conduit against entrance of dirt and moisture.
- V. Ground and bond conduit under provisions of Section 16450.
- W. All equipment connections shall be made with a short section (18" minimum - 36" maximum) length of flexible conduit. These connections shall be made with Seal-Tight conduit and be kept as short as possible.
- X. Ceiling and roof penetrations shall be installed with rigid steel per description below:
 - 1. Install rubber grommet at ceiling/roof penetration for rigid steel conduit.
 - 2. Provide and install outdoor flexible conduit per section 3.1 part X from rigid steel conduit ceiling/roof penetration to equipment connection.

3.2 INTERFACE WITH OTHER PRODUCTS

- A. Install conduit to preserve fire resistance rating of partitions and other elements, using materials and methods under the provisions of Section 07900.
- B. Route conduit through roof openings for piping and ductwork or through suitable roof jack with pitch pocket.

END OF SECTION 26 05 33.13

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SECTION 26 05 33.16

BOXES

PART 1- GENERAL

1.1 SECTION INCLUDES

- A. Wall and ceiling outlet boxes.
- B. Pull and junction boxes.

1.2 RELATED SECTIONS: NONE

1.3 REFERENCES

- A. NECA - Standard of Installation.
- B. NEMA FB 1 - Fittings and Supports for Conduit and Cable Assemblies.
- C. NEMA OS 1 - Sheet-steel Outlet Boxes, Device Boxes, Covers, and Box Supports.
- D. NEMA OS 2 - Nonmetallic Outlet Boxes, Device Boxes, Covers and Box Supports.
- E. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum).
- F. NFPA 70 - National Electrical Code.

1.4 SUBMITTALS FOR CLOSEOUT

- A. Record actual locations and mounting heights of outlet, pull, and junction boxes on project record documents.

1.5 REGULATORY REQUIREMENTS Conform to requirements of NFPA 70.

PART 2- PRODUCTS

2.1 OUTLET BOXES

- A. Sheet Metal Outlet Boxes: NEMA OS 1, galvanized steel.
 - 1. Luminaire and Equipment Supporting Boxes: Rated for weight of equipment supported; include 1/2 inch male fixture studs where required.

- B. Nonmetallic Outlet Boxes: NEMA OS 2, PVC. Provide gasketed cover by box manufacturer. Applicable to all outlet boxes for damp, wet and outdoor installations.
- C. Cast Boxes: NEMA FB 1, Type FS or FD, cast ferrous alloy. Provide gasketed cover by box manufacturer. Applicable to all outlet boxes for damp, wet or outdoor installations.
- C. Wall Plates for Finished Areas: As specified in Section 16140.

PART 3- EXECUTION

3.1 EXAMINATION Verify locations of outlets prior to rough-in.

3.2 INSTALLATION

- B. Install boxes in accordance with NECA "Standard of Installation."
- C. Install in locations as shown on Drawings, and as required for splices, taps, wire pulling, equipment connections and compliance with regulatory requirements.
- D. Electrical boxes are shown on Drawings in approximate locations unless dimensioned. Adjust box location up to 10 (3 m) feet if required to accommodate intended purpose.
- D. Orient boxes to accommodate wiring devices oriented as specified in Section 16140.
- E. Maintain headroom and present neat mechanical appearance.
- F. Install pull boxes and junction boxes above accessible ceilings and in unfinished areas only.
- G. Install boxes to preserve fire resistance rating of partitions and other elements, using materials and methods specified in Section 07900.
- H. Align adjacent wall mounted outlet boxes for switches, thermostats, and similar devices.
- I. Use adjustable steel channel fasteners for hung ceiling outlet box.
- J. Do not fasten boxes to ceiling support wires.
- K. Support boxes independently of conduit.

- L. Use gang box where more than one device is mounted together. Do not use sectional box.
- M. Use gang box with plaster ring for single device outlets.
- N. Use cast or PVC outlet box in exterior locations and wet locations.
- O. Large Pull Boxes: Use hinged enclosure in interior dry locations, surface-mounted cast metal box in other locations.

3.3 ADJUSTING Install knockout closures in unused box openings.

3.4 CLEANING

- D. Clean interior of boxes to remove dust, debris, and other material.
- E. Clean exposed surfaces and restore finish.

END OF SECTION 26 05 33.16

SECTION 26 05 53

ELECTRICAL IDENTIFICATION

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Nameplates and labels.
- B. Wire and cable markers.
- C. Conduit markers.
- D. Conduit color-coding.
- E. Panelboard directories.
- F. Wiring diagrams.

1.2 RELATED SECTIONS

- A. Section 26 01 20 - General Electrical Provisions.

PART 2 - PRODUCTS

2.1 NAMEPLATES AND LABELS

- A. Type NP Nameplates: Engraved three-layer laminated plastic with white letters on black background.
- B. Locations:
 - 1. Each electrical distribution and control equipment enclosure.
 - 2. Communication cabinets.
- C. Letter Size:
 - 1. Use 1/8 inch (3 mm) letters for identifying individual equipment and loads.
 - 2. Use 1/4 inch (6 mm) letters for identifying grouped equipment and loads.

2.2 LEGEND PLATES

A. Type LP: Die-stamped metal legend plate with mounting hole and positioning key.

B. Paint-fill engraved characters.

2.3 WIRE AND TERMINAL MARKERS

A. Self-adhering, pre-printed, self-laminating vinyl wrap-around strips.

B. Locations: Each conductor at panelboard gutters, pull boxes, outlet and junction boxes, and each load connection.

C. Legend:

1. Power and Lighting Circuits: Branch circuit or feeder number indicated on drawings.
2. Control Circuits: Control wire number indicated on schematic and interconnection diagrams on drawings.

2.4 CONDUIT MARKERS

A. Description: High performance snap-on or pressure sensitive precoiled, preprinted suitable for indoor and outdoor conditions.

B. Location: Furnish markers for each conduit longer than 10 feet.

C. Spacing: 20 feet on center.

D. Color:

- | | |
|-----------------------|---------|
| 1. 480 Volt System: | Yellow. |
| 2. 208 Volt System: | Green. |
| 3. Fire Alarm System: | Red. |
| 4. Telephone System: | Brown. |
| 5. Data System: | Blue. |

E. Legend:

- | | |
|-----------------------|--------|
| 1. 480 Volt System: | 480 V. |
| 2. 208 Volt System: | 208 V. |
| 3. Fire Alarm System: | FA. |
| 4. Telephone System: | TEL. |
| 5. Data System: | DATA. |

PART 3 - EXECUTION

3.1 PREPARATION

- A. Degrease and clean surfaces to receive nameplates and labels.

3.2 INSTALLATION

- A. Install nameplate and label parallel to equipment lines.
- B. Secure nameplate to equipment front using two screws or adhesive.
- C. Secure nameplate to inside surface of recessed panelboard doors in finished locations.
- D. Secure clear plastic-laminated wiring diagrams on the inside of cabinets, enclosures, panelboards, and switchboards.

3.3 WIRE IDENTIFICATION

- A. Provide wire markers on each conductor in panelboard gutters, pull boxes, outlet and junction boxes, and at load connection. Identify with branch circuit or feeder number for power and lighting circuits, and with control wire number as indicated on equipment manufacturer's shop drawings for control wiring.
- B. Provide conductor phase color coding as per Section 16120.

3.4 NAMEPLATING ENGRAVING

- A. Provide type "NP" nameplates of minimum letter height as noted below.
 - 1. Panelboards, Switchboards and Motor Control Centers: 1/4-inch to identify equipment designation. 1/8-inch to identify voltage rating and source.
 - 2. Individual Circuit Breakers, Switches and Motor Starters in Panelboards, Switchboards, and Motor Control Centers: 1/8-inch to identify circuit and load served, including location.
 - 3. Individual Circuit Breakers, Enclosed Switches, and Motor Starters: 1/8-inch to identify voltage rating and load served.
 - 4. Transformers: 1/4-inch to identify equipment designation. 1/8-inch to identify primary and secondary voltages, primary source, and secondary load and location.
 - 5. Equipment Cabinets, Terminal Cabinets, Control Panels and other Cabinets enclosing apparatus: 3/8-inch to identify equipment and designation.

- B. Provide type "LP" metal legend plates for attachment to panel mounted operator's devices such as pilot lights, push buttons, selector switches, etc.

3.5 CONDUIT COLOR CODING SCHEDULE

- A. Coordinate color of paint with Section 09900 - Painting to identify conduit by system.
- B. Fire Alarm System: Red.

3.6 PANELBOARD DIRECTORIES

- A. Provide typewritten directories arranged in numerical order showing number of room in which each device served by each panelboard circuit is located.
- B. Verify room numbers to be used with Owner. Room number will not necessarily be those used on the Drawings.
- B. Mount directories in a 6 inch by 8 inch metal frame under a clear plastic cover inside each panelboard door.

3.7 PLASTIC-LAMINATED WIRING DIAGRAMS

- A. Provide clear plastic-laminated wiring diagrams for cabinets, enclosures, panelboards, and switchboards.
- B. Secure clear plastic-laminated wiring diagrams to the inside surface of metal cabinets, enclosures, panelboards, and switchboards with adhesive.
- C. Mount diagrams clear of latches, hinges, and viewports.

END OF SECTION 26 05 53

SECTION 26 24 16

PANELBOARDS

PART 1 - GENERAL

1.1 THIS SECTION INCLUDES:

- A. NEMA Type 3R, 480/277 V, 3 phase, 4 wires, circuit breaker type, distribution panelboards in stainless steel enclosures.
- B. NEMA Type 3R, 120/240 V, 3 phase, 4 wires, circuit breaker type, branch circuit panelboards in stainless steel enclosures.

1.2 RELATED SECTIONS

- A. Section 26 01 20 - General Electrical Provisions.
- B. Section 26 05 19 – Conductors.
- C. Section 26 05 26 – Grounding.
- D. Section 26 05 29 - Support Devices.
- E. Section 26 05 53 – Electrical Identification

1.3 REFERENCES

- A. NECA (National Electrical Contractors Association) "Standard of Installation."
- B. UL 67 – Standard for Panelboards
- C. UL 50 – Enclosures for Electrical Equipment
- D. NEMA AB 1 - Molded Case Circuit Breakers.
- E. NEMA ICS 2 - Industrial Control Devices, Controllers, and Assemblies.
- F. NEMA KS 1 - Enclosed Switches.
- G. NEMA PB 1 - Panelboards.
- H. NEMA PB 1.1 - Instructions for Safe Installation, Operation and Maintenance of Panelboards Rated 600 Volts or Less.
- I. NFPA 70 - National Electrical Code.

- J. ASCE7-05, ASCE7-10, IBC2009, IBC2012, CBC 2019, BBCC 2015 Seismic Qualification, and OSHPD Special Seismic Certification Pre-approval OSP-0016-10.

1.4 MAINTENANCE MATERIALS

- A. Provide two of each panelboard key.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. General Electric.
- B. Eaton.
- C. Schneider Electric Square "D".
- D. Siemens.
- E. Or Approved Equal.

2.2 DISTRIBUTION PANELBOARDS

- A. Panelboards: NEMA Type 3R, 480/277 V, 3 phase, 4 wires, circuit breaker type.
- B. Panelboard Bus: Copper, ratings as indicated. Provide copper ground bus in each panelboard.
- C. Minimum integrated short circuit rating: As noted on drawings.
- D. Molded Case Circuit Breakers: NEMA AB 1. Provide circuit breakers with integral thermal and instantaneous magnetic trip in each pole.
- E. Provide circuit breaker accessory trip units and auxiliary switches as indicated.
- F. Enclosure: NEMA Type 3R stainless steel.
- G. Cabinet Front: Gasketed door with lockable vault handle.

2.3 BRANCH CIRCUIT PANELBOARDS

- A. Branch Circuit Panelboard: NEMA 3R 120/240 V, 3 phase, 4 wires, circuit breaker type.
- B. Panelboard Bus: Copper, ratings as indicated.

- C. Minimum short circuit rating: As noted on drawings.
- D. Molded Case Circuit Breakers: NEMA AB 1. Provide circuit breakers with integral thermal and instantaneous magnetic trip in each pole.
- E. Enclosure: NEMA Type 3R stainless steel.
- F. Cabinet Front: Gasketed door with lockable vault handle.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install panelboard in accordance with NEMA PB 1.1.
- B. Install panelboard plumb. Provide supports in accordance with Section 26 05 29.
- C. Height: 6 ft to top of panelboard.
- D. Provide filler plates for unused spaces in panelboards.
- D. Provide typed circuit directory for each branch circuit panelboard. Revise directory to reflect circuiting changes required to balance phase loads.

3.2 FIELD QUALITY CONTROL

- A. Measure steady state load currents at each panelboard feeder; rearrange circuits in the panelboard to balance the phase loads to within 20 percent of each other. Maintain proper phasing for multi-wire branch circuits.
- B. Visual and Mechanical Inspection: Inspect for physical damage, proper alignment, anchorage, and grounding. Check proper installation and tightness of connections for circuit breakers, fusible switches, and fuses.

END OF SECTION 26 24 16

SECTION 26 27 26

WIRING DEVICES

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Wall switches.
- B. Wall dimmers.
- C. Receptacles.
- D. Device plates and decorative box covers.

1.2 RELATED SECTIONS

- A. Section 26 01 20 - General Electrical Provisions.
- B. Section 26 05 33.16 - Boxes.

1.3 REFERENCES

- A. NECA - Standard of Installation.
- B. NEMA WD 1 - General Requirements for Wiring Devices.
- C. NEMA WD 6 - Wiring Device -- Dimensional Requirements.
- D. NFPA 70 - National Electrical Code.

1.4 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing the Products specified in this section with minimum three years of experience.

PART 2 - PRODUCTS

2.1 WALL SWITCHES

- A. Manufacturers:

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1. Hubbell.
2. General Electric.
3. Leviton.
4. Bryant

- B. Description: NEMA WD 1, Heavy-Duty, AC only general-use switch.
- C. Body and Handle: Plastic with rocker handle. Finish: as required by Architect.
- D. Ratings:
1. Voltage: 120-277 volts, AC.
 2. Current: 20 amperes.

2.2 WALL DIMMERS

- A. Manufacturers:
1. Lutron
 2. Lightolier
 3. Prescolite
 4. Leviton
 5. or approved equal.
- B. Description: NEMA WD1 and as specified on drawings.
- C. Body and Handle: as indicated on drawings;
- D. Finish: Per Architect requirements.
- E. Voltage: 120V.
- F. Power rating: Match load shown on drawings; 600 watts minimum.

2.3 RECEPTACLES

- A. Manufacturers:
1. Hubbell.
 2. General Electric.
 3. Leviton
 4. Bryant
- B. Description: NEMA WD 1, Heavy-duty general use receptacle. Finish: as required by Architect.
- C. Configuration: NEMA WD 6, type as specified and indicated.
- D. Convenience Receptacle: Type 5-20.

- E. GFCI Receptacle: Convenience receptacle with integral ground fault circuit interrupter to meet regulatory requirements.

2.4 WALL PLATES

- A. Decorative Cover Plate: Plastic. Finish: as required by Architect.
 - 1. Hubbell.
 - 2. Or equivalent.
- B. Weatherproof Cover Plate: Gasketed cast metal with hinged gasketed device cover.
 - 1. Hubbell.
 - 2. Or equivalent.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that outlet boxes are installed at proper height.
- B. Verify that wall openings are neatly cut and will be completely covered by wall plates.
- C. Verify that branch circuit wiring installation is completed, tested, and ready for connection to wiring devices.

3.2 PREPARATION

- A. Provide extension rings to bring outlet boxes flush with finished surface.
- B. Clean debris from outlet boxes.

3.3 INSTALLATION

- A. Install in accordance with NECA "Standard of Installation."
- B. Install devices plumb and level.
- C. Install switches with OFF position down.
- D. Install wall dimmers to achieve full rating specified and indicated after derating for ganging as instructed by manufacturer.

- E. Do not share neutral conductor on load side of dimmers.
- F. Install receptacles with grounding pole on bottom.
- G. Connect wiring device grounding terminal to outlet box with bonding jumper.
- H. Install decorative plates on switch, receptacle, and blank outlets in finished areas.
- I. Connect wiring devices by wrapping conductor around screw terminal.
- J. Use jumbo size plates for outlets installed in masonry walls.
- K. Install galvanized steel plates on outlet boxes and junction boxes in unfinished areas, above accessible ceilings, and on surface mounted outlets.

3.4 INTERFACE WITH OTHER PRODUCTS

- A. Install wall switch 48 inches above finished floor.
- B. Install convenience receptacle 18 inches above finished floor.
- C. Install convenience receptacle 6 inches above backsplash of counter.
- D. Install dimmer 48 inches above finished floor.
- E. Install telephone jack 18 inches above finished floor.
- F. Install telephone jack for side-reach wall telephone to position top of telephone at 54 inches above finished floor.
- G. Install telephone jack for forward-reach wall telephone to position top of telephone at 48 above finished floor.
- H. Coordinate the installation of wiring devices with underfloor duct service fittings provided under Section 16112.

3.5 FIELD QUALITY CONTROL

- A. Inspect each wiring device for defects.
- B. Operate each wall switch with circuit energized and verify proper operation.
- C. Verify that each receptacle device is energized.
- D. Test each receptacle device for proper polarity.

- E. Test each GFCI receptacle device for proper operation.
- F. Verify that each telephone jack is properly connected and circuit is operational.

3.6 ADJUSTING

- A. Adjust devices and wall plates to be flush and level.

3.7 CLEANING

- A. Clean exposed surfaces to remove splatters and restore finish.

END OF SECTION 26 27 26

SECTION 26 28 16.13

ENCLOSED CIRCUIT BREAKERS

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Enclosed circuit breakers.

1.2 RELATED SECTIONS

- A. Section 26 01 20 - General Electrical Provisions.
- B. Section 26 05 29 - Support Devices.

1.3 REFERENCES

- A. NEMA AB 1 - Molded Case Circuit Breakers.

1.4 EXTRA MATERIALS

- A. Provide three of each size and type current limiter.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Eaton
- B. Square "D".
- C. General Electric.
- D. Siemens.

Or approved equal.

2.2 MOLDED CASE CIRCUIT BREAKER

- A. Circuit Breaker: NEMA AB 1.
- B. Service Conditions

1. Temperature: -5°C to + 60°C.
2. Altitude: up to 2000 meters above sea level.

2.3 TRIP UNIT CIRCUIT BREAKERS

- A. Field - adjustable trip circuit breaker: Provide circuit breakers with frame sizes 200 amperes and larger with mechanism for adjusting setting for automatic operation.
- B. Current limiting circuit breaker: Provide circuit breaker with automatically - resetting current limiting elements in each pole. Let - through current and energy: Less than permitted for same size class RK-5 fuse.
- C. Solid - State circuit breaker: Provide circuit breaker with electronic sensing, timing and tripping circuits for adjustable current settings instantaneous trip and adjustable short time trip.

2.4 CURRENT LIMITERS

- A. Current Limiter: Designed for application with molded case circuit breaker.
- B. Coordinate limiter size with trip rating of circuit breaker to prevent nuisance tripping and to achieve interrupting current rating specified for circuit breaker.
- C. Provide interlocks to trip circuit breaker and to prevent closing circuit breaker when limiter compartment cover is removed or when one or more limiter is not in place or has operated.

2.5 PRODUCT OPTIONS AND FEATURES

- A. Provide accessories as needed.
- B. Handle Lock: Include provisions for padlocking.
- C. Provide mechanical trip device.
- D. Provide grounding lug in each enclosure.
- E. Provide Products suitable for use as service entrance equipment where so applied.

2.6 ENCLOSURE

- A. Enclosure: NEMA AB 1: Type 1 for indoor installation.
Type 4 for outdoor installation.
- B. Fabricate enclosure from steel.
- C. Finish using manufacturer's standard enamel finish: color per Engineer's requirements.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install enclosed circuit breakers where indicated, in accordance with manufacturer's instructions.
- B. Install enclosed circuit breakers plumb. Provide supports in accordance with Section 26 05 29.
- C. Height: 5 ft to operating handle.
- D. Provide engraved plastic nameplates.

3.2 FIELD QUALITY CONTROL

- A. Field inspection and testing will be performed under provisions of Section 01 45 00.
- B. Inspect and test each circuit breaker to NEMA AB 1.
- C. Inspect each circuit breaker visually.
- D. Perform several mechanical ON-OFF operations on each circuit breaker.
- E. Verify circuit continuity on each pole in closed position.
- F. Determine that circuit breaker will trip on overcurrent condition, with tripping time to NEMA AB 1 requirements.
- G. Include description of testing and results in test report.

3.3 ADJUSTING

- A. Adjust trip settings so that circuit breakers coordinate with other overcurrent protective devices in circuit.
- B. Adjust trip settings to provide adequate protection from overcurrent and fault currents.

END OF SECTION

**SECTION 28 31 00
FIRE DETECTION AND ALARM**

1. Part 1 - General

1.1 General and Special Conditions

- A. General and Special Conditions apply to the work under this section.
- B. The Contractor shall furnish all equipment, materials, tools, labor, engineering, drawings, submittals, fees, and related documentation necessary for a complete fire alarm system, with said systems being made ready for operation in accordance with the requirements of the Authorities Having Jurisdiction (going forward to be referred to as "AHJ"). The purpose of this document furnished by the Owner's Representative is to convey to the Contractor the scope of work required, all of which the Contractor is responsible to furnish, install, adjust, and make operable. The omission by the Owner's Representative of any necessary system component, as required by the AHJ, from the specifications shall not relieve the Contractor of the responsibility for providing such necessity, without additional cost to the Owner's Representative. The Contractor shall visit the site before submitting their bid and shall examine all existing physical conditions, which may be material to the performance of their work. No extra payments will be allowed to the Contractor as a result of extra work made necessary by their failure to do so. Any case of error, omission, discrepancy, or lack of clarity shall be promptly identified to the Owner's Representative and Consultant for clarification prior to the bid due date. This project is a "Turn-key Project"; upon awarding of contract, no change orders will be accepted.
- C. The Contractor shall provide all devices and equipment required by these specifications and the AHJ. Under no circumstances will the Contractor delete or alter any equipment or devices without the written authorization of the Owner's Representative.
- D. The Contractor shall present the Owner's Representative a plan of action for designing and installing the new fire alarm system. Whatever method the Contractor selects shall be in compliance with the local AHJ and this specification.
- E. Whatever method the Contractor selects shall be in compliance with local AHJ and all fire watch, replacement phasing, and testing costs shall be included in their scope of work.
- F. The Contractor shall consider that this bus base is fully occupied and carries on events that cannot tolerate disruption. The installation method is to keep in consideration this condition and make adjustments for minimizing disruptions to the bus base occupants at all times and in accordance with the requirements of the

Owner's Representative.

- G. The Contractor shall furnish and install additional devices for the fire alarm voice communication system to meet the requirements of the Orange County Fire Authority.
- H. The fire alarm system installation in areas with presence of Hydrogen gas shall comply with NEC Class I Division I requirements.
- I. The fire alarm system installation in areas with presence of Methane gas shall comply with NEC Class I Division II requirements.
- J. The fire alarm system shall be programmed to perform the following notification.
 - 1. In the event of fire warning and supervisory, send out a signal to a third-party contractor to notify the "Call List". The OCTA Central Communications Center and On-Call Facilities Management personnel shall be on the "Call List". When no responses received from the On-Call Facilities Management personnel, notify the Fire Department.
 - 2. In the event of fire alarm, send out a signal to a third-party contractor to notify the Fire Department and "Call List". The "Call List" notification shall be the same as mentioned in Item #1.

1.2 System Abbreviations and Definitions

ADA: Americans with Disabilities Act.

AFF: Above Finished Floor.

AHJ: Authority Having Jurisdiction.

Approved: Unless otherwise stated, materials, equipment or submittals approved by the Owner's Representative and AHJ.

Circuit: Wire path from a group of devices or appliances to a control panel or transponder.

Central Processing Unit (CPU): The central computer of a point addressable fire alarm or voice command control system.

Concealed: Where used in connection with installation of piping or conduit and accessories, shall mean "hidden from sight" as in shafts, furred spaces, soffits, or above suspended ceilings.

Contractor: The company awarded the prime contract for this work and any of its subcontractors, vendors, suppliers or fabricators.

CSFM: California State Fire Marshal.

ECS: Emergency Communication System.

Exposed: Where used in connection with installation of piping or conduit and accessories, shall mean "visible" or "not concealed".

FACP: Fire Alarm Control Panel.

FATC: Fire Alarm Terminal Cabinet.

FCC: Fire Command Center.

FM: FM Global (Factory Mutual)

FM Approved: Materials or equipment approved by Factory Mutual and included in the most recent edition of the FM Approval Guide.

HVAC: Heating Ventilating and Air Conditioning.

IDC: Initiating Device Circuit.

LCD: Liquid Crystal Display.

LED: Light Emitting Diode.

Listed: Materials or equipment included in a list published by a nationally recognized laboratory that maintains periodic inspection of production of listed equipment and material, and whose listing states either that the equipment or materials meet nationally recognized standards or has been tested and found suitable for use in a specific manner.

NAC: Notification Appliance Circuit.

NFPA: National Fire Protection Association.

NICET: National Institute for Certification in Engineering Technologies

NRTL: Nationally Recognized Testing Laboratory

Owner's Representative: City of Thousand Oaks

RCP: Remote Control Panel

SLC: Signaling Line Circuit.

Style 1: As defined by NFPA 72, Class B.

Style 4: As defined by NFPA 72, Class B.

Style 6: As defined by NFPA 72, Class A.

Style 7: As defined by NFPA 72, Class A.

Style B: As defined in NFPA 72, Class B.

Style D: As defined in NFPA 72, Class A.

Style Y: As defined in NFPA 72, Class B.

UL or ULI: Underwriters Laboratories, Inc.

UL Listed: Materials or equipment listed and included in the most recent edition of the UL Fire Protection Equipment Directory.

Zone: Combination of one or more circuits or devices in a defined bus base area, i.e. 3 speaker circuits on a floor combined to form a single zone.

1.3 Contractor Qualifications

- A. All work specified in this Section shall be performed (furnished, installed, and connected) by a qualified fire alarm contractor. The fire alarm Contractor shall provide the following documentation to show compliance with the Contractor Qualifications within 14 days after notice of awards of the contract:
1. Contractor's License: A copy of the contractor's valid State of California License. For this specification it will be required that the Contractor have a license that covers the work required in the contract. The classes of required licenses shall be: **C-10 and C-16** to ensure that any work related to this specification is done by a licensed contractor in the State of California.
 2. The contractor shall have a minimum of 5 years experience in the State of California performing the same type of work as required in this contract.
 3. Proof of Experience: Proof that the fire alarm contractor has successfully installed similar systems (fire detection, voice evacuation, and visual signaling control components on a previous project of comparable size and complexity).
 4. Insurance Certificates and Endorsements: Copy of the fire alarm contractor's current liability insurance certificates in conformance with the contract documents and the general requirements of the Owner's Representative.
 5. Certifications: Provide a copy of the California State Certification for Apprenticeship Standards for Fire Alarm and factory certification for the

equipment purposed for this project for the employee actively involved in this project.

1.3.1. Fire Codes for Reference

- A. The equipment and installation shall comply with the provisions of the following codes and standards unless the authority having jurisdiction has adopted a different version:
1. National Fire Protection Association (NFPA)
 - NFPA 70 - 2022 *National Electric Code*®
 - NFPA 72 - 2022 *National Fire Alarm Code*®
 - NFPA 90A - 2022 *Installation of Air-Conditioning and Ventilating Systems*
 - NFPA 92A - 2022 *Smoke-Control Systems Utilizing Barriers and Pressure Differences*
 - NFPA 92B - 2022 *Smoke Management Systems in Malls, Atria, and Large Areas*
 - NFPA 101- 2022 *Life Safety Code*®
 2. Underwriter's Laboratories, Inc
 - UL 864 - Control Units for Fire Protective Signaling Systems.
 - UL 268 - Smoke Detectors for Fire Protective Signaling Systems.
 - UL 268A - Smoke Detectors for Duct Applications.
 - UL 217 - Single and Multiple Station Smoke Alarms
 - UL 521 - Heat Detectors for Fire Protective Signaling Systems.
 - UL 228 - Door Closers-Holders, With or Without Integral Smoke Detectors.
 - UL 464 - Audible Signaling Appliances.
 - UL 38 - Manually Actuated Signaling Boxes for Use with Fire-Protective Signaling Systems
 - UL 346 - Waterflow Indicators for Fire Protective Signaling Systems.
 - UL 1971 - Signaling Devices for the Hearing-Impaired.
 - UL-1480 - Speakers for Fire Alarm, Emergency, and Commercial and Professional Use
 - UL 1481 - Power Supplies for Fire Protective Signaling Systems.
 - UL 1711 - Amplifiers for Fire Protective Signaling Systems.
 - UL 1635 - Digital Alarm Communicator System Units
 - UL-1638 - Signaling Appliances - Private Mode Emergency and General Utility Signaling
 3. CSFM - State of California
 4. International Code Council
 - International Bus base Code
 - International Fire Code

International Mechanical Code
Federal Codes and Regulations

5. Americans with Disabilities Act (ADA)

1.4 Scope of Work

- A. The Contractor shall design, furnish, and install, unless otherwise indicated, all the items required for a complete state-of-the-art, non-proprietary, field programmable, addressable intelligent fire alarm and supervisory system, and a one-way voice communication system as outlined in the specifications to replace the existing fire alarm systems. The Contractor shall be responsible for compliance with the entire project specifications and the Orange County Fire Authority (OCFA) and Authority Having Jurisdiction (AHJ) as well as the following guidelines.
- B. The contractor shall connect the new fire alarm systems to the integrated communications with the existing Hydrogen gas detection and Methane gas detection systems.
- C. The contractor shall install new and additional initiating and notification devices as required to meet the current California Fire Code (CFC) and NFPA.
- D. The contractor shall remove and replace all existing fire alarm systems including fire alarm control panels, remote annunciators, alarm power supply boosters, detectors, initiating devices, notification devices, conduits, and wiring with new fire alarm systems required by the OCFA and AHJ. The standalone fire alarm systems shall be integrated into the network and independently operated,
- E. The guidelines are not intended to be all-inclusive and do not limit or define the Contractor's Scope of Work, the work includes the following:
 - 1. The intent of this project is to replace the entire existing fire alarm systems with a new state-of the art, non-proprietary, field programmable, addressable intelligent fire alarm system and re-use existing field devices only where indicated on the drawings.
 - 2. Install new and additional notification appliances so that the bus base has a complete voice evacuation system compliant with local AHJ and ADA requirements.
 - 3. Provide and addressable control system, addressable initiating devices, notification appliances, power supplies, battery back-up, and remote nodes throughout the bus base as shown on the drawings.
 - 4. Replace all existing initiating devices throughout the bus base unless clearly indicated on the drawings as to be deleted or re-used. **This**

specifically includes the replacement of all spot-type, addressable, smoke detectors. Add additional initiating devices where shown on the drawings.

5. Provide and install all necessary addressable control modules and notification modules for activation and monitoring of the new remote visual devices and associated power supplies for all circuits throughout the bus base.
6. Connect the new fire alarm system to the elevator controls for elevator primary floor recall and alternate recall wherever existing elevator equipment has such capabilities.
7. Connect the new fire alarm panels and associated panels to dedicated 120VAC emergency power circuits.
8. Provide an on-site, factory-trained, state-certified technician to supervise the installation acceptable to the owner's representative.
9. Provide detailed terminal-to-terminal alarm system shop drawings, wiring diagrams, and battery calculations for all components and DC resistance voltage drop calculations not to exceed ten percent per notification appliance circuit, sequence of operations, and operating and maintenance instructions.
10. Obtain all permits and plan check. Permit and plan check fees will be reimbursed by OCTA at actual permit fee receipts without Contractor's mark up and/or labor.
11. Submit shop drawings and product data submittals to the AHJ and Owner's Representative for approval.
12. Conduct a complete pre-test of the system upon completion of installation to assure the Owner's Representative that the system is operational. This test shall take place prior to final acceptance test by the AHJ. This test shall provide a list of all initiating devices with their location description and device type. Pre-test shall be conducted and recorded electronically with results indicating time and date each device was tested.
13. Conduct a final acceptance test. The alarm Contractor shall furnish personnel who are familiar with the installation at a time convenient to the Owner's Representative and the AHJ. The final acceptance test will take place as soon as possible and convenient after the completion of the installation and the pretest.
14. Provide training of the Owner's Representative's engineering personnel in accordance with the specification.

15. Provide Owner's Representative with all record documents. Final payment shall not be received until all required documentation has been submitted.
16. Provide a one-year job site warranty of all materials and labor furnished under this section. Contractor to include factory warranty documentation.
17. The contractor shall remove all unnecessary existing wires, conduits, junction boxes, fire alarm devices and equipment, and terminal cabinets unless needed for re-use. Any existing wire that is to remain for use as spares shall be labeled as such.
18. The Contractor shall be responsible for providing all required professional engineering stamps/certification and all required contractor's license requirements, which are required by the Orange County Fire Authority (OCFA) and the State of California.
19. The Contractor is to comply with all provisions of the OCTA and OCFA Rules and Regulations.
20. Contractor shall complete all work within 270 calendar days from the Notice to Proceed from the Owner's Representative. This includes any and all drafting of drawings, submittals, submittal and permitting process, shipping of materials, demolition, installation, system programming, pretest, final inspection and approval from AHJ, provision of close-out documentation, and any other requirements of the specification.
21. The Contractor shall keep loud noise equipment during the installation to a minimum, so tenants in nearby spaces are not disturbed.

1.4.1 Related Work - Fire Alarm

- A. Work and/or equipment provided in other Sections and related to the fire alarm system shall include, but not be limited to:
 1. Sprinkler waterflow and supervisory switches shall be wired and connected by the contractor. Modification of existing sprinkler devices to accommodate monitoring by the new fire alarm system shall be the responsibility installing contractor.
 2. Duct smoke detectors shall be furnished, wired, and connected by the contractor. The contractor shall furnish necessary duct opening to install the duct smoke detectors.
 3. Emergency generator status monitoring
 - a. Running indication

- b. Fail to start indication

Note: This does not include modification to such systems and is limited to the capability of the existing system, if any.

1.5. System Description

1.5.1. General Fire Life Safety System

- A. The systems supplied under this specification shall be a new UL Listed and CSFM approved modular fire alarm network that uses independently addressed fire detection devices, input/output control modules, amplifiers and speakers.
- B. The network shall utilize token ring, peer-to-peer communications. The network shall consist of a main panel and remote-control panels. To enhance survivability, each control panel shall be an equal, active functional member of the network, capable of making all local decisions and initiating network tasks for other panels. In the event of a panel failure or communications failure between panels, panels shall be capable of forming sub-networks and remain operational between communicating panels. Master/slave system configurations shall not be considered as equal.
- C. The system shall be fully field programmable such that virtually any combination of system output functions may be correlated to any type of input event(s). Inputs may be combined using Boolean logic, be time dependent or under manual control, as defined by required system operation. All software operations are to be stored in a non-volatile programmable memory within the fire alarm control panels. There shall be no limit, other than maximum system capacity, as to the number of addressable devices which may be in alarm simultaneously.
- D. Addressable smoke detector sensitivity settings for both pre-alarm and alarm activation shall be automatically individually configurable for both daytime and nighttime operation. Addressable smoke detectors shall be UL listed for automatic sensitivity testing. Ease of maintenance shall be facilitated by the use of panel based and PC based system diagnostics.
 - 1. The system shall automatically test smoke detector sensitivity, eliminating the need for manual sensitivity testing.
 - 2. Ground fault detection and annunciation shall be by individual module address for supervised input and output devices.
 - 3. System test operation shall be configurable by individual addressable devices, and not disable entire circuits.
 - 4. The system shall be capable of generating a graphical map of connected all addressable devices to aid in circuit troubleshooting.
 - 5. Placement supervision of addressable devices shall couple a device's

location (not its address) to the programmed system response.

- E. The system shall provide a one-way multi-channel emergency communication system for the distribution of emergency messages to facility occupants.
- F. System panels and annunciators shall utilize configurable message routing and selective event messaging to direct event information only to the required system displays and printers as determined by the event type and location
- G. The fire alarm system shall be provided with one-way voice command speakers and strobe notification appliances.
- H. All system circuit wiring shall be in accordance with the approved set of drawings:
 - 1. All communication data circuits shall be Style 4 supervised signaling circuits.
 - 2. All fire alarm and supervisory alarm initiating circuits shall be Style B electrically supervised circuits from the fire alarm control panel to the devices.
 - 3. All notification appliance circuits shall be Style Y electrically supervised circuits from the fire alarm control panel to the devices.
 - 4. All point addressable signaling line circuits shall be Style 4 supervised circuits.
- I. Included in this scope of work will be the removal of the existing fire alarm manual pull stations as indicated on the approved drawings.

1.5.2. Fire Alarm Performance

1.5.2.1. General Requirements

- A. Comply with the provisions of NFPA 72 and the operational requirements of this specification.
- B. The system shall identify all off normal conditions and log each condition into the system as an event.
 - 1. The system shall automatically display on the control panel Liquid Crystal Display (LCD) the first (oldest) event of the highest priority by type and the most recent event. The event priority shall be alarm, supervisory, trouble, and monitor.
 - 2. The system shall utilize four sequential event queues.

3. For each event, the display shall include the event number, the type of event, a 40-character custom user description, and acknowledgement status.
 4. The user shall be able to review the event queue using the rotary controller.
 5. New alarm, supervisory, or trouble events shall sound a distinct, silence-able audible signal at the control panel.
 6. The LCD shall show the system time and the number of active and disabled points in the system, and the number of events in the alarm, supervisory, trouble and monitor queues.
 7. Specific input/output devices shall operate in accordance with the alarm, supervisory, trouble, monitor sections that follow and the input/output matrix.
- C. All critical systems, sub-systems and circuits shall be monitored for integrity. System faults shall be annunciated.
- D. Horn / Strobes shall be synchronized on each floor.
- E. Batteries shall be sized to support the system for 24 Hrs. of standby operation followed by 15 minutes of alarm operation at the end of the 24 Hour period.
- F. Off premises reporting of the loss of AC mains power to any system component shall be automatically delayed for a period of time acceptable to the AHJ to reduce traffic at the central monitoring station due to wide-area power failures.
- G. Event processing and display shall be prioritized as follows:
1. Fire alarms
 2. Supervisory events
 3. Trouble events
 4. Monitor events

1.5.3 System Operation

- A. The point addressable fire alarm and one-way voice communication system shall perform the following functions:
1. Continuous monitoring of the status of all fire alarm and supervisory

signal initiating devices.

2. Continuous monitoring of all electrically supervised fire alarm initiating, supervisory, and notification appliance circuits.
 3. Continuous monitoring of all panels, notification equipment, and data transmission lines.
 4. Continuous monitoring of all addressable modules.
 5. Operations of elevator controls as required and within the capability of the existing elevator equipment.
 6. Operation of all audible and visual signals as required.
 7. Operation of all required HVAC controls.
 8. Operation of all magnetic door holders as required.
 9. Operation of all stairwell locks as required.
 10. Transmission of a common alarm, trouble, sprinkler waterflow and valve supervisory signals to the UL listed central station as required.
 11. Operate in accordance with the Sequence of Operation listed on the bid set drawings provided by Cal Bus base Systems Inc.
- B. Upon change in status to any device on the system, the CPU shall activate audible and visual status change indicators and display the system point number, point description, and message associated with the point on the system's operator terminal.
- C. Activation of any sprinkler waterflow switch, smoke detector, duct smoke detector, special suppression system, sprinkler supervisory valve, or other fire alarm initiating device shall cause the following indicated on the approved fire alarm drawings with the same job number as this specification.
1. Sprinkler system waterflow switch operation shall:
 - a. Activate audible and visible status change indicators and display the system point number, point description, and message associated with the point on the system's operator terminal and remote LCD annunciators.
 - b. Light the appropriate floor and device type on the annunciator (if applicable).

- c. Activate audible and visual notification appliance \devices and transmit a three (3)-cycle slow whoop tone on the floor of alarm (Activate voice instructions as determined by the owner). Visible notification appliances shall continue to flash until system is reset.
 - d. Release all doors normally held open by door-control devices and unlock stairwell doors.
 - e. Activate stair pressurization fans.
 - f. Shutdown associated HVAC fans.
 - g. Transmit a common fire alarm signal to the approved central station.
 - h. Perform any and all functions indicated on the approved set of fire alarm drawings. In case of a discrepancy between this specification and the approved drawings, the bid set of drawings instructions shall take precedence.
2. Area smoke detector operation shall:
- a. Activate audible and visible status change indicators and display the system point number, point description, and message associated with the point on the system's operator terminal and remote LCD annunciators.
 - b. Light the appropriate floor and device type on the annunciator (if applicable).
 - c. Activate audible and visual notification appliance \devices and transmit a three (3)-cycle slow whoop tone on the floor of alarm (Activate voice instructions as determined by the owner). Visible notification appliances shall continue to flash until system is reset.
 - d. Release all doors normally held open by door-control devices and unlock stairwell doors.
 - e. Activate stair pressurization fans.
 - f. Shutdown associated HVAC fans.
 - g. Transmit a common fire alarm signal to the approved central station.
 - h. Perform any and all functions indicated on the approved set of fire alarm drawings. In case of a discrepancy between this specification

and the approved drawings, the bid set of drawings instructions shall take precedence.

3. Elevator lobby or elevator machine room smoke detector shall:
 - a. Activate audible and visible status change indicators and display the system point number, point description, and message associated with the point on the system's operator terminal and remote LCD annunciators.
 - b. Light the appropriate floor and device type on the annunciator (if applicable).
 - c. Activate audible and visual notification appliance \devices and transmit a three (3)-cycle slow whoop tone on the floor of alarm (Activate voice instructions as determined by the owner). Visible notification appliances shall continue to flash until system is reset.
 - d. Release all doors normally held open by door-control devices and unlock stairwell doors.
 - e. Activate stair pressurization fans.
 - f. Shutdown associated HVAC fans.
 - g. Transmit a common fire alarm signal to the outside monitoring company (AM-Tech) and Central Communications Center.
 - h. Recall the elevators to the first floor or the alternate floor.
 - i. Perform any and all functions indicated on the approved set of fire alarm drawings. In case of a discrepancy between this specification and the approved drawings, the bid set of drawings instructions shall take precedence.
4. Duct smoke detector activation shall (supervisory condition):
 - a. Activate audible and visible status change indicators and display the system point number, point description, and message associated with the point on the system's operator terminal and remote LCD annunciators.
 - b. Light the appropriate floor and device type on the annunciator (if applicable).
 - c. Shutdown the associated HVAC fans.

- d. Activate stair pressurization fans.
 - e. Transmit a common fire alarm signal to the approved central station.
 - f. Perform any and all functions indicated on the approved set of fire alarm drawings. In case of a discrepancy between this specification and the approved drawings, the bid set of drawings instructions
5. Special suppression system (i.e., SF200, etc.) activation shall:
- a. Activate audible and visible status change indicators and display the system point number, point description, and message associated with the point on the system's operator terminal and remote LCD annunciators.
 - b. Light the appropriate floor and device type on the annunciator (if applicable).
 - c. Activate audible and visual notification appliance \devices and transmit a three (3)-cycle slow whoop tone on the floor of alarm (Activate voice instructions as determined by the owner). Visible notification appliances shall continue to flash until system is reset.
 - d. Release all doors normally held open by door-control devices and unlock stairwell doors.
 - e. Transmit a common fire alarm signal to the approved central station.
 - f. Perform any and all functions indicated on the approved set of fire alarm drawings. In case of a discrepancy between this specification and the approved drawings, the bid set of drawings instructions shall take precedence.
7. Supervisory device operation shall:
- a. Activate audible and visible status change indicators and display the system point number, point description, and message associated with the point on the system's operator terminal and remote LCD annunciators (unless specifically indicated on certain annunciators per the Owner's representative, specifications, or bid drawings).
 - b. Light the appropriate floor and device type on the annunciator (if applicable).

- c. Transmit a common fire alarm signal to the approved central station.
 - d. Perform any and all functions indicated on the approved set of fire
- D. Removal of any device, wiring disarrangement, or system component failure shall display on the operator's terminal and display the change of status, time, date, point description on a point-by-point basis, and the message associated with the point and transmit a trouble signal to the outside monitoring company (AM-Tech) and Central Communications Center.
- E. The one-way voice communication system shall perform the following functions:
 - 1. Monitor all electronically supervised evacuation audio and visual notification circuits.
 - 2. Provide local visible zone annunciation of speaker circuits.
 - 3. Upon activation of an alarm initiating device, cause the affected zone or zones to automatically select.
 - 4. Allow evacuation messages to be transmitted to the selected evacuation zone when the microphone push-to-talk switch is depressed.
 - 5. Operate all audible notification appliances as indicated.
 - 6. Operate all visual notification appliances as indicated.
 - 7. Removal of any notification appliance from its circuit, wiring, and disarrangement of the system component failure shall display on the voice communication system operator's terminal the change in status, time, date, zone, or circuit description and message associated with the circuit or zone. Transmit a trouble signal to the digital alarm communicator transmitter.
 - 8. Manual activation of any voice zone selector switch at the voice communication panel will cause the following functions to occur:
 - a. Speaker/strobe evacuation zone switch shall:
 - (1) Activate all visual notification circuits within the evacuation zone.
 - (2) Select all speaker circuits within the evacuation zone.
 - (3) Allow a pre-alert tone followed by a verbal message to be transmitted to the selected evacuation zone when the

microphone push-to-talk switch is depressed.

1.6. Submittals

1.6.1. Submittal General

- A. The contractor shall not purchase any equipment for the specified system until the owner has approved the project submittals in their entirety and has returned them to the contractor.
- B. Approved submittals allow the contractor to proceed with the installation and shall not be construed to mean that the contractor has satisfied the requirements of these specifications.
- C. Each submittal shall include a detailed list of variations that the submittal may have from the requirements of the contract documents.
- D. The contractor shall provide specific notation on each shop drawing, sample, data sheet, installation manual, etc. submitted for review and approval, of each variation.
- E. Any conflicts in the contract documents and/or with Orange County Fire Authority (OCFA) and Authority Having Jurisdiction (AHJ) requirements shall be submitted to the owner in writing 7 days prior to bid.
- F. Submittals shall be approved by authorities having jurisdiction prior to submitting them to the Owner's Representative.
- G. Provide shop drawings, including bus base floor plans showing device locations; complete wiring and schematic diagrams, including conduit size and wire routing, wiring size and counts, wire color codes, and field terminations; control panel layout, including all modules, circuit terminals and interconnections, overall cabinet dimensions; complete riser diagrams indicating wiring sequence for all devices and control equipment. Drawings shall show proposed layout and anchorage of equipment and appurtenances and equipment relationship to other parts of the work, including clearances for maintenance and operation. Prepare shop drawings at a minimum 3/32 inch equals 1 foot plans and a 1/4 inch equals 1 foot for details. All shop drawings are to be provided with the installing contractor's information clearly printed on each drawing.
- H. Provide substantiating calculations, including calculations for determining secondary power supply requirements and voltage drop calculations. Battery calculations shall list the supervisory and alarm current requirements for each component. Battery recharging period shall be included in the calculations. The voltage drop calculations shall list the wire distance and current draw of each notification appliance circuit and the formula used and shall not exceed 10 percent. Any conflict between the specification and the approved set of bid

drawings will result in giving the drawings precedent.

1. Prior to purchase or fabrication of any material, approval shall be obtained from the Owner's Representative, and the AHJ. Make six (6) complete submittals of all shop drawings, wire diagrams, and literature for the AHJ.
2. Provide complete submittal within three (3) weeks after notice to proceed from Owner's Representative.
3. Partial submittals are not acceptable and will be returned to the contractor un-reviewed.

1.7. Delivery, Storage, and Handling of Materials

- A. Storage of installation materials will be the sole responsibility of the contractor. An on-site location must be approved and agreed upon with Owner's Representative prior to storing materials. Locks and storage bins will be the responsibility of the contractor.
- B. The facility accepts no responsibility for materials stored prior to installation.
- C. The Owner's Representative will designate an area within the facility for storage of all materials. At the end of each working day, uninstalled materials will be returned to the designated area. Material, equipment, tools, etc. will not be left outside the storage area without the prior consent of the Owner's Representative.
- D. The cost of all material handling, delivery, and freight is the Contractor's responsibility. The Owner's Representative will not be responsible for material delivered to the site.
- E. Maintain premises free from accumulation of waste materials or rubbish caused by this work. At the end of each working day, remove from the site all surplus materials, tools, and all waste. The Contractor shall leave the premises clean to the Owner's Representative's satisfaction.

1.8 Warranty

- A. Contractor shall provide a one (1) year job site warranty covering all material and labor furnished under this section. Contractor shall include factory warranty documentation.
 1. Warranty shall cover all fire alarm equipment in the facility new or used.
 2. Warranty shall cover all installation materials used to install new equipment and any existing installation materials such as, but not limited to, conduit, junction boxes, wire, wire connectors, terminal strips, and other miscellaneous installation materials.

3. Warranty shall cover all related installation labor.
 4. Warranty shall commence beginning from the date of the final inspection with the Authority Having Jurisdiction.
- B. The guarantee shall include all necessary material, travel, labor, and parts to replace defective components or materials at the job site. Contractor shall provide labor and material for routine repairs not caused by bus base alterations, acts of God, or system abuse. The Contractor shall commence repair of any "in guarantee" defects within 12 hours of notification of such defects.
- C. The Contractor shall make allowances in his guarantee to cover the diagnosis of system defects that might ultimately be the responsibility of others to correct. When this occurs, the Owner's Representative and other affected trades shall be notified.
- D. If the Owner experiences more than two (2) spurious or unexplained false alarms within a 48-hour period while the system is under warranty, the Contractor shall provide the necessary labor, materials, and technical expertise to promptly correct the problem(s) without additional cost.

1.9 As-Built Drawings

- A. Upon completion of installation, Contractor shall provide to Owner's Representative an accurate drawing detailing actual locations of installed fire alarm equipment.
1. Device labeling shall be correct and include device address and location.
 2. Walls and room labels shall be correct and approved by the Owner's Representative on As-Built drawings.
 3. Owner's Representative shall incur no additional costs for the changes made to the drawings. Owner's Representative may ask for changes to be made after the inspection due to room or devices labeling correction without additional cost prior to final submittal package but after final inspection has occurred with the Authority Having Jurisdiction.
- B. Furnish Owner's Representative with one (1) full size hard copy print of each approved drawing, revised to show "as-built" conditions. In addition, one half-size set of the "as-built" designs and one (1) CD-ROM copy of each approved shop drawings in AutoCAD 2022 format, revised to show "as-built" conditions, in *.dwg format. The Contractor shall provide Owner's Representative with a copy of the entire fire alarm system program on a diskette or removable storage device; another copy shall be kept in the same format at the Fire Alarm Control Panel including all passwords. All changes to the program are to be updated and copied

to the Owner's Representative's version. Final payment shall not be provided until all required documentation has been received. A copy of all programming software will be left in the FACP and a copy will be given to the Owner's Representative.

1.10. Clean-Up

- A. Contractor shall maintain the premises free from accumulation of waste materials or rubbish caused by this work to the Owner's Representative's satisfaction. Carpeting and other flooring shall be protected and clean-up will be the responsibility of the Contractor.
- B. At the completion of work, Contractor shall remove all surplus materials, tools, etc. and leave the premises clean to the Owner's Representative's standard of cleanliness.

1.11. Safety

- A. All work shall be performed in compliance with the Occupational Safety and Health Act of 1970 and Construction Safety Act Standards.

1.12. Quality Assurance

- A. The Contractor shall maintain a fully staffed service branch including technical service personnel within 80 miles of the project location.
- B. All supplied equipment shall be standard products of the manufacturer and regularly stocked at the service branch location.
- C. Trained personnel shall perform all electrical installation of the fire alarm system, including wire installation and termination.
- D. The Owner's Representative shall approve any subcontractors used to install portions of the system prior to commencement of the installation.
- E. Contractor shall be a C-10 and C-16 licensed contractor and authorized installer of the pre-selected fire alarm system.

2. Part 2 - Products

2.1. Manufacturer

- A. The manufacturer of the system equipment shall be regularly involved in the design, manufacture, and distribution of the products specified in this document. These processes shall be monitored under a quality assurance program that meets ISO 9000/9001 requirements.

- B. The catalog numbers used are those of Honeywell Silent Knight, Edwards Vigilant, Kidde, or "equal", and constitute the type and quality of equipment to be furnished.
- C. If equipment of another manufacturer is to be submitted for approval as equal, the contractor shall, at the time of bid, list all exceptions taken to these specifications, all variances from these Specifications and all substitutions of operating capabilities or equipment called for in these specifications and forward said list to the engineer. Any such exceptions, variances or substitutions not listed at the time of bid and are subsequently identified in the submittal, shall be grounds for immediate disapproval without comment. Final determination of compliance with these specifications shall rest with the Owner's Representative, who, at his or her discretion, may require proof of performance.
- D. Brands other than what is listed on the bid drawings can be substituted under the following conditions:
 - 1. Requirements of this specification, including but not limited to, those specific to brand substitution, are met.
 - 2. A written notice must be included on the bid documents to the Owner's Representative.
 - 3. The system must operate in accordance with the Sequence of Operation shown on the bid drawings.
 - a. The system must meet all other specification criteria listed in this specification and on the bid drawings created by Cal Bus base Systems Inc.
- E. Alternate product submissions based upon use of a product line considered proprietary in its distribution, design, application software, or ongoing maintenance and repair shall not be acceptable. Proof of a product's non-proprietary nature shall be the burden of the contractor at the time of bid and shall be in the form of written documentation. The determination of a product's compliance to this requirement shall be exclusively that of the Owner's Representative and may be based on, amongst other criteria, the ability for the Owner's Representative to choose to have multiple, competing companies, provide support and system programming for ongoing maintenance and changes to the system.

2.2 Installation Material

- A. All wire and cable shall be UL listed and/or approved for use in fire alarm signal systems per NFPA 70, Article 760. All wire shall be a solid or stranded copper conductor, minimum size of No. 18 AWG, and insulation rated at 600V.
- B. Manufacturer's recommended wire type and gauge shall be used.
- C. Any existing wiring that is re-used during the installation must comply with this specification and manufacturer's specifications or be replaced. Contractor shall warrant any existing wire and new wire installed for the same duration as he

equipment.

- D. All wiring shall be appropriately color-coded, and permanent wire markers shall be used to identify the terminations for each circuit at the control panel.
- E. Splices shall be kept at a minimum. Splices shall be made within outlet boxes, junction boxes, and pull boxes, Splices shall be made with the use of terminal strips in all fire alarm terminal boxes and wire nuts may only be used in junction boxes in the field, not fire alarm panels nor terminal cabinets.
- F. All conduit, junction boxes, pull boxes, and fittings shall conform to the following:
 - 1. Conduit:
 - a. Conduit shall be 3/4 inch minimum and be rigid steel conduit in wet areas, electric metallic tubing and flexible conduit, in conformance with NFPA70. Flexible conduit whips shall not exceed six (6) feet in length.
 - b. Conduit exposed to weather shall comply with NFPA70 and the requirements of the AHJ.
 - c. All fittings shall be listed and approved for the specific conduit.
 - d. For threaded rigid steel conduit, do not use threadless or compression-type fittings.
 - e. All EMT fittings shall be steel or malleable iron "concrete-tight" or "rain-tight" couplings and connectors, compression, set screw, or stainless-steel multiple-locking type. Do not use intention type fittings.
 - f. All new and existing conduit penetrating through walls or ceilings shall be fire caulked.
 - 2. Junction and Pull Boxes:
 - a. Shall be installed in accordance with the National Electric Code, state, and local codes.
 - b. Provide galvanized sheet steel junction and pull boxes, with screw-on covers and of types, shapes, and sizes to suit each respective location and installation.
 - c. Boxes exposed to weather, moisture, at/or adjacent to water or steam connections, at sprinkler waterflow switches and supervisory

switches shall be corrosion-resistant, cast-metal weatherproof outlet boxes of types, shapes, and sizes, including depth of boxes with threaded conduit ends, cast-metal face plates suitable for each application, including face-plate gaskets and corrosion-resistant fasteners.

- d. Each box shall be large enough to accommodate required splices and conduit in accordance with NEC.
- e. Boxes shall be painted red for the fire alarm identification with the letters "FA" appearing in black permanent lettering.
- f. Pull boxes dimensions, cover, size, etc., shall be sized by the Contractor to allow for proper installation and pulling of the specified cable, no splices of newly installed cabling shall be permitted in any pull box (new or existing). All cables shall be ordered/cut to the required lengths and pulled without splices. Cable shall be looped in pull boxes to allow for future segment replacement (between boxes), which may develop a fault and require replacement.

3. Terminal Cabinets:

- a. Shall be UL listed for use in electrical wiring systems.
- b. Minimum of 12" by 12" by 4" deep with a hinged, lockable cover or a plate cover attached by screws.
- c. Terminal strips shall be numbered and a list of all terminations shall be permanently affixed to the inside cover of all terminal cabinets or adjacent to each terminal strip.
- d. Terminal cabinets shall be identified as part of the fire alarm system on the outward face of the cabinet by permanent nameplate stating "Fire Alarm Terminal Cabinet".

4. Wire and Cable

- a. Wire used for 120 VAC power circuits shall be a minimum size 12 AWG standard copper conductors, with THHN insulation.
- b. Wire used for 24VDC power circuits and strobe circuits shall be a minimum size of 12 AWG standard copper conductors with THHN insulation.
- c. Cable used for one-way voice communication speakers shall be a minimum size of 16 AWG solid copper conductors; UL listed for

fire alarm use and labeled TFN or THHN.

- d. Cable used for point addressable, signaling line circuits and network transmission systems shall be a minimum size of 18 AWG solid copper conductors, UL listed for fire alarm system use and labeled TFN or THHN. Note: Distances may require greater size of conductor.
 - e. The cable shall be installed per National Electrical Code, Articles 725 and 760.
 - f. The cable shall be marked with the wire model number, wire gauge, and number of conductors.
 - g. The cable shall be UL listed for fire alarm signaling applications.
 - h. All wiring conduit fills must be calculated with reference to NFPA 70.
- G. All wiring components shall be UL listed. Wiring methods shall conform to NFPA 70, sections 760 and 780.
- H. All wiring shall be checked for grounds, opens, shorts, and extraneous voltage prior to terminations (this includes shields and twisted-shield cables).
- I. Dedicated lockable breakers for the fire alarm panel or transponder panel power circuits shall be provided for the fire alarm system.
- J. 120 VAC power wiring shall not be installed in the same conduit with any other fire alarm wiring.
- K. Non-power limited cable and power limited cable shall not be installed in the same conduit, as well as any high voltage.

2.3. Control Equipment and Materials

2.3.1. Overview

- A. All materials, equipment, accessories, devices and other facilities and appurtenances covered by these specifications or noted on the drawings shall be new, best suited for the intended use and shall conform to applicable and recognized standards for their use and supplied by a single manufacturer. Should any equipment provided under this specification be supplied by a different manufacturer, that equipment shall be recognized compatible by BOTH manufacturers and listed as such as required by Underwriters' Laboratories.

- B. The fire alarm control panel(s) shall be a multi-processor based networked system

designed specifically for fire, one-way emergency audio communications, and smoke control applications. The control panel shall be listed and approved for the application standard(s) as listed in the References section of this specification.

- C. The control panel shall include all required hardware, software and site-specific system programming to provide a complete and operational system. The control panel(s) shall be designed such that interactions between any applications can be configured and modified using software provided by the manufacturer. The control panel(s) operational priority shall assure that life safety takes precedence among the activities coordinated by the control panel.
- D. The operating controls shall be located in a steel enclosure behind a locked door with viewing window. All control modules shall be labeled, and all zone locations shall be identified. All panel modules shall be placement supervised for and signal a trouble if damaged or removed.
- E. Contractor shall install new back-up batteries at all control panels and remote power supplies regardless of the panel being new or existing. Existing batteries will not be re-used.

2.3.2. System Features

- A. Each control panel shall include the following capabilities:
 - 1. Supervision of the system electronics, wiring, detection devices and software.
 - 2. Up to 1500 analog/addressable input/output points.
 - 3. Network connections with up to 8 other control panels.
 - 4. Support multiple dialers (DACTs) and modems.
 - 5. An RS-232 serial communication port.
 - 6. An internal audible signal with different patterns to distinguish between alarm, supervisory, trouble and monitor events.
 - 7. Support four 24 VDC and eight channel Audio NACs.
 - 8. User configurable switches and LED indicators to support auxiliary functions.
 - 9. Log up to 1100 chronological events.
 - 10. The ability to download all applications and firmware from the configuration computer at a single location on the fire network.

11. A real-time clock for time stamps and timed event control.
12. Electronic addressing of intelligent addressable devices.
13. Provide an independent hardware watchdog to supervise software and CPU operation.
14. “Dry” alarm, trouble and supervisory relay contacts.
15. An optional 10/100 Base-T Ethernet port for network programming, diagnostics, and monitoring.
16. Control panel modules shall plug into a chassis assembly for ease of maintenance.
17. Field wiring shall connect to the panel using removable connectors.

2.3.2. User Oriented Features

- A. Each control panel shall include the following user-oriented features:
 1. An LCD user interface control/display that shall annunciate and control system functions.
 2. Provide discreet system control switches for reset, alarm silence, panel silence, and acknowledge.
 3. A Rotary Control shall be provided to simplify scrolling through the display and entering data.
 4. A “lamp test” feature shall verify operation of all visual indicators on the panel.
 5. An authorized user shall have the ability to operate or modify system functions including system time, date, passwords, holiday dates, restart the system and clear control panel event history file.
 6. An authorized user shall have the ability to disable/enable devices, zones, actions, timers and sequences.
 7. An authorized user shall have the ability to activate/restore outputs, actions, sequences, and simulate detector smoke levels.
 8. An authorized user shall have the ability to enter time and date,

reconfigure an external port for download programming, initiate programming and change passwords.

9. An authorized user shall have the ability to test the functions of the installed system.
10. Service groups shall facilitate one-man walk testing. Service/test groups shall be capable of being configured with any combination of addressable devices, independent of SLC wiring. It shall be possible to program alternate device responses when the device's service group is active.
11. Devices not in an active service group shall process all events normally.
12. Provide internal system diagnostics and maintenance user interface controls to display/report the power, communication, and general status of specific panel components, detectors, and modules.
13. SLC loop controller diagnostics shall identify common alarm, trouble, ground fault, Class A fault, and map faults. Map faults include wire changes, device type changes by location, device additions/deletions and conventional open, short, and ground conditions. Ground faults on the supervised circuit wiring of remote addressable modules shall be identified by device address.
14. An authorized user shall have the ability to generate a report history for alarm, supervisory, monitor, trouble, smoke verification, watchdog, and restore activity.
15. System reports shall provide detailed description of the status of system parameters for corrective action or for preventative maintenance programs. Reports shall be displayed by the operator interface or capable of being printed on a printer.
16. An authorized user shall have the ability to display/report the condition of addressable analog detectors. Reports shall include device address, device type, percent obscuration, and maintenance indication. The maintenance indication shall provide the user with a measure of contamination of a device upon which cleaning decisions can be made.

2.3.3. Programmability

- A. A Windows-based Configuration Utility (CU) shall be used to create the site-specific system programming. The utility shall facilitate programming of any input point to any output point. The utility shall allow customization of fundamental system operations using initiating events to start actions, timers, sequences and logical algorithms.
- B. Programming capabilities shall include:

1. Zoning of initiation devices.
 2. Initiation of events by time of day, day of week, day of year.
 3. Initiation of events by matrix groups (X-Y coordinate relationships) for releasing systems.
 4. Initiation of events using OR, AND NOT and counting functions.
 5. Prioritizing system events.
 6. Programmable activation of detector sounder bases by detector, groups of bases, or all bases.
 7. Directing selected device messages to specific panel annunciators.
 8. Detector sensitivity selection by time of day.
 9. Support of 256 Central Monitoring Station accounts and directing selected device messages to any one of ten Central Monitoring Stations.
 10. The configuration utility shall time and date stamp all changes to the site-specific program and shall facilitate program versioning and shall store all previous program version data. The utility shall provide a compare feature to identify the differences between different versions of the site-specific program.
 11. The configuration utility shall be capable of generating reports which detail the configurations of all fire alarm panels, addressable devices and their configuration settings including generating electrical maps of the addressable device SLCs.
 12. The configuration utility shall support the use of bar code readers to expedite electronic addressing and custom programming functions.
- C. The fire alarm control panel shall be a Honeywell Silent Knight, Kidde, Edwards Vigilant or equal to.

2.4. Power Supply

- A. System power supply(s) shall be a high efficiency switched mode design providing four (4) supervised power limited 24 VDC output circuits as required by the panel and external loads fed by the panel. Initial power supply loading shall not exceed 80% of power supply capacity in order to allow for future system expansion.

- B. Each system power supply shall be individually supervised. Power supply trouble signals shall identify the specific supply and the nature of the trouble condition.
- C. Upon failure of normal (AC) power, the affected portion(s) of the system shall automatically switch over to secondary power without losing any system functionality. When powered from batteries, the power supply shall employ “Voltage Boost” technology to insure that output voltage never drops below 22.5 VDC regardless of battery voltage.
- D. All system power supplies shall be capable of recharging their associated batteries, from a fully discharged condition to a capacity sufficient to allow the system to perform consistent with the requirements of this section, in 48 hours maximum.
- E. All standby batteries shall be continuously monitored by the power supply. The power supply shall be able to perform an automatic test of batteries and indicate a trouble condition if the batteries fall outside a predetermined range. Power supplies shall incorporate the ability to adjust the charge rate of batteries based on ambient temperatures. The power supply shall automatically disconnect the battery before low voltage damages the battery. Low battery and disconnection of battery power supply conditions shall immediately be annunciated as battery trouble.
- F. Batteries shall utilize sealed lead acid chemistry. Initial battery capacity shall provide 125% of calculated capacity requirements in order to allow for future system expansion.
- G. All AC power connections shall be to the bus base's designated emergency electrical power circuit and shall meet the requirements of NFPA 70 and NFPA 72. The power circuit disconnect means shall be clearly labeled FIRE ALARM CIRCUIT CONTROL and shall have a red marking. The location of the circuit disconnect shall be labeled permanently inside each control panel the disconnect serves.
- H. The power supply shall be an Edwards brand, Vigilant PS10-B or equal to.

2.5. Panel LCD and Common Controls

- A. The system shall be designed and equipped to receive, monitor, and annunciate signals from devices and circuits installed throughout the facility.
- B. Each fire alarm control panel (system node) shall be capable of supporting a backlit LCD display. The display on each system node shall be configurable to *display* the status of any and/or all combinations of all alarm, supervisory, trouble, monitor, or service group event messages on the network. Each LCD display on the system shall be capable of being programmed to allow *control* functions of any combination of nodes on the entire network.

- C. The LCD display shall provide separate alarm, trouble, supervisory, and monitor event queues of to minimize operator confusion. Receipt of alarm, trouble, and supervisory signals shall activate integral audible devices at the control panel(s) and at each remote annunciation device. The integral audible devices shall produce a sound output upon activation of not less than 85 dBA at 10 feet.
- D. The LCD display shall contain the following system status indicators:
 - 1. System Power Indicator
 - 2. System CPU Fail Indicator
 - 3. Ground Fault Indicator
 - 4. Disabled Points Indicator
 - 5. System Common Alarm Indicator
 - 6. System Common Trouble Indicator
 - 7. System Common Supervisory Indicator
- E. The LCD display shall contain the following system switch/indicators:
 - 1. System Reset Switch with Indicator
 - 2. System Alarm Silence Switch with Indicator
 - 3. System Panel Silence Switch with Indicator
 - 4. Acknowledge Switch with Indicator
- F. The LCD display shall contain the following system function control:
 - 1. Rotary Controller/Switch - to scroll through the display and enter data.
- G. System shall have a 960 Character Backlit Liquid Crystal Text Display with the following specific characteristics:
 - 1. The user interface shall provide a backlit LCD that will allow custom event messages of up to 42 characters. The interface shall provide a minimum of 24 lines by 40 characters and provide the emergency user hands free viewing of the first seven (7) and last highest priority events. The last highest priority event shall always display and update automatically. Events shall be automatically placed in one of four queues:

alarm, trouble, supervisory and monitor. The total number of active events by type shall be displayed. Visual indication shall be provided of any event type that has not been acknowledged. It shall be possible to customize the designation of all user interface LEDs and Switches for local language requirements.

2. Instructional text messages support a maximum of 2,000 characters each.

H. The 960 character LCD display shall be an Edwards brand, Vigilant VM-1, or equal to.

2.6 Audio Annunciation and Control

A. Provide a master one-way emergency communications system (ECS) as part of the main fire alarm control panel. The ECS shall contain a paging microphone and shall be capable of generating and delivering three audio messages simultaneously to remote parts of the facility.

B. All audio messages and live pages shall originate at the one-way audio control unit. The one-way audio control unit shall store up to two (2) minutes of pre-recorded audio messages digitally as WAV files. These messages shall be automatically directed to various areas in a facility under program control. The unit shall have the capacity to store up to 10 individual audio messages and to simultaneously play back two (2) different messages in addition to live page message.

C. During non-alarm conditions, the ECS control unit shall provide audio path supervision.

D. The one-way emergency communications system shall provide control switches to direct live paging messages as follows:

1. "All Call" to direct the page messages to all areas in the facility, overriding all other messages and tones.
2. "Page to Evacuation Area" to direct the message to the evacuation area(s), overriding all other messages and tones.
3. "Page to Alert Area" to direct page messages to the area(s) receiving the alert message and tones, overriding all other messages and tones.
4. "Page to Balance Bus base" to direct page messages to the areas) in the facility NOT receiving either the evacuation area or alert area messages.

E. The system shall automatically deliver a preannounce tone of 1000 Hz for three seconds when the emergency operator presses the microphone PTT key. A 'ready to page' LED shall flash during the preannounce phase and turn steady when the

system is ready for the user's page delivery. The system shall include a page deactivation timer which activates for 3 seconds when the emergency user releases the microphone talk key. Should the user subsequently press the microphone key during the deactivation period a page can be delivered immediately. Should the timer complete its cycle the system shall automatically restore emergency signaling and any subsequent paging will be preceded by the pre-announce tone. A VU display shall indicate voice level to the emergency operator.

- F. The one-way emergency communications system shall be capable of supporting up to 64 remote microphone inputs and a line level audio input.
- G. The fire alarm control panels shall support remote cabinets with amplifiers to receive, amplify and distribute messages through speakers over supervised circuits.
- H. The master one-way emergency audio control unit shall be an Edwards brand, Vigilant VM-PMI or equal to.

2.6.1. Remote Microphone

- A. Remote microphones shall be installed as indicated on the bid drawings designed by Cal Bus base Systems Inc.
- B. The remote microphone shall facilitate live page announcements over the FACP system from locations distant from the FACP. It shall be possible to connect up to 63 remote microphones to an FACP.
- C. The remote microphone shall feature a Push-to-Talk switch; local and remote page active LEDs, and a trouble LED.
- D. The remote microphone shall operate on filtered-regulated 24 VDC power derived from the panel power supply. Power shall be supplied directly from the FACP or listed auxiliary power supply, ensuring a reliable and monitored power source.
- E. The remote microphone shall be an Edwards brand, Vigilant VM-REMIC series or equal to.

2.7 Reports

- A. The system shall provide the operator with system reports that give detailed description of the status of system parameters for corrective action, or for preventative maintenance programs. The system shall provide these reports via the main LCD, and shall be capable of being printed on any system printer.
- B. The system shall provide a report that gives a sensitivity listing of all detectors

that have less than 80% environmental compensation remaining. The system shall provide a report that provides a sensitivity (% Obscuration per foot) listing of any particular detector.

- C. The system shall provide a report that gives a listing of the sensitivity of all of the detectors on any given panel in the system, or any given analog/addressable device loop within any given panel.
- D. The system shall provide a report that gives a chronological listing of at least the last 1000 system events.
- E. The system shall provide a listing of all of the firmware revision listings for all of the installed components in the system.

2.8. System Wiring

2.8.1. Fire Network Wiring

- A. The network inter panel wiring shall be Class B. The network media shall be copper as specified on the drawings.
- B. The system supplied under this specification shall utilize node to node, direct wired peer-to-peer network operations. The system shall utilize independently addressed, smoke detectors, heat detectors and input/output modules as described in this specification. The peer-to-peer network shall contain multiple nodes consisting of the fire alarm panels.
- C. When a network is wired in a Class B configuration, a single break or short on the network wiring isolates the system into two groups of panels. Each group continues to function as a peer-to-peer network working with their combined databases. When wired using a Class A configuration, a single break or short on the network wiring causes the system to isolate the fault, and network communication continues uninterrupted, without any loss of function. Should multiple wiring faults occur, the network re-configures into many sub-networks and continues to respond to alarm events from every panel that can transmit and receive network messages.
- D. The copper network interface shall be an Edwards brand, Vigilant VM-NOC RS-485 Network Option Card or equal to.

2.8.2. System SLC Wiring and Characteristics

- A. The signaling line circuit connecting panels/nodes to intelligent addressable devices including, detectors, monitor modules, control modules, isolation modules, intrusion detection modules and notification circuit modules shall be Class B (style 4). All signaling line circuits shall be supervised and power limited.

- B. When the addressable devices on a signaling line circuit cover more than one designated fire/smoke compartment, a wire-to-wire short on the circuit shall not affect the operation of the addressable devices in other fire/smoke compartments.
- C. Each SLC shall support 125 addressable detector addresses and 125 module addresses. The SLC shall support 100% of all addressable devices in alarm and provide support for a 100% compliment of detector isolator bases. Initial circuit loading shall not exceed 80% in order to allow for future system expansion.
- D. T-taps (branching) shall be permitted on Class B circuits. Where possible, the devices installed at the end of each branch should be easily accessible for troubleshooting, e.g. a pull station at normal mounting height.
- E. The addressable device SLC module shall be UL Listed for use with code compliant, electrically sound existing wiring.
- F. Each intelligent addressable device shall transmit information about its location with respect to other devices on the circuit. This information shall be used to create an "As-Built" wiring diagram as well as provide enhanced supervision of a device's physical location. The device message and programmed system output function shall be associated with the device's location on the SLC circuit location and not a device address.
- G. The SLC module shall allow replacement of "same type" devices without the need to address and reload the "location" parameters on replacement device.
- H. The SLC/Panels shall notify the user when non-programmed devices are detected on the SLC circuit. The SLC/Panels shall notify the user when the wrong device type is installed at a location configured for a different device type on the SLC circuit.
- I. The addressable device signaling line circuit module shall be an Edwards brand, Vigilant VM-SLC or equal to.

2.8.3. Notification Appliance Circuits (not to include one-way speaker circuits)

- A. All notification circuits shall be supervised, and power limited. Non-power limited circuits are not acceptable. All notification appliance circuits shall be Class B (Style "Y").
- B. Initial circuit loading shall not exceed 80% in order to allow for future system expansion.
- C. 24 VDC Notification Appliance circuits characteristics:
 - 1. Notification appliance circuits shall utilize a "voltage boost" circuit to insure FACP terminal voltage never drops below 22.5VDC even under low battery conditions.

2. Notification appliance circuits shall have a minimum circuit output rating of 3 amps @ 24 VDC
3. 24VDC NACs shall be polarized and provide both strobe synchronization and a horn silence signal on a single pair of wires.

2.8.4. Audio Notification Appliance Circuits

- A. Audio notification appliance circuits shall be polarized and have a minimum circuit output rating of 50 watts @ 25V audio, and 35 watts @ 70V audios.

2.8.4.1. Audio Amplifiers

- A. Each audio power amplifier shall have two supervised inputs, allowing the amplifier to output either of the two audio channels as directed by system programming.
- B. Audio amplifiers shall be of switched mode design; power limited and protected from short circuits conditions on the audio circuit wiring. Each amplifier output shall provide a selectable Class A/B, 25/70 VRMS output, suitable for connection to emergency speakers.
- C. In the event of a loss of the audio input signal, the audio amplifiers shall automatically default to an internally generated 1kHz alarm tone.
- D. Provide a standby audio amplifier that shall automatically sense the failure of a primary amplifier, and fully replace the function of the failed amplifier.
- E. Provide as minimum, one thirty (30) watt audio amplifier per paging channel. Initial amplifier loading shall not exceed 80% in order to allow for future system expansion. Calculations shall assume each speaker is connected at one (1) watt.
- F. Audio amplifiers shall be Edwards brand, Vigilant SIGA-AA series or equal to.

2.8.5. Initiating Device Circuits

- A. Conventional (2-wire) initiating device circuits monitoring manual fire alarm stations, smoke and heat detectors, waterflow switches, valve supervisory switches, fire pump functions, and air pressure supervisory switches shall be Class B (Style "A" or "B").
- B. Initiating device circuits shall be configurable for latched or non-latched operation and configurable to initiate alarm, supervisory or monitor events.
- C. End-of-line resistors for conventional initiating device circuits shall be covered with insulated tubing, terminated with ring lugs and display a UL label.

2.9. DACT

- A. The system shall provide off premises communications capability using a Digital Alarm Communications Transmitter (DACT) for sending system events to multiple Central Monitoring Station (CMS) receivers over conventional telephone lines.
- B. The system shall provide the CMS(s) with point identification of system events using Contact ID (SIA DC-05) protocol.
- C. The dialer shall support up to 255 individual accounts and to send account information to eight (8) different receivers, each having a primary and secondary telephone access number. System events shall be capable of being directed to one or more receivers depending on event type or location as specified by the system design.
- D. In the event of a fire alarm panel CPU failure during a fire alarm condition, the DACT degrade mode shall transmit a general fire alarm signal to the CMS.
- E. The owner shall arrange for two (2) dedicated loop-start phone lines to be terminated using two RJ31X jacks within 5 ft of the main fire alarm control panel.
- F. The DACT shall be an Edwards brand, Vigilant VM-DACT or equal to.

2.10. Remote Booster Power Supply

- A. Install Remote NAC Power Supplies (boosters) at the locations shown on the drawings designed by Cal Bus base Systems Inc., as required, to minimize NAC voltage drops. Remote NAC power supplies shall be treated as peripheral NAC devices and shall not be considered fire alarm control units.
- B. The NAC power supplies shall be fully enclosed in a surface mounted steel enclosure with hinged door and cylinder lock, and finished in red enamel. Door keys shall be the identical to FACP enclosure keys. The enclosure shall have factory installed mounting brackets for additional UL listed fire alarm equipment within its cabinet. Enclosures shall be sized to allow ample space for interconnection of all components and field wiring, and up to 10AH batteries. The enclosure shall have provisions for an optional tamper switch. All FACP addressable control modules required to initiate the required NAC power supply output functions shall be installed within the NAC power supply enclosure
- C. Remote NAC power supply *input* circuits shall be configurable as Class B supervised inputs or for connection to any 6 to 45 VDC initiation source.
- D. Remote booster power supplies shall provide four (4) synchronized Class B supervised or two (2) Class A, power limited, 24VDC filtered and regulated

Notification Appliance Circuits (NACs). Each NAC output shall be configurable as a continuous 24Vdc auxiliary power output circuit. **The booster power supply shall be capable of a total output of 10 amps.**

- E. The power supply NACs shall be configurable to operate independently at any one of the following rates: continuous synchronized, or 3-3-3 temporal. It shall be possible to configure the NACs to follow the main FACP NAC or activate from intelligent addressable synchronized modules. All visible <audible> NACs within the facility shall be synchronized.
- F. Upon failure of primary AC power, the remote power supply shall automatically switch over to secondary battery power without losing any system functions. It shall be possible to delay reporting of an AC power failure for up to 6 hours. All standby batteries shall be continuously monitored by the power supply. Low battery and disconnection of battery power supply conditions shall immediately annunciated as locally as battery trouble. All power supply trouble conditions (DC power failure, ground faults, low batteries, and IDC/NAC circuit faults) shall identify the specific remote power supply affected at the main FACP. All power supply trouble conditions except loss of AC power shall report immediately. Interconnecting NAC Booster power supplies in a manner which prevents identification of an individual power supply trouble shall not be considered as an equal.
- G. The remote booster power supply shall be capable of recharging up to 24AH batteries to 70% capacity in 24 hours maximum. Batteries provided shall be sized to meet the same power supply performance requirements as the main FACP, as detailed elsewhere in this specification.
- H. All AC power connections shall be to the bus base's designated dedicated emergency electrical power circuit. The power circuit disconnect means shall be clearly labeled FIRE ALARM CIRCUIT CONTROL and shall have a red marking. The location of the circuit disconnect shall be labeled permanently inside the each remote NAC power supply the disconnect serves.
- I. The remote NAC power supplies shall be Edwards brand, Vigilant model MIRBPS/APS series devices.

2.11. Remote Annunciators

- A. Provide a UL864 listed remote annunciator at the location(s) shown on the drawings. The annunciators shall be semi-flush mounted.
- B. The annunciator shall display the same text information on the 80 character back-lit LCD as the FACP to which it is connected.
- C. The following common indicators shall be provided on the annunciator:

1. Annunciator Power, Fire Alarm, Supervisory, Ground Fault, Trouble, Controls Enabled and Ack/Silence LEDs, and an internal buzzer.
- D. The following common controls shall be provided on the annunciator:
1. Silence, Trouble Silence, Drill, System Reset (enabled where deemed appropriate by AHJ and Owner's Representative), and Lamp Test push buttons. The common controls shall be enabled using a key switch.
 2. The annunciators shall be capable of driving up to 24 pairs of LEDs for point annunciation.
 3. The annunciator shall be powered by a battery backed up UL Listed 24 VDC power source.
 4. The fire alarm remote annunciator shall be and Edwards brand, Vigilant R-Series annunciator or equal to.

2.12. Peripheral Components

2.12.1. Addressable Detectors

2.12.1.1 General Requirements for Intelligent Addressable Flame, Heat and Smoke Detectors

- A. Each detector shall contain an integral microprocessor which shall determine if the device is normal, in alarm, or has an internal trouble. The microprocessor's non-volatile memory shall permanently store the detector's serial number, device type and system address. It shall be possible to address each intelligent device without the use of switches. Devices requiring switches for addressing shall not be considered as equal. Memory shall automatically be updated with the hours of operation, last maintenance date, number of alarms and troubles, time of last alarm, and analog signal patterns for each sensing element just before the last alarm.
- B. Each detector shall be capable of identifying up to 32 diagnostic codes. This information shall be available for system maintenance. The diagnostic code shall be stored at the detector.
- C. Each addressable detector on the Signaling Line Circuit (SLC) shall transmit information regarding its location with respect to other intelligent devices on the signaling line circuit to the control panel, creating an "As-Built" circuit map. The circuit mapping function shall provide location supervision of all intelligent devices on the signaling line circuit. An intelligent detector's programmed system response functions shall be associated with the detector's actual *location* on the

signaling line circuit and *not with the detector's address*. After system commissioning, detectors improperly installed in the wrong location shall function according to the mapped programmed response for its *location* on the circuit, not its detector's address.

- D. Two status LEDs shall be provided on each detector. A flashing green LED shall indicate normal operation; flashing RED shall indicate the alarm state. A steady RED and steady GREEN shall indicate alarm state when in the stand-alone mode. LEDs shall be visible from any direction.
- E. The system shall allow for changing of detector types for service replacement purposes without the need to reprogram the system. The replacement detector type shall automatically continue to operate with the same programmed sensitivity levels and functions as the detector it replaced, without the need for reprogramming. System shall display an off-normal condition until the proper detector type is installed or a change in the device type profile has been made.
- F. Detectors shall be rated for operation in the following environment unless specifically noted:
 - 1. Temperature: 32°F to 120°F (0°C to 49°C)
 - 2. Humidity: 0-93% RH, non-condensing
- G. **Detectors with addressing components in the base shall not be considered as equal.**
- H. The intelligent detectors shall be Honeywell Silent Knight series, Kidde, Notifiers, Edwards Vigilant devices or equal to.

2.12.1.2 Addressable Photo-Heat Detectors

- A. Contractor understands that all spot-type smoke, smoke-heat, and smoke detectors shall be replaced as per the bid drawings. No existing detectors will be re-used whether the contractor plans to install the same type or that of a different brand/manufacturer.
- B. Provide addressable combination photoelectric smoke-heat detectors at the locations shown on the drawings.
- C. Each smoke-heat detector shall be individually programmable to operate at any one of five (5) sensitivity settings. The detector shall also store pre-alarm and alternate pre-alarm sensitivity settings. Pre alarm sensitivity values shall be configurable in 5% increments of the alarm and alternate alarm sensitivity settings respectively. The detector shall be able to differentiate between a long term drift above the pre alarm threshold and fast rise above the threshold. The detector shall monitor the sensitivity of the smoke sensor. If the sensitivity shifts outside the

UL limits, a trouble signal shall be sent to the panel. It shall be possible to automatically change the sensitivity of individual intelligent addressable smoke detectors for day and night (alternate) periods.

- D. The smoke chamber shall be UL listed for field replacement.
- E. Each detector shall utilize an environmental compensation algorithm that shall automatically adjust for background environmental conditions such as dust, temperature, and pressure. The detector shall provide a maintenance alert signal when 80% (dirty) of the available compensation range has been used. The detector shall provide a dirty fault signal when 100% or greater compensation has been used.
- F. Three low mass thermistors shall act as fixed temperature 130 to 140 °F (54 to 60 °C) heat sensors, contributing along with the photo sensor to the fire alarm algorithm.
- G. The Combination photoelectric smoke-heat detectors shall be Honeywell Silent Knight series, Kidde, Notifiers, Edwards Vigilant or equal to.

2.12.1.3. Addressable Photoelectric Smoke Detector

- A. Contractor understands that all spot-type smoke, smoke-heat, and smoke detectors shall be replaced as per the bid drawings. No existing detectors will be re-used whether the contractor plans to install the same type or that of a different brand/manufacturer.
- B. Provide addressable photoelectric smoke detectors at the locations shown on the drawings.
- C. The photoelectric smoke detector shall be suitable for direct insertion into air ducts up to 3 ft (0.91m) high and 3 ft (0.91m) wide with air velocities up to 5,000 ft/min. (0-25.39 m/sec) without requiring specific duct detector housings or supply tubes.
- D. Each smoke detector shall be individually programmable to operate at any one of five (5) sensitivity settings. The detector shall also store pre-alarm and alternate pre-alarm sensitivity settings. Pre alarm sensitivity values shall be configurable in 5% increments of the alarm and alternate alarm sensitivity settings respectively. The detector shall be able to differentiate between a long-term drift above the pre alarm threshold and fast rise above the threshold. The detector shall monitor the sensitivity of the smoke sensor. If the sensitivity shifts outside the UL limits, a trouble signal shall be sent to the panel. It shall be possible to automatically change the sensitivity of individual intelligent addressable smoke detectors for day and night (alternate) periods.
- E. The smoke chamber shall be UL listed for field replacement.

- F. Each detector shall utilize an environmental compensation algorithm that shall automatically adjust for background environmental conditions such as dust, temperature, and pressure. The detector shall provide a maintenance alert signal when 80% (dirty) of the available compensation range has been used. The detector shall provide a dirty fault signal when 100% or greater compensation has been used.
- G. The photoelectric smoke detectors shall be Honeywell Silent Knight series, Kidde, Notifiers, Edwards Vigilant or equal to.

2.12.1.4. Addressable Rate of Rise Heat Detector

- A. Contractor understands that all spot-type smoke, smoke-heat, and smoke detectors shall be replaced as per the bid drawings. No existing detectors will be re-used whether the contractor plans to install the same type or that of a different brand/manufacturer.
- B. Provide intelligent rate-of-rise heat detectors at the locations shown on the drawings.
- C. The detector shall continually monitor the temperature of the air in its surroundings to minimize thermal lag to the time required to process an alarm. The detector shall utilize a low mass thermistor heat sensor and operate at a temperature rate-of-rise alarm point of 15°F per minute. The integral microprocessor shall determine if an alarm condition exists and initiate an alarm based on the analysis of thermistor data. Systems using central intelligence for alarm decisions shall not be considered as equal.
- D. The heat detector shall be rated for ceiling installation at a minimum of 70 ft centers and also be suitable for wall mount applications.
- E. The Intelligent combination fixed temperature / rate-of-rise heat detectors shall be Honeywell Silent Knight series, Kidde, Notifiers, Edwards Vigilant.

2.12.1.5. Standard Detector Base

- A. Provide standard detector bases suitable for mounting on either a North American 2 ½ inch deep 2-gang box; standard 4 inch, 1½ inch deep square box; or European 100 mm square box at the locations shown on the drawings.
- B. The bases shall utilize a twist-lock design and provide screw terminals for all field wiring connections.
- C. The base shall contain no active electronics and support all GSA-Series detector types.

- D. The base shall be capable of supporting a Remote Alarm LED Indicator. Provide remote LED alarm indicators where shown on the plans.
- E. Removal of the respective detector shall not affect communications with other detectors.
- F. The standard addressable detector base for this specification shall be an Edwards brand, Vigilant, GSA-SB4.
- G. If required according to the bid set of drawings, the remote LED indicator shall be Honeywell Silent Knight series, Kidde, Notifiers, Edwards Vigilant.

2.12.1.6. Addressable Duct Smoke Detector

- A. Provide intelligent low profile photoelectric duct smoke detectors at the locations shown on the drawings.
- B. The intelligent duct smoke detector shall operate in ducts having from 100ft/min to 4,000ft/min air velocity. The detector shall be suitable for operation over a temperature range of -20 to 158F° and offer a harsh environment gasket option. The detector shall utilize an air exhaust tube and an air sampling inlet tube that extends into the duct air stream up to ten (10) feet. Design of the detector shall permit sampling tube installation from either side of the detector and permit sampling tube installation in 45- degree increments to ensure proper alignment with duct airflow. Drilling templates and gaskets to facilitate locating and mounting the housing shall be provided.
- C. The intelligent duct smoke detector shall obtain information from a photoelectric sensing element. The detector shall be able to differentiate between a long term drift above the pre alarm threshold and fast rise above the threshold. The detector shall monitor the sensitivity of the smoke sensor. If the sensitivity shifts outside the UL limits, a trouble signal shall be sent to the panel
- D. Each detector shall utilize an environmental compensation algorithm that shall automatically adjust for background environmental conditions such as dust, temperature, and pressure. The detector shall provide a maintenance alert signal when 80% (dirty) of the available compensation range has been used. The detector shall provide a dirty fault signal when 100% or greater compensation has been used.
- E. The intelligent duct smoke detector shall provide a form "C" auxiliary alarm relay rated at 2amps @ 30Vdc. The position of the relay contact shall be supervised by the control panel software. Operation of the relay shall be controlled either by its respective detector processor or under program control from the control panel as required by the application. Detector relays not capable of programmed operation independent of the detector's state shall not be considered as equal. The detector shall be equipped with a local magnet-activated test switch.

- F. Each duct detector shall be installed and testing in accordance with manufacturer's instructions. Test results shall be submitted to the owner.
- G. Remote test switches/LED indicators shall be provided below the detector on the ceiling where detectors are not visible to indicate location of the detector in locations indicated on the drawings.
- H. The Intelligent Photoelectric Duct Smoke Detector shall be an Edwards brand, Vigilant model GSA-SD.
- I. The remote key operated test switch / LED shall be Honeywell Silent Knight series, Kidde, Notifiers, Edwards Vigilant.

2.12.2. Initiation and Control Modules

2.12.2.1.General Regarding Modules

- A. Intelligent addressable multifunction modules shall be provided at the locations shown on the bid drawings to provide the specific system input and output functions described by the operation section and functional matrix found on the drawings.
- B. The operation of multifunction modules shall be software configurable at the site to meet operational conditions, and may be changed at any time by download changes from the control panel. The intelligent multifunction modules shall utilize electronic addressing. Modules using rotary or DIP switches, memory chips and / or jumpers for addressing shall not be considered as equal.
- C. Each intelligent multifunction module on the Signaling Line Circuit (SLC) shall transmit information regarding its location with respect to other intelligent devices on the signaling line circuit to the control panel, creating an "As-Built" circuit map. The circuit mapping function shall provide location supervision of all intelligent devices on the signaling line circuit. An intelligent device's programmed system response functions shall be associated with the device's actual *location* on the signaling line circuit and *not with the device's address*. After system commissioning, devices improperly installed in the wrong location shall function according to the mapped programmed response for its *location* on the circuit, not its device address.
- D. All input /output status decisions shall be made by the microprocessor within the module. Communications with a control panel shall not be required in order for the module to identify off-normal input/output conditions. Modules with supervised input or output circuits shall be capable of identifying ground fault conditions down to the module address level.
- E. Each module shall be equipped with two (2) diagnostic indicators; a green LED to

confirm communications and a red LED to display active status. LEDs shall be visible through the finished cover plate. The module shall be capable of storing a unique serial number and up to 24 diagnostic codes, hours of operation, number of alarms and troubles, and time of last alarm in its memory which can be retrieved for troubleshooting.

- F. Modules shall be rated for operation in the following environment:
 - 1. Temperature: 32°F to 120°F (0°C to 49°C)
 - 2. Humidity: 0-93% RH, non-condensing
- G. Where multiple modules are mounted in close proximity to each other, plug-in modular versions of the modules and motherboards shall be available to minimize field wiring and facilitate troubleshooting.
- H. The addressable multifunction modules shall Honeywell Silent Knight series, Kidde, Notifiers, Edwards Vigilant devices or equal to.

2.12.2.2.Addressable Single Class B Input

- A. Provide addressable single class B input multifunction modules at the locations shown on the drawings.
- B. The module shall be suitable for mounting on North American 2½” (64mm) deep 1-gang boxes and 1½” (38mm) deep 4” square boxes with 1-gang covers.
- C. Each module shall provide one (1) supervised Class B input circuit configurable as one of the following “personalities.”
 - 1. Normally-Open Alarm Latching (for alarm initiation applications)
 - 2. Normally-Open Alarm Delayed Latching (for waterflow switch applications)
 - 3. Normally-Open Active Non-Latching (for limit switch and monitor applications)
 - 4. Normally-Open Active Latching (for tamper switch and supervisory applications)
- D. Each module shall identify and report by device address, ground faults and opens associated with its initiating device circuit, to the control panel. Single function modules or without individual ground fault detection identification capability shall not be considered as equal.

- E. The Intelligent Single Class B Input Module shall be Honeywell Silent Knight series, Kidde, Notifiers, Edwards Vigilant or equal to.

2.12.2.3.Addressable Dual Class B Input

- A. Provide addressable dual class B input multifunction modules at the locations shown on the drawings.
- B. The module shall be suitable for mounting on North American 2½" (64mm) deep 1-gang boxes and 1½" (38mm) deep 4" square boxes with 1-gang covers.
- C. Each module shall provide two (2) supervised Class B input circuit configurable as one of the following "personalities."
 - 1. Normally-Open Alarm Latching (for alarm initiation applications)
 - 2. Normally-Open Alarm Delayed Latching (for waterflow switch applications)
 - 3. Normally-Open Active Non-Latching (for limit switch and monitor applications)
 - 4. Normally-Open Active Latching (for tamper switch and supervisory applications)
- D. Each module shall identify and report by device address, ground faults and opens associated with its initiating device circuits, to the control panel. Single function modules or without individual ground fault detection identification capability shall not be considered as equal.
- E. The Addressable Dual Class B Input Module shall be Honeywell Silent Knight series, Kidde, Notifiers, Edwards Vigilant or equal to.

2.12.2.4.Addressable Universal Class A-B Modules

- A. Provide intelligent universal Class A/B multifunction modules at the locations shown on the drawings.
- B. The module shall be suitable for mounting on North American 2½" (64mm) deep 2-gang boxes and 1½" (38mm) deep 4" square boxes with 2-gang covers.
- C. Each universal module shall be configurable as one of the following "personalities."
 - 1. Two (2) supervised Class B Normally-Open Alarm Latching. (for alarm initiation applications)

2. Two (2) supervised Class B Normally-Open Alarm Delayed Latching. (for waterflow switch applications)
 3. Two (2) supervised Class B Normally-Open Active Non-Latching. (for limit switch and monitor applications)
 4. Two (2) supervised Class B Normally-Open Active Latching. (for tamper switch and supervisory applications)
 5. One (1) form "C" dry relay contact rated at 2 amps @ 24 Vdc. (for circuit control applications)
 6. One (1) supervised Class A Normally-Open Alarm Latching. . (for alarm initiation applications)
 7. One (1) supervised Class A Normally-Open Alarm Delayed Latching. . (for waterflow switch applications)
 8. One (1) supervised Class A Normally-Open Active Non-Latching. (for limit switch and monitor applications)
 9. One (1) supervised Class A Normally-Open Active Latching. . (for tamper switch and supervisory applications)
 10. One (1) supervised Class A 2-wire Smoke Alarm Non-Verified. (for alarm initiation applications)
 11. One (1) supervised Class B 2-wire Smoke Alarm Non-Verified. (for alarm initiation applications)
 12. One (1) supervised Class A 2-wire Smoke Alarm Verified (for alarm initiation applications)
 13. One (1) supervised Class B 2-wire Smoke Alarm Verified (for alarm initiation applications)
 14. One (1) supervised Class A Signal Circuit, 24Vdc @ 2A. (for occupant notification applications)
 15. One (1) supervised Class B Signal Circuit, 24Vdc @ 2A. . (for occupant notification applications)
- D. Each module shall identify and report ground faults, opens and shorts associated with its supervised input / output circuits, by device address, to the control panel. Single function modules or without individual ground fault detection identification capability shall not be considered as equal.

- E. The Universal Class A/B Module shall Honeywell Silent Knight series, Kidde, Notifiers, Edwards Vigilant or equal to.

2.12.2.5.Addressable Single Input Monitor

- A. Provide addressable single input monitor modules at the locations shown on the drawings.
- B. The module shall be suitable for mounting on North American 2½” (64mm) deep 1-gang boxes and 1½” (38mm) deep 4” square boxes with 1-gang covers.
- C. Each module shall provide one (1) supervised Class B input circuit configurable as one of the following “personalities.”
 - 1. Normally-Open Active Non-Latching (for limit switch and monitor applications)
 - 2. Normally-Open Active Latching (for tamper switch and supervisory applications)
- D. Each module shall identify and report by device address, ground faults and opens associated with its initiating device circuit, to the control panel. Single function modules or without individual ground fault detection identification capability shall not be considered as equal.
- E. The Intelligent Single Input Monitor Module shall be Honeywell Silent Knight series, Kidde, Notifiers, Edwards Vigilant or equal to.

2.12.2.6.Addressable Single Input Signal Circuit

- A. Provide addressable single input signal modules at the locations shown on the drawings.
- B. The module shall be suitable for mounting in North American 2½” (64mm) deep 2-gang boxes and 1½” (38mm) deep 4” square boxes with 2-gang covers, or European 100mm square boxes.
- C. The addressable single input signal module shall provide one (1) supervised Class B notification appliance circuit.
- D. The signal module shall be configurable for the following operations:
 - 1. 24 VDC synchronized NAC circuit, 2 amps @ 24 VDC.
 - 2. Audio notification circuit 25Vrms @ 50 watts or 70 Vrms @ 35 watts
 - 3. Firefighter’s Telephone control with ring tone

- E. The addressable single signal module shall be an Honeywell Silent Knight series, Kidde, Notifiers, Edwards Vigilant or equal to.

2.12.2.7. Addressable Relay

- A. Provide addressable control relay modules at the locations shown on the drawings.
- B. The module shall be suitable for mounting on a North American 2 ½" (64mm) deep 1-gang box or 1 ½" (38mm) deep 4" square box with 1-gang covers.
- C. The module shall provide one (1) form C dry relay contacts rated at 24Vdc @ 2 amps (pilot duty) to control external appliances or equipment. The position of the relay contact shall be confirmed by the system firmware. The relay coil shall be magnetically latched to reduce wiring and ensure 100% of the relays on the SLC can be energized at same time.
- D. The addressable control relay module shall be an Honeywell Silent Knight series, Kidde, Notifiers, Edwards Vigilant or equal to.

2.12.2.8 Addressable Manual Stations

- A. Manual pull stations are to be removed.
- B. Patch and paint shall be the responsibility of the installing Contractor (see Part 3 - Execution for details).

2.13. Beam Smoke Detectors

- A. Beam type smoke detectors shall be supplied at the locations shown on the drawings.
- B. The beam smoke detector shall consist of a microprocessor-based combination transmitter/receiver unit and a retroreflector. The detector shall operate over a range of 15 to 160 ft. (4.6 to 48.8 m) or 160 to 300 ft. (48.8 to 100 m) as required by actual distance (contractor to verify in the field). Alarm thresholds shall be field configurable at settings of 25%, 35% or 50% obscuration. Automatic gain control shall be provided to compensate for aging and dirt buildup on detector optics. The detector shall utilize LEDs to ensure proper alignment without the use of special tools. The beam smoke detectors shall be powered from the system control panel.
- C. Testing shall be carried out using calibrated test filters.

2.14 Notification Appliances

2.14.1 Notification Appliance General

- A. All appliances supplied for the requirements of this specification shall be UL Listed for Fire Protective Service and shall be capable of providing the “equivalent facilitation” which is allowed under the Americans with Disabilities Act Accessibilities Guidelines (ADA(AG)) and shall be UL 1971 Listed.
- B. All appliances shall be of the same manufacturer as the fire alarm control panel specified to insure absolute compatibility between the appliances and the control panels, and to insure that the application of the appliances are done in accordance with the single manufacturer’s instructions.
- C. Any appliances that do not meet the above requirements and are submitted for use must show written proof of their compatibility for the purpose intended. Such proof shall be in the form of documentation from all manufacturers that clearly states that their equipment (as submitted) is 100% compatible with each other for the purpose intended.
- D. All strobes shall be provided with lens markings oriented for wall mounting. Exterior mounted devices shall be provided with a weatherproof backbox.
- E. All visual appliances shall be synchronized. Light and audible output levels shall be designed to meet ADA and NFPA requirements
- F. All notification appliances shall be white unless noted otherwise on the drawings.

2.14.2 Strobes

- A. Provide low profile wall mounted strobes at the locations shown on the drawings.
- B. Low profile strobes shall mount in a North American 1-gang box and protrude less than 1” from the finished wall. Markings acceptable to code and the AHJ must be clearly visible on the device to indicate that the alert is for a fire event.
- C. The strobe output shall be switch selectable as required by its application from the following available settings: 15cd, 30cd, 75cd & 110cd. Selected strobe rating shall be visible when the strobe is in its installed position. Amber lens strobes shall be available with outputs of 12/24/60/88cd. Light shall be evenly distributed throughout the required volume using cavity and mask “FullLight” technology to prevent hot spots. Strobes using specular reflectors shall not be considered as equal.
- D. When multiple strobes are installed within view of each other, their outputs shall be synchronized within ten (10) milliseconds of each other for an indefinite period without the need for separate synchronization modules.
- E. Horn and strobe power, horn silencing, and strobe synchronization shall be

accomplished over a single pair of wires. In and out screw terminals shall accommodate 18AWG to 12 AWG wiring and have captive hardware.

- F. The strobes shall be Honeywell Silent Knight series, Kidde, Notifiers, Edwards Vigilant or equal to.

2.14.3. Speaker, Wall Mount

- A. Provide low profile wall mounted speakers at the locations shown on the drawings.
- B. The low-profile speakers shall mount in a North American 4" x 2 1/8" square electrical box, and protrude less than 1" from the finished wall. Markings acceptable to code and the AHJ must be clearly visible on the device to indicate that the alert is for a fire event.
- C. The speaker output shall be switch selectable from the following available settings: 2W (90dBA), 1W (87dBA), 1/2W (84dBA), or 1/4W (81dBA) at 10 ft. when measured in reverberation room per UL-464. Frequency response shall be 400 to 4,000Hz. The selected speaker wattage shall be visible when the speaker is in its installed position.
- D. The speaker shall provide in and out screw terminals shall accommodate 18AWG to 12 AWG wiring and have captive hardware.
- E. The low-profile wall mounted speakers shall be Honeywell Silent Knight series, Kidde, Notifiers, Edwards Vigilant or equal to.

2.14.4. Speaker, Ceiling Mount

- A. Provide low profile ceiling mounted speaker at the locations shown on the drawings.
- B. Speakers shall mount in a North American 4" x 2 1/8" square electrical box, or a 960A-4RF round flush box, and protrude less than 1.6" from the finished ceiling. Markings acceptable to code and the AHJ must be clearly visible on the device to indicate that the alert is for a fire event.
- C. The speaker output shall be switch selectable from the following available settings: 2W (91dBA), 1W (87dBA), 1/2W (84dBA), or 1/4W (80dBA) at 10 ft. when measured in reverberation room per UL-1480. Frequency response shall be 400 to 4,000Hz. The selected speaker wattage shall be visible when the speaker is in its installed position.
- D. The speaker shall provide in and out screw terminals shall accommodate 18AWG to 12 AWG wiring and have captive hardware.

- E. The low-profile ceiling mounted speaker shall be Honeywell Silent Knight series, Kidde, Notifiers, Edwards Vigilant or equal to.

2.14.5. Speaker, Weatherproof

- A. Provide low profile weatherproof speakers at the locations shown on the drawings.
- B. The weatherproof speaker shall mount in a North American 4" square 1 1/2" deep electrical box for indoor applications without a trim skirt and a 4" square 2 1/8" deep electrical box when used with a trim skirt. A factory supplied back box shall be supplied for weatherproof applications.
- C. The speaker shall be suitable for wall or ceiling mount and operate in temperatures from -40 to 151 degrees F. Markings acceptable to code and the AHJ must be clearly visible on the device to indicate that the alert is for a fire event.
- D. The speaker output shall be switch selectable from the following available settings:

Wattage	Switch Position	25Vrms	70Vrms
2W	T	90.0 dBA	89.7 dBA
1W	X	87.1 dBA	86.9 dBA
1/2 W	Y	84.0 dBA	83.9 dBA
1/4 W	Z	80.8 dBA	80.8 dBA

- E. Output is at 10 ft. when measured in reverberation room per UL-464. Frequency response shall be 400 to 4,000Hz. The selected speaker wattage shall be visible when the speaker is in its installed position.
- F. The speaker shall provide in and out screw terminals shall accommodate 18AWG to 12 AWG wiring and have captive hardware.
- G. The weatherproof speaker shall be Honeywell Silent Knight series, Kidde, Notifiers, Edwards Vigilant or equal to.

2.14.6. Speaker/Strobe, Wall Mount

- A. Provide low profile wall mounted speaker-strobes at the locations shown on the drawings.
- B. The low-profile speaker-strobes shall mount in a North American 4" x 2 1/8" square electrical box, without trims or extension rings, and protrude less than 1" from the finished wall. Markings acceptable to code and the AHJ must be clearly

visible on the device to indicate that the alert is for a fire event.

- C. The speaker output shall be switch selectable from the following available settings: 2W (90dBA), 1W (87dBA), 1/2W (84dBA), or 1/4W (81dBA) at 10 ft. when measured in reverberation room per UL-464. Frequency response shall be 400 to 4,000Hz. The selected speaker wattage shall be visible when the speaker/strobe is in its installed position.
- D. The strobe output shall be switch selectable as required by its application from the following available settings: 15cd, 30cd, 75cd & 110cd. Selected strobe rating shall be visible when the speaker-strobe is in its installed position. Amber lens strobes shall be available with outputs of 12/24/60/88cd. Light shall be evenly distributed throughout the required volume using cavity and mask "FullLight" technology to prevent hot spots. Strobes using specular reflectors shall not be considered as equal.
- E. When multiple strobes are installed within view of each other, their outputs shall be synchronized within ten (10) milliseconds of each other for an indefinite period without the need for separate synchronization modules
- F. Horn and strobe power, horn silencing, and strobe synchronization shall be accomplished over a single pair of wires. Both the speaker and strobe elements shall provide in and out screw terminals shall accommodate 18AWG to 12 AWG wiring and have captive hardware.
- G. The low-profile wall mounted speaker-strobes shall be Honeywell Silent Knight series, Kidde, Notifiers, Edwards Vigilant.

2.14.7. Speaker/Strobe, Ceiling Mount

- A. Provide low profile ceiling mounted speaker-strobes at the locations shown on the drawings.
- B. Speaker-strobes shall mount in a North American 4" x 2 1/8" square electrical box, or a 960A-4RF round flush box, and protrude less than 1.6" from the finished ceiling. Markings acceptable to code and the AHJ must be clearly visible on the device to indicate that the alert is for a fire event.
- C. The speaker output shall be switch selectable from the following available settings: 2W (91dBA), 1W (87dBA), 1/2W (84dBA), or 1/4W (80dBA) at 10 ft. when measured in reverberation room per UL-1480. Frequency response shall be 400 to 4,000Hz. The selected speaker wattage shall be visible when the speaker-strobe is in its installed position.
- D. The strobe output shall be switch selectable as required by its application from the following available settings: 15cd, 30cd, 75cd & 95cd or 95cd, 115cd, 150cd, & 177cd. Selected strobe rating shall be visible when the speaker-strobe is in its

installed position. Amber lens strobes shall be available with outputs of 13/26/65/82cd or 82/100/130/155cd.

- E. When multiple strobes are installed within view of each other, their outputs shall be synchronized within ten (10) milliseconds of each other for an indefinite period without the need for separate synchronization modules
- F. Strobe power and synchronization shall be accomplished over a single pair of wires. Both the speaker and strobe elements shall provide in and out screw terminals shall accommodate 18AWG to 12 AWG wiring and have captive hardware.
- G. The low profile ceiling mounted speaker-strobes shall be Honeywell Silent Knight series, Kidde, Notifiers, Edwards Vigilant.

2.14.8. Speaker/Strobe, Weatherproof

- A. Provide low profile weatherproof speaker-strobes at the locations shown on the drawings.
- B. The weatherproof speaker-strobes shall mount in a North American 4" square 1 ½" deep electrical box for indoor applications without a trim skirt and a 4" square 2 1/8" deep electrical box when used with a trim skirt. A factory supplied back box shall be supplied for weatherproof applications.
- C. The speaker-strobe shall be suitable for wall or ceiling mount and operate in temperatures from -40 to 151 degrees F. Markings acceptable to code and the AHJ must be clearly visible on the device to indicate that the alert is for a fire event.
- D. The speaker output shall be switch selectable from the following available settings:

Wattage	Switch Position	25Vrms	70Vrms
2W	T	90.0 dBA	89.7 dBA
1W	X	87.1 dBA	86.9 dBA
½ W	Y	84.0 dBA	83.9 dBA
¼ W	Z	80.8 dBA	80.8 dBA

- E. Output is at 10 ft. when measured in reverberation room per UL-464. Frequency response shall be 400 to 4,000Hz. The selected speaker wattage shall be visible when the speaker/strobe is in its installed position.
- F. The strobe output shall be switch selectable as required by its application from the following available settings:

**FIRE ALARM CONTROL PANELS REPLACEMENT
AT SANTA ANA BUS BASE**

**C-2-2230
EXHIBIT B**

		Standard Candela Output Speaker-Strobes				High Candela Output Speaker- Strobes			
		Strobe Switch Position							
Listing	Location	D	C	B	A	D	C	B	A
UL 1971	Indoor, Clear lens	15 cd	29 cd	70 cd	87 cd	102 cd	123 cd	147 cd	161 cd
UL 1971	Indoor, Amber lens	13 cd	25 cd	59 cd	62 cd	84 cd	101 cd	125 cd	130 cd
UL 1638	Outdoor, Clear lens	6 cd	12 cd	28 cd	35 cd	41 cd	50 cd	60 cd	65 cd
UL 1638	Outdoor, Amber lens	5 cd	10 cd	24 cd	25 cd	34 cd	41 cd	51 cd	52 cd

- G. Selected strobe rating shall be visible when the speaker-strobe is in its installed position
- H. When multiple strobes are installed within view of each other, their outputs shall be synchronized within ten (10) milliseconds of each other for an indefinite period without the need for separate synchronization modules.
- I. Horn and strobe power, horn silencing, and strobe synchronization shall be accomplished over a single pair of wires. Both the speaker and strobe elements shall provide in and out screw terminals shall accommodate 18AWG to 12 AWG wiring and have captive hardware.
- J. The weatherproof speaker-strobes shall be Honeywell Silent Knight series, Kidde, Notifiers, Edwards Vigilant or equal to.

2.15. Inspection Bar Codes

- A. Inspection bar codes shall be installed on all initiating devices, addressable modules, annunciators, control panels and power supplies.
- B. Inspection bar codes used by the system must utilize Code 3 of 9 or other approved format, and contain a minimum of eight (8) digits that comprise a unique serial identifier within the Web-based Reporting System. There shall be no duplication of device ID numbers. The ID number shall be printed below the bar code for identification purposes.
- C. Inspection bar codes shall be limited in size to no more than 2" (5cm) in width, and 3/8" (2 cm), in height and shall include a Mylar[®] or other protective coating to protect the bar code from fading due to sunlight or exposure.
- D. Inspection bar codes shall be installed on each device in such a manner as to

require that scanning of the bar code take place no further than 12" from the device during inspection.

2.16. System Operation Instructions

- A. Concise, clearly readable, and legible typewritten or printed instructions and a list of all devices on the system, including the type of device, label and address shall be mounted where directed by the Owner's Representative and encased under plastic or glass in a frame or other housing/box at a conspicuous location next to the main fire alarm control panel. The instructions shall include the steps to be taken by an operator upon a fire signal received and the function operation of the system under normal, alarm, and trouble conditions. Directions shall be concise. These instructions shall be in addition to the information provided with the operation and maintenance manual.

3. Part 3 - Execution

3.1. Installation

3.1.1. General

- A. The entire system shall be installed in a skillful manner in accordance with approved manufacturer's installation manuals, approved drawings and wiring diagrams.
- B. All work shall be performed in accordance with the requirements of NFPA 70 and NFPA 72.
- C. Coordinate locations of all devices with all other divisions' drawings and specifications.
- D. All fire alarm devices shall be accessible for periodic maintenance. Should a device location indicated on the contract drawings not meet this requirement, it shall be the responsibility of the installing contractor to bring it, in writing, to the attention of the Owner's Representative.
- E. Fasten equipment to structural members of bus base or metal supports attached to structure, or to concrete surfaces.
- F. All systems and system components listed to UL864 Control Units for Fire Protective Signaling Systems maybe installed within a common conduit raceway system, in accordance with the manufacture's recommendations. System(s) or system components not listed to the UL864 standard shall utilize a separate conduit raceway system for each of the sub-systems.
- G. No wiring except life safety system circuits and system power supply circuits shall be permitted in the control panel enclosures.
- H. Any low-voltage copper wiring that leaves the protection of a bus base shall be provided with a compatible UL 497B listed transient protection devices where the circuit leaves the bus base and where it enters the next bus base.
- I. Devices containing end-of-line resistors shall be appropriately labeled. Devices should be labeled such that removal of the device is not required to identify the EOL device.
- J. Concrete floors shall be X-rayed prior to core drilling on post tension slabs. Verify with engineer on type of slab prior to bid.

3.1.2. Electrical

3.1.2.1 Boxes, Enclosures, and Wiring Devices

- A. Boxes shall be installed plumb and firmly in position.
- B. Extension rings with blank covers shall be installed on junction boxes where required.
- C. Junction boxes served by concealed conduit shall be flush mounted.
- D. Fire alarm system junction box covers shall be painted red.
- E. Wiring within cabinets, enclosures, boxes, junction boxes and fittings shall be installed in a neat and workmanlike manner, installed parallel with or at right angles to the sides and back of any box, enclosure or cabinet, and routed to allow access for maintenance. All conductors that are terminated, spliced, or otherwise interrupted in any enclosure, cabinet, mounting or junction box shall be connected to terminal blocks. Mark each terminal in accordance with the wiring diagrams of the system. Make all connections with approved pressure type terminal blocks, which are securely mounted. No more than two conductors shall be installed under one connection. Wire nuts, crimp splices and similar devices shall not be used in terminal cans and control cabinets.

3.1.2.2. Conductors

- A. Each conductor shall be identified as shown on the drawings at terminal points. Permanent wire markers shall be located within 2 inches of the wire termination. Marker text shall be visible with protective doors or covers removed.
- B. Maintain a consistent color code for fire alarm system conductor functions throughout the installation.
- C. All wiring shall be installed in compliance with the National Electric Code, NFPA 70, and the equipment manufacturer's requirements.
- D. Wiring for Signaling Line Circuit and Initiating Device Circuit field wiring shall be solid copper, No. 18 AWG twisted pair conductors at a minimum. Speaker circuits; 16 AWG twisted pair at a minimum. 24VDC visual Notification Appliance Circuits shall be solid copper No. 14 AWG size conductors at a minimum. The wiring sizes listed herein are minimum sizes. Use larger wire sizes when recommended by the manufacturer, based on system configuration and project specific calculations.
- E. Where shielded wiring is used, the shield shall be grounded at only one point, which shall be in or adjacent to the FACP or other control equipment. Shields shall be continuous, treated as a third conductor, and insulated from ground except as noted.
- F. T-taps (branches) are permitted in Style 4 SLC circuits with interconnections

occurring on terminal strips.

- G. Circuits to third-party systems (HVAC, Elevators, fire pumps, etc.) shall terminate in terminal cabinets within three (3) feet of the controllers for those systems.
- H. AC power wiring shall be No. 12 AWG solid copper having insulation rated for 600 volts.
- I. All wiring shall be checked and tested to insure that there are no grounds, opens or shorts.

3.1.2.3 Devices

- A. All devices and appliances shall be mounted to or in an approved electrical box.
- B. Conduits shall be sized according to the conductors contained therein. Cross sectional area percentage fill for system conduits shall not exceed 40%.
- C. Install all conductors in rigid metal conduit or electro-metallic tubing, utilizing compression type fittings and couplings, with a minimum diameter 3/4". The use of flexible metal conduit not exceeding a six (6) foot length shall be permitted for initiating device circuits.
- D. All fire alarm conduit systems shall be routed and installed to minimize the potential for physical, mechanical or fire damage, and shall not to interfere with existing bus base systems, facilities or equipment.
- E. Run conduit or tubing concealed in finished areas unless specifically shown otherwise on the drawings. Conduit may be exposed in unfinished mechanical/electrical rooms, and basement levels except where walls are finished.
- F. All system conduits, junction boxes, pull boxes, terminal cabinets, electrical enclosures and device back box locations shall be readily accessible for inspection, testing, service and maintenance.
- G. Power Limited cable, when not installed in UL listed metal conduit or raceway, shall be mechanically protected by bus base construction features per NFPA 70, Article 760.
 - 1. Installation shall be in areas not subjected to mechanical injury.
 - 2. All circuits shall be supported by the bus base structure. Cable shall be attached by straps or bridal rings to the bus base structure at intervals not greater than 10 feet. Fire alarm wiring shall not be bundled or strapped to existing conduit, pipe or wire in the facility.

3. Where wiring is installed above drop ceilings, cable shall not be laid on ceiling tiles.
 4. Cable shall not be fastened in a manner that puts tension on the cable.
- B. Power Limited Cable shall be FPLP, FPLR or FPL, or permitted substitute.

3.1.2.4. Fire Alarm Components

A. Fire Alarm Control Panels

1. Mount the enclosure with the top of the cabinet 72" above the finished floor or center the cabinet at 63", whichever is lower.
2. Label the fire alarm panels with the room number, electrical panel number and circuit breaker number feeding them.
3. Within the panel, all non-power limited wiring must be properly separated from power limited circuits.
4. Grounds shall comply with IEEE 1100. Install a ground wire from main service ground to fire-alarm control unit.

B. Annunciators

1. Mount the panel; with the top of the panel 72" above the finished floor or center the panel at 63", whichever is lower.

C. Remote Power Supplies and Auxiliary Fire Alarm Panels

1. Locate the panel or cabinet with the top of the panel 72" above the finished floor or center the panel at 63", whichever is lower.
2. Do not locate these panels above ceilings or where inaccessible by a person standing on the finished floor of the space.
3. Label the power supplies and auxiliary FACPs with the room number, electrical panel number and circuit breaker number feeding them.
4. Within the panel, all non-power limited wiring must be properly separated from power limited circuits.

D. Manual Pull Stations

1. Contractor is to remove existing manual pull stations throughout the facility.
2. Any paint, patchwork, or special finishes needed to bring the affected area

up to the current standard and visual status of the surrounding walls, flooring, or ceilings will be the responsibility of the contractor.

3. In areas approved by the Owner's Representative, and where other decorative cover plates are being used, the Contractor may use a cover plate to conceal location where manual pull station existed.
4. Removal of conduit, boxes, and wire necessary as a result of a deleted pull stations will be the responsibility of the contractor. Contractor should take into consideration any and all related costs as change orders for this type of work will not be accepted.
5. Any re-routing of conduit, boxes, raceways, and/or wiring due to deleted manual pull stations will be the responsibility of the Contractor. Contractor should take into consideration any and all related costs as change orders for this type of work will not be accepted.

E. Notification Appliances, mount assemblies as follows:

1. All wall mounted audio/visual devices shall be mounted so the entire lens is between 80" and 96" above the finished floor. Where low ceilings exist, devices shall be mounted within 6" of the ceiling.
2. Each speaker's output shall be set to the wattage value indicated for its specific location as shown on the approved drawings.
3. Each strobe's output shall be set to the candela value indicated for its specific location as shown on the approved drawings.
4. Each speaker/strobe's outputs shall be set to the wattage/candela value indicated for its specific location as shown on the approved drawings.
5. Appliances installed outdoors shall be UL listed for outdoor use.

G. Smoke Detectors:

1. Detectors located on the wall shall have the top of the detector at least 4" and not more than 12" below the ceiling.
2. On smooth ceilings, detectors shall not be installed over 30 ft. apart in any direction.
3. Install smoke detectors no closer than 3 ft. from air handling supply air diffusers or return air openings.
4. Locate detectors no closer than 12" from any part of a lighting fixture.

5. Contractor understands that all spot-type smoke, smoke-heat, and smoke detectors shall be replaced as per the bid drawings. No existing detectors will be re-used whether the contractor plans to install the same type or that of a different brand/manufacturer.
6. Any patch, paint, access hatches, or special finishes required to accomplish the installation of this work is the sole responsibility of the Contractor.
7. Deletion of any existing smoke detectors, regardless of system they are a part of, within the facility will be the sole responsibility of the installing Contractor. The cost of any lifts, ladders, scaffolding, or other necessary components required to delete devices should be assumed by the Contractor.

H. Duct Smoke Detectors:

1. Install sampling tubes so they extend the full width of ducts exceeding 36". Contractor to verify width of existing duct work and be responsible for installing the appropriate sampling tube regardless of the state of the existing device.
2. Detectors shall be located to facilitate ease of maintenance.
3. All penetrations near detectors located on/in return ducts shall be sealed to prevent air entry.

I. End-of-Line Resistors

1. Devices containing end-of-line resistors shall be appropriately labeled.

J. Beam Smoke Detectors

1. Existing beam detectors may be re-used so long as they are compatible and listed to be used with the fire life safety system being installed.
2. Any defects or unacceptable installation of existing beam smoke detectors will need to be corrected by the Contractor at no additional cost to the Owner's Representative.
3. New beam detectors, if needed, shall be installed accordingly:
 - a. Install beam type smoke detectors in accordance with approved drawings and the manufacturer's recommendations.
 - b. Mount detectors 19" to 24" below the ceiling unless instructed otherwise.

- c. Keep the centerline of the beam 19" from obstructions.
- d. Mount on solid surfaces (brick/block walls, steel beams, or concrete).
- e. Use all mounting points on detector mounts.
- f. Mount where accessible for maintenance.

K. Heat Detectors

- 1. Heat detectors shall be installed in strict accordance with their UL listing and the requirements of NFPA 72.
- 2. Heat detectors installed in the elevator machinery room to meet ANSI A17.1 requirements for elevator power disconnect, shall be located adjacent to each sprinkler head. Coordinate temperature rating and location with sprinkler rating and location.

L. Addressable Control (relay) Modules

- 1. Install the module less than 3 feet from the device controlled.
- 2. Orient the device mounting for best maintenance access.
- 3. Label all addressable control modules as to their function.
- 4. Provide a dedicated 24VDC circuit to feed all auxiliary relays required for inductive loads (auxiliary relays, door holders). Circuits shall be supervised via an end-of-line relay and addressable input module. Auxiliary relays shall not derive their power from the starter or load being controlled.

3.2. Fire Stopping

- A. Provide fire stopping for holes at conduit penetrations through floor slabs, fire rated walls, partitions with fire rated doors, corridor walls, and vertical service shafts in accordance with the fire stopping provisions of this contract.

3.3. Patching, Painting, and Special Finishes

- A. Repair of all surfaces where existing fire alarm equipment has been removed shall be completed by the Contractor. The existing surface shall be repaired to match surrounding surfaces. The cost of these repairs should be assumed and prepared for by the Contractor. No change orders for this type of work will be accepted.
- B. Ceiling tiles and any painting of ceiling tiles shall be provided by the Contractor.

3.4. Other Installation Notes

- A. All coring required will be the responsibility of the Contractor. To minimize damage, qualified personnel shall perform core drilling. Contractor to provide x-raying of all coring locations. The Contractor shall repair any damage that occurs because of core drilling. All coring is to be pre-approved by the Owner's Representative prior to coring.
- B. The cost of any Fire Watch requirements will be the responsibility of the Contractor.
- C. All wiring shall be in conduit.
- D. Contract shall pay for and obtain all permits, approvals, licenses, fees, and charges required for this work.
- E. The Contractor shall remove and dispose of all removed fire alarm equipment, waste materials, and batteries.
- F. Existing indicating lights (not located on drawings) shall remain if acceptable to AHJ and are to be re-used if capability exists with new system as they operated in conjunction with the existing system.

3.5. Test/Field Quality Control (Pre-Test)

- A. The fire alarm self-certification test shall be conducted and coordinated with the Owner's Representative and the AHJ be made aware of this pre-test. Test will include:
 - 1. Bar-coding and scanning of each device as detailed in this specification.
 - 2. A test of each alarm-initiating device for functions specified and for the required alarm actions.
 - 3. A test of the complete system for grounded, open, and shorted circuits.
 - 4. A test to verify that the system changes over and operates properly on the emergency power circuit off of the generator (if applicable).
 - 5. A test that the emergency power source (batteries) is capable of operating the system for specified periods as shown on the approved drawings.
 - 6. A test that alarm signals will operate under specified trouble conditions.

7. A test to verify that the system will perform all specified tasks.
 8. A test to ensure that sound uniformity and audibility of the evacuation system has been achieved in all areas of coverage.
 9. Contractor to schedule with City Outside monitoring company (AM-Tech) and Central Communications Center provider to test zones for annunciation at central station at Contractor's expense. City approved vendor for this service is Cal Bus base Systems Inc., Phone:877-225-2534.
- B. Any and all costs incurred for necessary re-tests due to failures of system performance will be the responsibility of the Contractor.

3.6. Final Acceptance Test

- A. The fire alarm final acceptance test shall be conducted and coordinated with the Ventura County Fire Department and the Owner's Representative. A letter certifying that the installation is complete and fully operational shall be forwarded to the Owner's Representative. The final test shall include, but not be limited to:
1. A test of each alarm-initiating device for functions specified and for the required alarm actions.
 2. A test of the complete system for grounded, open, and shorted circuits.
 3. A test to verify that the system changes over and operates properly on the emergency power circuit off of the generator (if applicable).
 4. A test that the emergency power source (batteries) is capable of operating the system for specified periods as shown on the approved drawings.
 5. A test that alarm signals will operate under specified trouble conditions.
 6. A test to verify that the system will perform all specified tasks.
 7. A test to ensure that sound uniformity and audibility of the evacuation system has been achieved in all areas of coverage.
 8. A completed form acceptable to AHJ and in accordance with NFPA 72 certifying the system.
- B. Any and all costs incurred for necessary re-tests due to failures of system performance will be the responsibility of the Contractor.
- C. The Contractor shall pay any and all overtime pay required by the Ventura County Fire Department for witnessing the acceptance test.

- D. Contractor shall be present at other related tests, as required, including, but not limited to, fan control, fire/smoke damper testing, and elevator recall so long as these tests are required by the AHJ due to the replacement of the fire alarm system

3.7. Training

- A. Provide training of the Owner's Representative personnel in the proper operation procedures. The training program for the Owner's Representative personnel shall include the following:
 - 1. Operations and Maintenance Manuals containing complete operating instructions, outline step-by-step procedures required for system start-up, operation, and shutdown, including the manufacturer's name, model number, service manual, parts list, and brief description of all equipment and their basic operation features. Complete maintenance instructions listing routine maintenance procedures, possible breakdowns and repairs, trouble-shooting guide, and as-built drawings of the complete system, including conduit layout, equipment layout, device labels, and simplified wiring and control diagrams of system. Operations and Maintenance Manuals shall be submitted and approved prior to conducting training sessions.
 - 2. Four (4) separate 1-hour training sessions for operating personnel shall be conducted by the Contractor. The sessions are to cover proper operating and response procedures. The instructions shall be sufficient to enable previously untrained personnel to properly operate the system.

3.8. As-Built Drawings

- A. Upon completion of installation, Contractor shall provide to Owner's Representative an accurate drawing detailing actual locations of installed fire alarm equipment.
 - 1. Device labeling shall be correct and include device address and location.
 - 2. Walls and room labels shall be correct and approved by the Owner's Representative on As-Built drawings.
 - 3. Owner's Representative shall incur no additional costs for the changes made to the drawings. Owner's Representative may ask for changes to be made after the inspection due to room or devices labeling correction without additional cost prior to final submittal package but after final inspection has occurred with the Authority Having Jurisdiction.

- B. Furnish Owner's Representative with one (1) full size hard copy print of each

approved drawing, revised to show "as-built" conditions. In addition, one half-size set of the "as-built" designs and one (1) CD-ROM copy of each approved shop drawings in AutoCAD 200 format, revised to show "as-built" conditions, in *.dwg format. The Contractor shall provide Owner's Representative with a copy of the entire fire alarm system program on a diskette or removable storage device; another copy shall be kept in the same format at the Fire Alarm Control Panel including all passwords. All changes to the program are to be updated and copied to the Owner's Representative's version. Final payment shall not be provided until all required documentation has been received. A copy of all programming software will be left in the FACP and a copy will be given to the Owner's Representative.

- C. All items of this section shall be provided before final payment.

3.9. Spare Parts

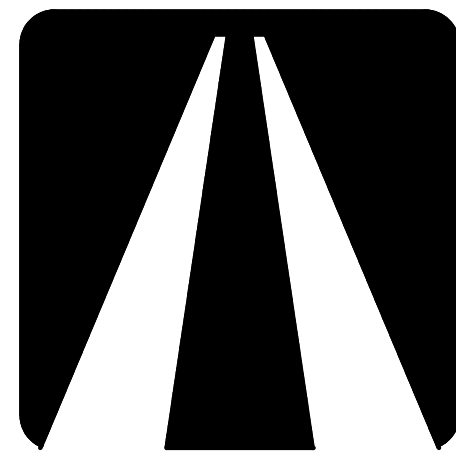
A. All spare parts shall be directly interchangeable with the corresponding components of the installed system.

- B. The following spare parts shall be furnished to the Owner's Representative:

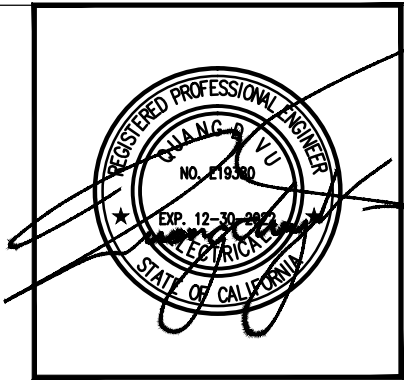
1. Ten (10) smoke detectors, including bases
2. Two (2) heat detectors, including bases
3. Two (2) duct smoke detectors
4. Four (4) addressable control relay modules
5. Four (4) addressable single input signal circuit modules
6. Four (4) addressable single input modules
7. Six (6) speaker units
8. Two (2) strobe units (wall mount, multi-candela as installed)
9. Two (2) speaker/strobe units (wall mount, multi-candela as installed)

END OF SECTION

SECTION VII: LIST OF DRAWINGS - EXHIBIT C



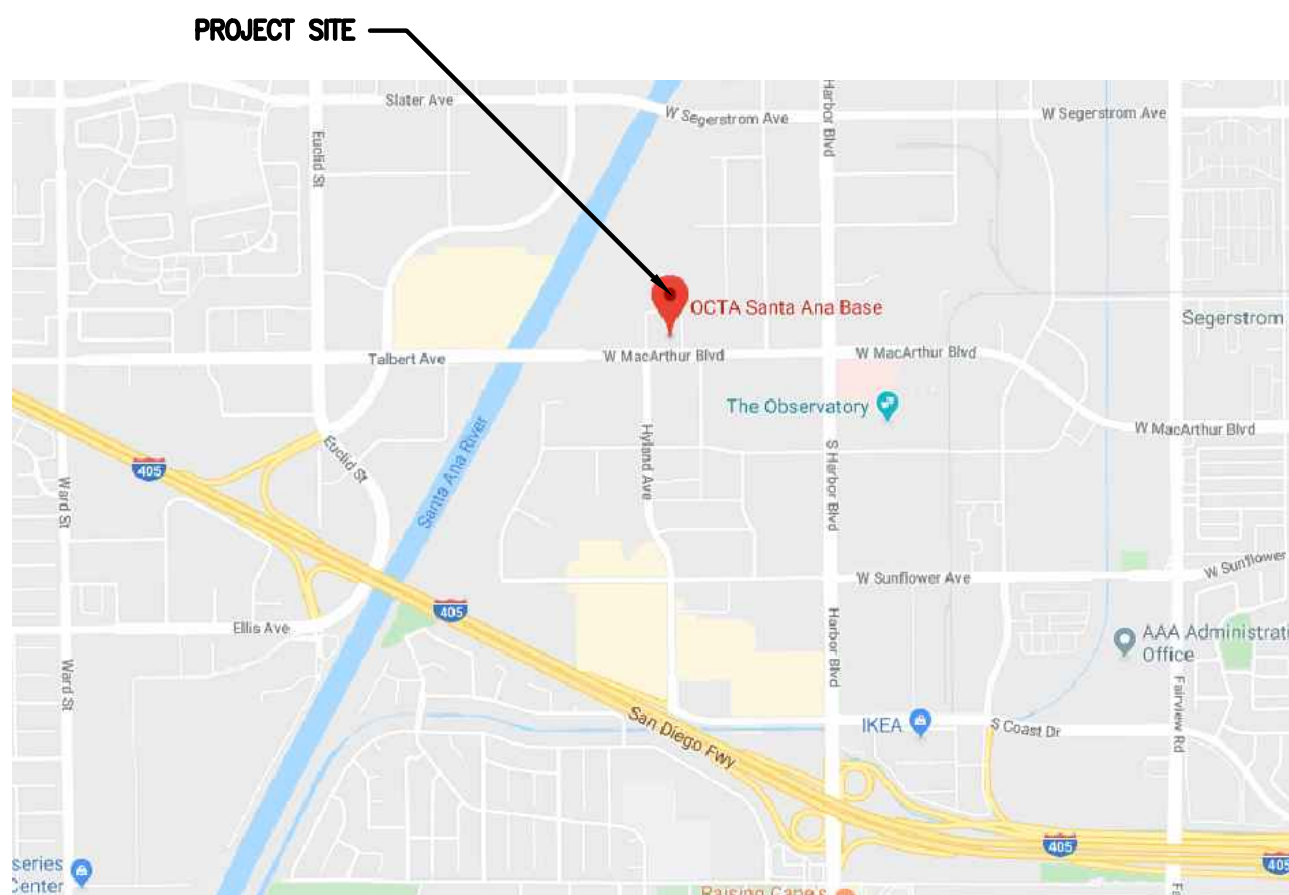
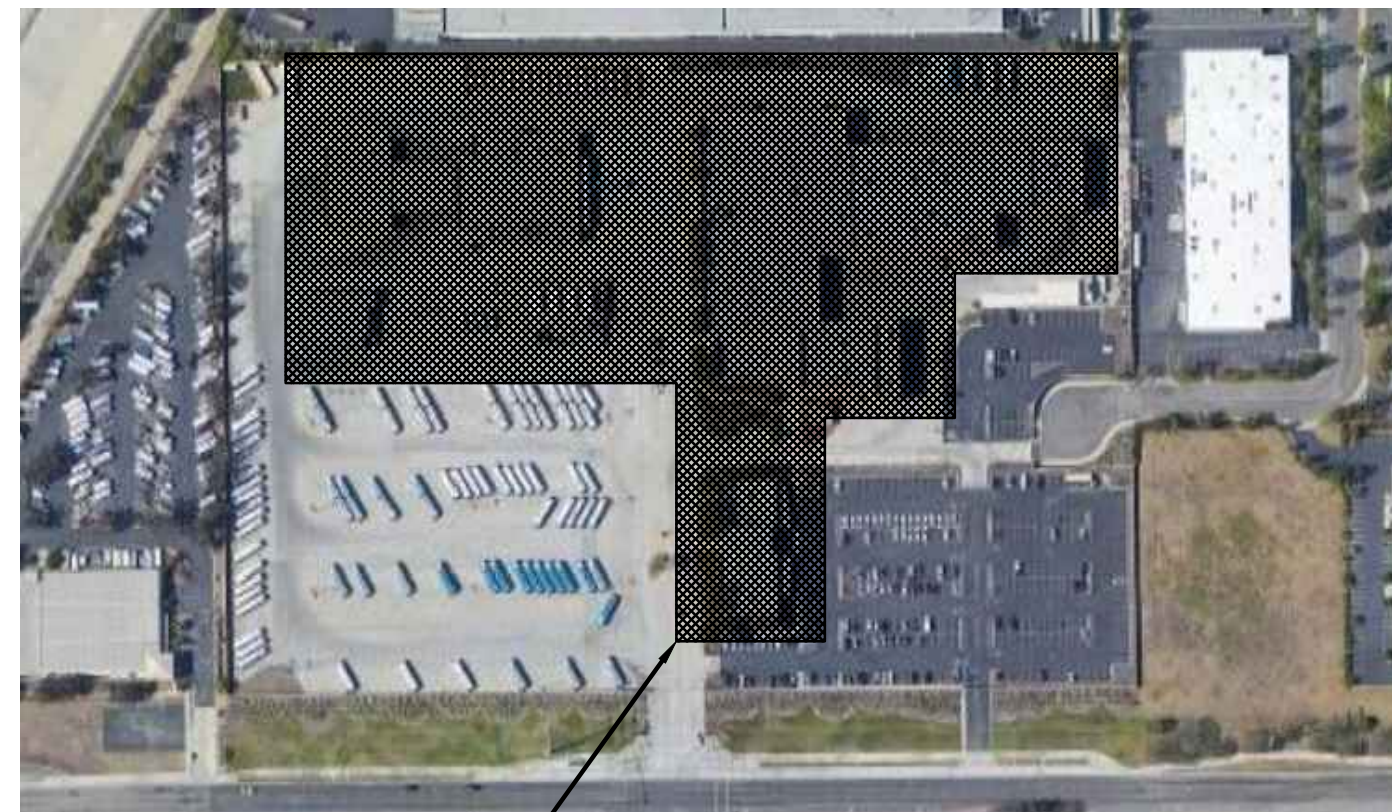
ORANGE COUNTY
TRANSPORTATION
AUTHORITY




DAHL, TAYLOR & ASSOCIATES
CONSULTING ENGINEERS
2960 DAIMLER STREET
SANTA ANA, CALIFORNIA 92705
TEL: # (949) 756-8654
FAX: # (949) 502-0777

FIRE ALARM CONTROL PANELS REPLACEMENT AT SANTA ANA BUS BASE

CONTRACT No. C-2-2230

VICINITY MAP		PROJECT INFORMATION																					
		OWNER: ORANGE COUNTY TRANSPORTATION AUTHORITY SITE ADDRESS: 4301 WEST MACARTHUR BLVD., SANTA ANA, CA 92704 FACILITY USE: BUS MAINTENANCE ZONE: INDUSTRIAL REFERENCE: - BUILDING FOOT PRINT: N/A ALLOWABLE FLOOR AREA: N/A TYPE OF CONSTRUCTION: N/A SPRINKLERS REQUIREMENT: N/A HAZARD MATERIAL: NO HAZARDOUS MATERIAL IS STORED NEARBY																					
		<div>CLIENT</div> <div>ORANGE COUNTY TRANSPORTATION AUTHORITY 550 S. MAIN STREET ORANGE, CA 92868 CONTACT: GEORGE OLIVO PHONE: (714) 560-5872 EMAIL: golivo@octa.net</div> <div>ELECTRICAL</div> <div>DAHL, TAYLOR & ASSOCIATES 2960 DAIMLER STREET SANTA ANA, CA 92705 CONTACT: QUANG D. VU, P.E. PHONE: (949) 254-8016 EMAIL: qvu@dahlitaylor.com</div>																					
PROJECT LOCATION		BUILDING CODES AND STANDARDS																					
		<div>2019 BUILDING STANDARDS ADMINISTRATIVE CODE, PART 1, TITLE 24 C.C.R.</div> <div>2019 CALIFORNIA BUILDING CODE (CBC), PART 2, TITLE 24 C.C.R.</div> <div>2019 CALIFORNIA ELECTRICAL CODE (CEC), PART 3, TITLE 24 C.C.R.</div> <div>2019 CALIFORNIA MECHANICAL CODE (CMC) PART 4, TITLE 24 C.C.R.</div> <div>2019 CALIFORNIA PLUMBING CODE (CPC), PART 5, TITLE 24 C.C.R.</div> <div>2019 CALIFORNIA ENERGY CODE, PART 6, TITLE 24 C.C.R.</div> <div>2019 CALIFORNIA FIRE CODE, PART 9, TITLE 24 C.C.R.</div> <div>2019 CALIFORNIA REFERENCED STANDARDS, PART 12, TITLE 24 C.C.R.</div> <div>TITLE 19 C.C.R., PUBLIC SAFETY, STATE FIRE MARSHAL REGULATIONS.</div> <div>2019 CALGreen</div> <div>Partial List of Applicable National Fire Protection Association (NFPA) Standards</div> <table><tr><td>NFPA 13-AUTOMATIC SPRINKLER SYSTEMS (CALIFORNIA AMENDED)</td><td>2019 EDITION</td></tr><tr><td>NFPA 14-STANDPIPE SYSTEMS</td><td>2019 EDITION</td></tr><tr><td>NFPA 17-DRY CHEMICAL EXTINGUISHING SYSTEMS</td><td>2021 EDITION</td></tr><tr><td>NFPA 17a-WET CHEMICAL EXTINGUISHING SYSTEMS</td><td>2021 EDITION</td></tr><tr><td>NFPA 20-STATIONARY PUMPS</td><td>2019 EDITION</td></tr><tr><td>NFPA 24-PRIVATE FIRE SERVICE MAINS</td><td>2019 EDITION</td></tr><tr><td>NFPA 72-NATIONAL FIRE ALARM CODE (CALIFORNIA AMENDED)</td><td>2019 EDITION</td></tr><tr><td>NFPA 80-FIRE DOOR AND OTHER OPENINGS PROTECTIVES</td><td>2019 EDITION</td></tr><tr><td>NFPA 253-CRITICAL RADIANT FLUX OF FLOOR COVERING SYSTEMS</td><td>2019 EDITION</td></tr><tr><td>NFPA 2001-CLEAR AGENT FIRE EXTINGUISHING SYSTEMS</td><td>2018 EDITION</td></tr></table> <div>ALL WORK AND MATERIALS SHALL BE IN FULL ACCORDANCE WITH THESE CODES AND ALL APPLICABLE LOCAL ORDINANCES. WHERE CONTRACT DOCUMENTS EXCEED THESE REQUIREMENTS WITHOUT VIOLATING CODE AND REGULATION REQUIREMENTS, CONTRACT DOCUMENTS SHALL TAKE PRECEDENCE. WHERE CODES CONFLICT, THE MORE STRINGENT SHALL APPLY.</div>		NFPA 13-AUTOMATIC SPRINKLER SYSTEMS (CALIFORNIA AMENDED)	2019 EDITION	NFPA 14-STANDPIPE SYSTEMS	2019 EDITION	NFPA 17-DRY CHEMICAL EXTINGUISHING SYSTEMS	2021 EDITION	NFPA 17a-WET CHEMICAL EXTINGUISHING SYSTEMS	2021 EDITION	NFPA 20-STATIONARY PUMPS	2019 EDITION	NFPA 24-PRIVATE FIRE SERVICE MAINS	2019 EDITION	NFPA 72-NATIONAL FIRE ALARM CODE (CALIFORNIA AMENDED)	2019 EDITION	NFPA 80-FIRE DOOR AND OTHER OPENINGS PROTECTIVES	2019 EDITION	NFPA 253-CRITICAL RADIANT FLUX OF FLOOR COVERING SYSTEMS	2019 EDITION	NFPA 2001-CLEAR AGENT FIRE EXTINGUISHING SYSTEMS	2018 EDITION
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CONTRACTORS BID NOTES																							
<div>1. THE DRAWINGS AS PROVIDED ARE DIAGRAMMATIC ONLY.</div> <div>2. CONTRACTORS BIDDING ON THIS PROJECT SHALL REVIEW THE ENTIRE SET OF DRAWINGS AND CONDUCT FIELD VERIFICATION IN PREPARATION OF THEIR BID. REMOVAL OF ANY PORTION OF THE DRAWING IS PROHIBITED.</div> <div>3. GENERAL CONTRACTOR WILL BE RESPONSIBLE FOR THE SCOPE OF WORK AS DESCRIBED IN THE ENTIRE SET AND WILL BE RESPONSIBLE TO COORDINATE ALL TRADES.</div> <div>4. GENERAL CONTRACTOR AND ABATEMENT CONTRACTOR ARE TO COORDINATE ALL RELATED WORK.</div>																							
SCOPE OF WORK																							
<div>1. REMOVE AND REPLACE EXISTING FIRE ALARM SYSTEMS WITH NEW ADDRESSABLE FIRE ALARM SYSTEMS AND BACKUP POWER BATTERIES WHICH SHALL HAVE CAPACITY TO HANDLE ALL SIGNALING LINE CIRCUITS (SLC) AND NOTIFICATION APPLIANCE CIRCUITS (NAC).</div> <div>2. INSTALL NEW ADDRESSABLE FIRE ALARM CONTROL PANEL, DEVICES, AND WIRING INCLUDING DETECTORS, PULL STATIONS, AND HORN / STROBES IN EXISTING OPERATIONS BUILDING.</div> <div>3. INSTALL NEW ADDRESSABLE FIRE ALARM CONTROL PANEL, DEVICES AND WIRING INCLUDING DETECTORS, PULL STATIONS, AND HORN / STROBES IN EXISTING MAINTENANCE BUILDING WHICH HAS NEC CLASS I DIV I AND DIV II AREAS.</div> <div>4. INSTALL NEW ADDRESSABLE FIRE ALARM CONTROL PANEL, DEVICES AND WIRING INCLUDING DETECTORS, PULL STATIONS, AND HORN / STROBES IN EXISTING FUEL/BRAKE/TIRE REPAIR BUILDING WHICH HAS NEC CLASS I DIV I AND DIV II AREAS.</div> <div>5. INSTALL NEW ADDRESSABLE DEVICES AND WIRING INCLUDING DETECTORS, PULL STATIONS, AND HORN / STROBES IN EXISTING BUS WASH BUILDING WHICH HAS NEC CLASS I DIV I AND DIV II AREAS.</div> <div>6. INSTALL NEW ADDRESSABLE DEVICES AND WIRING INCLUDING DETECTORS, PULL STATIONS, AND HORN / STROBES IN EXISTING DETAIL CLEANING BUILDING WHICH HAS NEC CLASS I DIV I AND DIV II AREAS.</div> <div>7. INSTALL NEW ADDRESSABLE DEVICES AND WIRING IN HYDROGEN EQUIPMENT STATION (NEC CLASS I DIV I) AND COMPRESSED NATURAL GAS (CNG) EQUIPMENT STATION (NEC CLASS I DIV II).</div>																							

Sheet Title		TITLE SHEET, DRAWINGS INDEX, SCOPE OF WORK, PROJECT LOCATION AND VICINITY MAP	
Project		FIRE ALARM CONTROL PANELS REPLACEMENT AT SANTA ANA BUS BASE	
JOB #	1.21.4	DESIGN BY:	SDV
DRAWN BY:	TMP	CHECKED BY:	QV
DATE	02-09-2022	SCALE	AS NOTED
SHEET	SA-T-1		
550 South Main Street Orange, CA 92668 714/560/OCTA			
			

Sheet Title TITLE SHEET, DRAWINGS INDEX, SCOPE OF WORK,
PROJECT LOCATION AND VICINITY MAP

Project FIRE ALARM CONTROL PANELS REPLACEMENT
AT SANTA ANA BUS BASE

JOB # 1.21.4
DESIGN BY: SDV
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DATE 02-09-2022
SCALE AS NOTED
SHEET

SA-T-1

550 South Main Street
Orange, CA 92668
714/560/OCTA



[illegible]

JOB #	1.21.4
DESIGN BY:	SDV
DRAWN BY:	TMP
CHECKED BY:	QV
DATE	02-09-2022
SCALE	AS NOTED
SHEET	SA-T-2



GENERAL NOTES

GENERAL NOTES:

- 3) THE CONTRACTOR SHALL FURNISH ALL LABOR, MATERIAL, TOOLS, AND EQUIPMENT TO PROVIDE A COMPLETE AND FINISHED PRODUCT. ALL MATERIALS SHALL BE NEW, UNLESS NOTED OTHERWISE.
- 2) ALL WORK PERTAINING TO THIS PROJECT SHALL BE DONE IN ACCORDANCE WITH THESE PLANS AND THE SPECIFICATIONS, AND CONTRACT DOCUMENTS, AND THE LOCAL AGENCY OF JURISDICTION BUILDING CODE REQUIREMENTS. CONTRACTOR IS REQUIRED TO OBTAIN CONSTRUCTION PERMIT AND BUSINESS LICENSE FROM THE CITY BEFORE BEGINNING CONSTRUCTION WORK.
- 3) THE CONTRACTOR SHALL INFORM THE PROJECT MANAGER 72 HOURS BEFORE STARTING CONSTRUCTION WORK. THE PROJECT ENGINEER WILL SCHEDULE A MEETING BETWEEN CONTRACTOR AND OCTA FACILITY AND OPERATION STAFF BEFORE WORK BEGINS.
- 4) THE CONTRACTOR SHALL PROVIDE ALL NECESSARY BARRICADES, FENCES AROUND WORK AREA, WARNING SIGNS, AND OTHER PROTECTIVE DEVICES, AND TAKE ALL NECESSARY PRECAUTIONARY MEASURES TO PROTECT ALL OCTA PERSONNEL, PUBLIC, PROPERTY AND THE WORK.
- 5) DUST CONTROL SHALL BE REQUIRED DURING CONSTRUCTION. DUST SHALL BE CONTROLLED BY THE CONTRACTOR BY ENCLOSING AREA OF WORK WITH PLASTIC SHEET OR CANVAS BARRICADES TO PREVENT DUST SPREAD TO ADJACENT BUSES, BUILDINGS, EQUIPMENT AND OCTA WORKERS.
- 6) DEMOLITION NECESSARY FOR COMPLETION OF CONSTRUCTION SHALL BE A PART OF THIS PROJECT. THE EXISTING MATERIAL REMOVED DURING CONSTRUCTION, SHALL BE LEGALLY DISPOSED OFF-SITE DAILY. ALL DEBRIS SHALL BE REMOVED FROM PREMISES DAILY AND ALL AREAS SHALL BE LEFT IN A CLEAN (BROOM) CONDITION AT ALL TIMES, AND AT THE END OF EACH WORK DAY, CLEAN THE WORK AND SURROUNDING AREAS WHERE CONSTRUCTION DEBRIS HAS SPREAD DURING THE WORK DAY.
- 7) ALL DRAINAGE FROM NEW CONSTRUCTION WORK SHALL BE PREVENTED FROM ENTERING EXISTING STORM DRAINS ON SITE.
- 8) THE CONTRACTOR IS REQUIRED TO TAKE ALL PRECAUTIONARY MEASURES TO LOCATE AND PROTECT ABOVE AND BELOW GROUND UTILITIES, EQUIPMENT, AND STRUCTURES SHOWN OR NOT SHOWN ON THESE PLANS. THE PROTECTION OF ALL UTILITIES IS THE RESPONSIBILITY OF THE CONTRACTOR. 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 MUST DETERMINE THE EXACT LOCATION OF UTILITIES IDENTIFIED IN THE WORK AREA BY POTHOLES USING HAND TOOLS BEFORE USING ANY POWER OPERATED EXCAVATING EQUIPMENT. UTILITIES NOT SHOWN ON THE PLANS WHICH ARE IN DIRECT CONFLICT WITH THE WORK WILL BE DEALT WITH BY CHANGE ORDER. THE CONTRACTOR SHALL BEAR ALL EXPENSE FOR THE REPAIR OR REPLACEMENT OF UTILITIES OR OTHER PROPERTY DAMAGE BY HIS OPERATIONS IN CONJUNCTION WITH THE EXECUTION OF THE CONTRACT WORK.
- 9) THE CONTRACTOR SHALL DELINEATE TRAFFIC THROUGH THE CONSTRUCTION WORK AREA, AND SHALL COOPERATE WITH THE OCTA FACILITY, OPERATIONS, AND MAINTENANCE PERSONNEL TO KEEP THE FACILITY OPERATIONAL AT ALL TIMES. PROVIDE A 20 FEET WIDE DRIVE-WAY ADJACENT TO WORK AREA FOR BUS AND OTHER TRAFFIC TO PASS AROUND WORK AREA. PROVIDE ACCESS FOR BUS AND CAR PARKING IN ADJACENT PARKING STALLS. CONTRACTOR IS REQUIRED TO KEEP OCTA BUS AND FACILITY TRAFFIC OPERATIONAL AT ALL TIMES. DO NOT PARK TRUCKS EQUIPMENT IN BUS DRIVEWAYS, ENTRANCE OR EXITS.
- 10) ALL WORK SHALL BE COMPLETED BETWEEN THE HOURS OF 7:00 A.M. AND 4:00 P.M. ALL EXISTING FACILITIES, EQUIPMENT, AND UTILITIES DISCONNECTED BY CONTRACTOR DURING THE WORK DAY SHALL BE RE-CONNECTED AT 4:00 PM FOR OCTA TO CONTINUE ITS NORMAL AFTER HOURS OPERATIONS.
- 11) PLANS HAVE BEEN PREPARED FROM VISUAL AND ACTUAL MEASUREMENT OF THE WORK AREA. THE CONTRACTOR SHALL REPORT TO THE PROJECT MANAGER ANY ERROR, INCONSISTENCY, OR OMISSION HE MAY DISCOVER IN THE DRAWINGS BEFORE BEGINNING WORK. THE CONTRACTOR IS RESPONSIBLE FOR CORRECTING ANY ERROR AT NO COST TO THE AUTHORITY AFTER THE START OF CONSTRUCTION. THE CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS BEFORE SUBMITTING HIS BID. IN CASE OF DISCREPANCIES, CONTRACTOR SHALL OBTAIN CLARIFICATION FROM THE PROJECT MANAGER. SUBMITTAL OF BID INDICATES CONTRACTOR IS AWARE OF SITE AND WORK CONDITIONS AND UNDERSTANDS THE WORK REQUIRED BY THE CONTRACT.
- 12) ON SITE VERIFICATION OF ALL DIMENSIONS AND CONDITIONS SHALL BE RESPONSIBILITY OF THE CONTRACTOR, NOTIFY PROJECT MANAGER OF ANY DISCREPANCY BEFORE STARTING WORK.
- 13) THE CONTRACTOR SHALL PROVIDE TEMPORARY WATER, POWER, AND OTHER FACILITIES REQUIRED TO COMPLETE THE PROJECT. CONTRACTOR SHALL PROVIDE TEMPORARY TOILET FACILITIES ON SITE FOR HIS WORKERS WHICH SHALL BE CLEANED ON A DAILY BASIS.
- 14) THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COMPLETE SECURITY OF THE WORK WHILE THE WORK IS IN PROGRESS AND UNTIL COMPLETED.
- 15) THE 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 AREAS OR STRUCTURES.
- 16) CONTRACTOR SHALL COMPLY WITH ALL SAFETY CODE REGULATIONS AND THE STATE DEPARTMENT OF INDUSTRIAL RELATIONS, DIVISION OF INDUSTRIAL SAFETY (O.S.H.A.) REQUIREMENTS.
- 17) VERIFY ALL MEASUREMENTS ON SITE BEFORE PREPARING AND SUBMITTING SHOP DRAWINGS.
- 18) THE CONTRACTOR SHALL POST ADVANCE CONSTRUCTION WARNING SIGNS. THE CONTRACTOR SHALL PROVIDE ALL BARRICADES, WARNING SIGNS, AND PROTECTIVE DEVICES AND SHALL TAKE ALL NECESSARY MEASURES TO PROTECT ALL PERSONNEL, PROPERTY, AND THE WORK SITE DURING CONSTRUCTION. CONTRACTOR SHALL PROVIDE FLASHING LIGHTS AROUND THE CONSTRUCTION WORK AREA ON THE BARRICADES FROM DUSK (4:00 PM) TO DAWN (7:00 AM) EVERYDAY WHEN WORK IS IN PROGRESS. COMPLETELY CLOSE WITH BARRICADES ENTRANCE AND EXITS OF THE CONSTRUCTION AREA, AND INSTALL NOTIFICATION SIGNS IN ADVANCE OF CLOSURE OF THE AREA FOR CONSTRUCTION, INSTALL NOTIFICATION SIGNS ONE WEEK BEFORE CONSTRUCTION BEGINS.
- 19) WORK UNDER THIS CONTRACT SHALL BE DONE SO THAT EXISTING BUS OPERATIONS AND BUS MAINTENANCE SHALL REMAIN IN FULL OPERATIONS DURING CONSTRUCTION. OCTA'S BUS OPERATION AND BUS MAINTENANCE, REPAIR SHALL REMAIN UNINTERRUPTED, ONGOING, AND IN FULL OPERATION DURING CONSTRUCTION. CONTRACTOR SHALL ARRANGE HIS WORK TO OFFER LEAST INTERFERENCE TO OCTA'S CONTINUED DAILY BUS OPERATION AT THE BUS BASE. KEEP NON-CONSTRUCTION AREAS OPEN TO OCTA STAFF WORK.

- CONTRACTOR SHALL ARRANGE HIS WORK TO OFFER LEAST INTERFERENCE WITH OCTA DAILY BUS OPERATIONS. OCTA PROJECT MANAGER WILL COORDINATE WORK ACTIVITIES, AND TEMPORARY CHANGES IN FACILITY ACTIVITY WHICH ARE NECESSARY FOR CONTRACTOR'S WORK. CONTRACTOR SHALL COORDINATE HIS WORK ACCORDINGLY.
- 21) THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL DAMAGES TO EXISTING FACILITIES RESULTING FROM HIS CONSTRUCTION. ALL DISTURBED OR DAMAGED AREAS SHALL BE REPAIRED AT CONTRACTOR'S EXPENSE AND/OR PATCHED TO MATCH ADJACENT MATERIALS, OR AS EXISTED BEFORE CONSTRUCTION.
- 22) IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO LOCATE ALL UTILITIES WHETHER SHOWN ON THE DRAWINGS OR NOT, AND TO PROTECT THEM AS NECESSARY. THE CONTRACTOR SHALL BEAR ALL EXPENSE OF REPAIR OR REPLACEMENT OF UTILITIES DAMAGED BY HIS OPERATIONS OR CONSTRUCTION WORK. CONTRACTOR SHALL LOCATE ALL UTILITIES IN THE WORK AREA AND PROTECT THEM FROM DAMAGE. IF DAMAGED BY CONSTRUCTION, CONTRACTOR WILL BE REQUIRED TO REPAIR DAMAGED UTILITY IMMEDIATELY SO THAT OCTA BUS OPERATIONS IS NOT INTERRUPTED. PROVIDE TEMPORARY UTILITIES DURING BREAKDOWN PERIOD. CONTRACTOR SHALL FULLY CO-OPERATE WITH OCTA BUS AND FACILITY MAINTENANCE STAFF TO COMPLETE THE WORK. IF REQUIRED BY OCTA STAFF, PROVIDE TEMPORARY FACILITIES, UTILITIES, OR EQUIPMENTS DURING TEMPORARY DISCONNECTION, BREAKDOWN, OR DAMAGE OF OCTA FACILITIES, UTILITIES, OR EQUIPMENTS DUE TO CONTRACTOR'S WORK.
- 23) NO OMISSION OF THE WORK SHALL BE MADE WITHOUT WRITTEN APPROVAL OF OCTA.
- 24) NO SUBSTITUTION OF THE WORK SHALL BE MADE WITHOUT WRITTEN APPROVAL OF OCTA. CHANGES TO THE CONTRACT DRAWINGS OR SPECIFICATIONS SHALL BE MADE BY A WRITTEN ADDENDUM OR CHANGE ORDER APPROVED BY OCTA.
- 25) ALL WORKMANSHIP SHALL BE PERFORMED BY SKILLED MECHANICS USING THE BEST STANDARD PRACTICES OF THE TRADE AND CONSTRUCTION INDUSTRY.
- 26) WHERE NO SPECIFIC DETAIL IS SHOWN, THE CONSTRUCTION SHALL BE SIMILAR TO THAT INDICATED OR NOTED FOR SIMILAR CONDITIONS OF CONSTRUCTION ON THE PROJECT. REFERENCES OF NOTES AND DETAILS TO SPECIFIC CONDITIONS AND LOCATIONS SHALL NOT LIMIT THEIR APPLICABILITY.
- 27) THE STRUCTURE IS DESIGNED AS A STABLE UNIT AFTER ALL COMPONENTS ARE INSTALLED. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL TEMPORARY SHORING, BRACING, SCAFFOLDING, AND OTHER SUPPORTS NECESSARY. CONTRACTOR SHALL PROVIDE ALL NECESSARY TEMPORARY BACKING, SUPPORTS, SLEEVES, FRAMING FOR SUPPORTING THE WORK DURING INSTALLATION.
- 28) CONTRACTOR SHALL TAKE ALL PRECAUTIONS NECESSARY TO PREVENT OCTA STAFF AND BUSES FROM ENTERING CONSTRUCTION AREA DURING DEMOLITION AND CONSTRUCTION. SIGNS SHALL BE POSTED TO NOTIFY OCTA WORKERS OF CONSTRUCTION. PROVIDE BARRIERS AROUND GENERAL AREA OF CONSTRUCTION WHILE WORK IS IN PROGRESS. FENCES, BARRICADES, ENCLOSURES, WARNING SIGNS, ETC. SHALL BE PROVIDED AROUND THE LOCAL WORK AREA BY THE CONTRACTOR TO KEEP THE PUBLIC OUT OF CONTRACTOR'S WORK AREA AND WARN THE PUBLIC OF CONSTRUCTION WORK IN PROGRESS.
- 29) THE CONTRACTOR SHALL ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THE PROJECT INCLUDING SAFETY OF ALL PERSONS AND PROPERTY AND THAT THE REQUIREMENT SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS.
- 30) THE CONTRACTOR SHALL BE RESPONSIBLE FOR SAFETY AND SECURITY OF THE PROPERTY AND ALL WORKERS ON SITE. CONTRACTOR SHALL PROVIDE ALL SAFETY EQUIPMENT FOR HIS WORKERS.
- 31) THE SCHEDULE OF THE PROJECT IS CRITICAL. EACH SUB-CONTRACTOR SHALL START HIS WORK PER THE SCHEDULE AND PURSUE IT DILIGENTLY AND COMPLETE IT IN ACCORDANCE WITH THE GENERAL CONTRACTOR'S SCHEDULE OF CONSTRUCTION. THE GENERAL CONTRACTOR IS RESPONSIBLE FOR THE SUPERVISION OF THE WORK OF ALL ITS SUB-CONTRACTORS.
- 32) CARE SHALL BE EXERCISED TO PREVENT DAMAGE DUE TO CARELESSNESS OR VANDALISM. ALL MATERIALS AND EQUIPMENT SHALL BE SECURED AFTER WORKING HOURS. NO CONSTRUCTION MATERIALS OR EQUIPMENT ARE TO BE LEFT UNSECURED AT ANY TIME. THE CONTRACTOR SHALL PROVIDE FOR HIS OWN SECURITY, STORAGE ENCLOSURES AS NECESSARY IN DESIGNATED LAY-DOWN OR STORAGE ENCLOSURE AREA APPROVED BY THE OCTA FACILITY MAINTENANCE MANAGER. THE CONTRACTOR SHALL BE RESPONSIBLE TO FENCE AND SECURE HIS STORAGE AND EQUIPMENT AT ALL TIMES. OCTA IS NOT RESPONSIBLE FOR CONTRACTOR'S MATERIAL OR EQUIPMENT LOSS ON OCTA PROPERTY. CONTRACTOR'S MATERIALS, TRUCKS, OR EQUIPMENTS SHALL NOT BLOCK TRAFFIC DRIVEWAYS OR OCTA BUS OPERATIONS AND MAINTENANCE WORK DURING CONSTRUCTION.
- 33) DO NOT BLOCK BUS ENTRANCE, EXITS AND DRIVEWAYS OR BUS PARKING STALLS WITH CONTRACTOR'S MATERIAL, EQUIPMENT OR TRUCKS. KEEP ALL MATERIALS, TOOLS, EQUIPMENT, AND TRUCKS WITHIN LIMIT OF CONSTRUCTION OR IN ASSIGNED SPACE BY FACILITY MANAGER.
- 34) DO NOT LOAD OR STORE NEW EQUIPMENT (TO BE INSTALLED) AT ONE SPOT OR LOCATION ON THE ROOF.
- 35) WHEN WORKING ON ROOF TO INSTALL EQUIPMENT DURING CONSTRUCTION, CONTRACTOR IS REQUIRED TO CORDON OFF (WITH TRAFFIC DELINEATORS AND YELLOW WARNING TAPE) WORKING AREA BELOW IN THE SHOP (MAINTENANCE BUILDING) SO THAT OCTA WORKERS ARE AWARE OF CONSTRUCTION WORK OVERHEAD ON ROOF. PREVENT TOOLS, EQUIPMENT AND DEBRIS FROM FALLING BELOW IN WORK AREAS OF MAINTENANCE BUILDING.
- 36) THIS TASK SHALL BE COORDINATED WITH THE PROJECT MANAGER, BUS BASE MANAGER, AND FACILITY MANAGER

A JOB HAZARD ANALYSIS SHALL BE DEVELOPED FOR THE TASK THAT IDENTIFIES DAILY SAFETY TAILGATE BRIEFINGS, BARRICADES, VEHICLE AND EQUIPMENT STAGING (DIAGRAM), COMMUNICATIONS, EVACUATING EFFECTED PERSONNEL INSIDE THE BUILDING, CRANE ACTIVITY, REMOVING OLD EQUIPMENT, INSTALLING NEW EQUIPMENT, FALL PROTECTION, ALLOWING EFFECTED EVACUATED PERSONNEL BACK INTO THEIR AREA OF BUILDING, HOUSEKEEPING/CLEAN-UP, DEMOBILIZATION. THE JOB HAZARD ANALYSIS IS REQUIRED TO BE SUBMITTED TO THE OCTA PROJECT MANAGER 10 WORKING DAYS PRIOR TO THE SCHEDULED HVAC TASK ACTIVITY FOR OCTA REVIEW.

NO LATER THAN TEN (10) WORKING DAYS PRIOR TO THE ARRIVAL OF A CRANE, THE CONTRACTOR MUST PROVIDE THE MOST RECENT ANNUAL AND QUADRENNIAL CERTIFICATES. THE CONTRACTOR MUST ALSO PROVIDE CRANE OPERATOR CERTIFICATES FROM THE NATIONAL COMMISSION FOR THE CERTIFYING OF CRANE OPERATORS (NCCCO), AS OUTLINED IN CIIPP, NO LATER THAN TEN WORKING DAYS PRIOR TO A CRANE OPERATOR WORKING ON SITE.

PICK AND CARRY WITH RUBBER TIRED CRANES IS FORBIDDEN ON OCTA PROJECTS.

A RIGGING PLAN DEVELOPED BY THE CRANE COMPANY OR CRANE OWNER IS REQUIRED FOR ALL LIFTS. THE RIGGING PLAN SHALL BE SUBMITTED NO LATER THAN 10 WORKING DAYS PRIOR TO THE SCHEDULED CRANE ACTIVITY FOR OCTA REVIEW.

THE PLAN SHALL INCLUDE:

- THE VERIFIED LOAD WEIGHT AND THE RIGGING WEIGHTS
- BOTTOM ANGLE AND REACH IN FEET FOR THIS LOAD PLACEMENT
- COPY OF THE LOAD CHART APPLICABLE TO THE ANGLE, REACH AND LOAD
- THE PERCENTAGE OF CRANE RATED CAPACITY FOR THIS LOAD PLACEMENT
- A PLOT PLAN OR GOOGLE MAP DIAGRAM OF THE CRANE SET-UP LOCATION AND THE LOAD PLACEMENT LOCATIONS
- IDENTIFY THE COMMUNICATION METHOD (RADIO, HAND SIGNAL, ECT.)
- DELIVERY TRUCK/TRAILER LOCATION

CRITICAL LIFTS REQUIRE AN ENGINEERED PLAN DESIGNED BY A REGISTERED PROFESSIONAL ENGINEER LICENSED IN CALIFORNIA. A CRITICAL LIFT INCLUDES, BUT IS NOT LIMITED TO:

1. ANY LIFT LOCATION THAT COULD RESULT IN THE BOOM OR LOAD FALLING INTO A HAZARDOUS AREA IN THE EVENT OF A MISHAP, INCLUDING ENERGIZED ELECTRICAL WIRING AND EQUIPMENT, GAS MANIFOLDS, AND OPERATING MACHINERY,
 2. LIFTS EQUAL TO OR GREATER THAN 10 TONS,
 3. LIFTS EQUAL TO OR GREATER THAN 75% OF RATED CAPACITY,
 4. LIFTS OVER OCCUPIED BUILDINGS, RAILWAYS OR PUBLIC ROADWAYS,
 5. THE USE OF MULTIPLE CRANES FOR ONE LIFT, AND/OR
 6. LIFT AND TRANSIT OF LOAD GREATER THAN 75% OF RATED CAPACITY OF TRACK CRAWLER CRANE.
- DURING CONSTRUCTION REMOVE EQUIPMENT, DISCONNECT OR REMOVE UTILITIES, AND ROOF ACCESSORIES TO FACILITATE AND INSTALL NEW EQUIPMENT. REINSTALL ALL THE ABOVE AFTER NEW EQUIPMENT HAS BEEN INSTALLED AND OPERATIONAL. INFORM OCTA, SEVEN DAYS AHEAD OF EQUIPMENT OF UTILITY DISCONNECTION.**

38) THE PROTECTION OF ALL OCTA PROPERTY, STRUCTURES, EQUIPMENT, UTILITIES, AND ACCESSORIES IS THE RESPONSIBILITY OF THE CONTRACTOR.

39) THE EXTENT OF THE WORK IS ONLY INDICATED GENERALLY ON THE DRAWINGS ARE BASED ON EXISTING CONDITIONS AND RECORD DRAWINGS.

40) IT IS THE INTENT OF THESE CONSTRUCTION DOCUMENTS TO INCLUDE ITEMS AND COMPONENTS FOR THE PROPER EXECUTION OF THE WORK, AND FOR THE PROVISION FOR A COMPLETE FUNCTIONING SYSTEM. IN THAT REGARD ALL APPURTENANT AND ACCESSORY ITEMS AND COMPONENTS REQUIRED FOR THE CONSTRUCTION OF COMPLETE AND FUNCTIONING SYSTEM SHALL BE PROVIDED WHETHER SPECIFICALLY IDENTIFIED IN THESE DOCUMENTS OR NOT.

41) BEFORE SUBMITTING A BID, CONTRACTOR SHALL VISIT THE SITE IN THE PRE-BID JOB-WALK AND VERIFY ALL EXISTING ITEMS SHOWN ON THE PLANS, CONDITIONS, HAZARDS, ELEVATIONS, STRUCTURES, EQUIPMENT, UTILITIES, AND LOCAL REQUIREMENTS. SUBMISSION OF A BID BY THE CONTRACTOR SHALL BE DEEMED EVIDENCE OF SUCH VISIT AND REVIEW OF SITE. ALL BIDDERS SHALL TAKE THESE EXISTING CONDITIONS INTO CONSIDERATION AND A LACK OF SPECIFIC INFORMATION ON THE DRAWING 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 EXISTS ON SITE.

42) LOCATIONS AND ELEVATIONS OF THE VARIOUS ITEMS INCLUDED WITHIN THE WORK HAVE BEEN OBTAINED FROM EXISTING DRAWINGS AND LIMITED FIELD SURVEY. CONTRACTOR SHALL EXAMINE THE SITE, VERIFY FIELD CONDITIONS, STRUCTURES, EQUIPMENT UTILITIES AND SERVICES REQUIRED AND BE ADEQUATELY INFORMED AS TO THEIR RELATION TO THE WORK. THE SUBMISSION OF BID SHALL BE DEEMED EVIDENCE OF SUCH A VISIT.

43) OCTA STAFF WILL CONTINUE TO WORK ON BUS MAINTENANCE AND REPAIR DURING CONSTRUCTION IN THE MAINTENANCE BUILDING. CONTRACTOR'S WORK SHALL NOT DISRUPT OCTA BUS MAINTENANCE WORK.

44) CONTRACTOR WILL BE ALLOWED TO WORK ON REMOVING AND REPLACING ONE HV UNIT AT A TIME. CONTRACTOR SHALL REMOVE AND REPLACE ONE FAN AND COMPLETE ALL WORK ON THE FAN INCLUDING MAKING IT OPERATIONAL BEFORE PROCEEDING TO THE NEXT HV UNIT REPLACEMENT. THE CONTRACTOR SHALL COORDINATE THE WORK WITH OCTA PROJECT MANAGER AND FACILITY MAINTENANCE TO SEQUENCE HIS DAILY WORK SCHEDULE.

45) CONTRACTOR SHALL SCHEDULE DEACTIVATION OF UTILITIES WITH THE OCTA PROJECT MANAGER AND FACILITY MAINTENANCE. DEACTIVATION OR RELOCATION OF UTILITIES, SYSTEMS, EQUIPMENT, OR OTHER ACCESSORIES SHALL BE SCHEDULE A WEEK IN ADVANCE WITH THE PROJECT MANAGER. PROVIDE TEMPORARY SERVICE DURING DEACTIVATION PERIOD. MINIMIZE DEACTIVATION DOWN TIME.

46) CONTRACTOR SHALL COVER ALL OCTA EQUIPMENT, STRUCTURES BELOW IN BUS MAINTENANCE BAYS WHEN WORKING ON ROOF TO PREVENT DUST SPREAD AND DAMAGE TO OCTA TOOLS, EQUIPMENT. CLEAN ALL ABOVE ITEMS AND WORK AREA AT END OF WORK DAY.

47) THE GENERAL CONTRACTOR SHALL TAKE ALL PREVENTIVE MEASURES DURING CONSTRUCTION TO PREVENT DAMAGE TO OCTA PROPERTY AND STAFF WORKING IN AND AROUND THE BUILDING. THE MAINTENANCE BUILDING STAFF WILL BE WORKING IN THE BUILDING DURING CONSTRUCTION WORK. THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR AND SHALL REPLACE OR REPAIR ANY FAULTY IMPROPER OR INFERIOR MATERIAL OR WORKMANSHIP OR ANY DAMAGE TO THE WORK OR ADJACENT AREAS, OR STRUCTURES IN AND AROUND THE MAINTENANCE BUILDING.



DAHL, TAYLOR & ASSOCIATES
CONSULTING ENGINEERS
2960 DAIMLER STREET
SANTA ANA, CALIFORNIA 92705
TEL: # (949) 756-8654
FAX: # (949) 502-0777

[illegible]

Sheet Title	GENERAL NOTES
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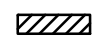
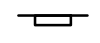
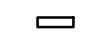



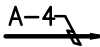

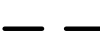
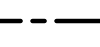
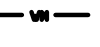
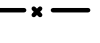
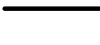






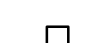



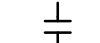
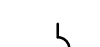
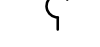




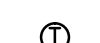





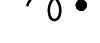

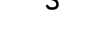
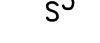
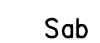

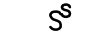

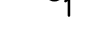


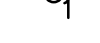
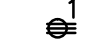

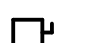








Project
FIRE ALARM CONTROL PANELS REPLACEMENT
AT SANTA ANA BUS BASE

JOB #	1.21.4
DESIGN BY:	SDV
DRAWN BY:	TMP
CHECKED BY:	QV
DATE	02-09-2022
SCALE	AS NOTED
SHEET	

SA-GN-1

550 South Main Street
Orange, CA 92668
714/560/OCTA



GENERAL NOTES		ABBREVIATIONS		SYMBOLS LEGEND	
<div>1. THE ELECTRICAL DRAWINGS, SPECIFICATIONS AND GENERAL NOTES DESCRIBE THE SCOPE OF WORK AND ARE TO BE USED FOR THE PURPOSE OF BIDDING AND PREPARATION OF CONSTRUCTION DOCUMENTS FOR SUBMISSION TO THE AUTHORITY HAVING JURISDICTION (AHJ) TO SECURE THE NECESSARY CONSTRUCTION PERMIT. ALL CONTRACTOR FURNISHED AND INSTALLED EQUIPMENT AND MATERIALS SHALL BE NEW, UNLESS NOTED OTHERWISE (U.N.O.).</div> <div>2. ELECTRICAL CONTRACTOR SHALL PROVIDE DRAWINGS AND DIAGRAMS OF FIELD VERIFIED EXISTING INSTALLATION FOR REVIEW BY THE ENGINEER. BASED ON EXISTING BUILDING CONDITIONS, THE CONTRACTOR SHALL PROVIDE DESIGN, CONSTRUCTION SHOP DRAWINGS, AND MATERIAL SUBMITTALS FOR REVIEW BY THE ENGINEER. THE CONTRACTOR SHALL SUBMIT CALCULATIONS, CONSTRUCTION DRAWINGS, AND MATERIAL SUBMITTALS TO THE AUTHORITY HAVING JURISDICTION (AHJ) AND ORANGE COUNTY FIRE AUTHORITY (OCFA) FOR REVIEW, APPROVAL, CONSTRUCTION PERMIT, AND INSPECTION.</div> <div>3. THERE ARE HYDROGEN AND METHANE GASES PRESENT IN SEVERAL BUILDINGS AND GENERATION PLANTS / STATIONS, WHICH ARE CLASSIFIED AS NEC CLASS 1 DIVISION 1 AREA AND DIVISION 2 AREA. NEW INSTALLATION SHALL COMPLY WITH REQUIREMENTS FOR THESE CLASSIFICATIONS.</div> <div>4. THE CONTRACTOR SHALL VERIFY THE INPUT VOLTAGE AND AMPERAGE (HORSEPOWER) RATING OF ALL EQUIPMENT PRIOR TO INSTALLATION, AND NOTIFY THE ENGINEER FOR DIRECTION PRIOR TO PROCEEDING.</div> <div>5. PROVIDE AN ADDITIONAL JUNCTION BOX (SIZE AS REQUIRED) WHERE THE NUMBER OF CONDUCTORS EXCEEDS THE MAXIMUM ALLOWED FOR A GIVEN JUNCTION POINT OR OUTLET.</div> <div>6. ELECTRICAL CONTRACTOR SHALL VERIFY EXISTING UNDERGROUND WIRING, CONDUITS, PULL BOXES, AND VAULTS. THE CONTRACTOR SHALL PREPARE ELECTRICAL UNDERGROUND UTILITY SITE DRAWINGS AND SUBMIT THEM TO THE ENGINEER FOR REVIEW. ALL AVAILABLE CODE COMPLIANT UNDERGROUND CONDUITS CAN BE USED FOR NEW WIRE INSTALLATION.</div> <div>7. CONTRACTOR'S BID SHALL INCLUDE ALL PREMIUM OVERTIME COSTS, UTILITY CHARGES, COST FOR TEMPORARY UTILITY SERVICES, ALTERATION, DEMOLITION AND EXTENSION WORK, PLAN CHECK / INSPECTION FEES, MISCELLANEOUS CONTINGENCY COSTS, ETC.</div> <div>8. IF CONTRACTOR PROPOSES TO SUBSTITUTE FOR EQUIPMENT SPECIFIED, CONTRACTOR SHALL SUBMIT A REQUEST FOR CONSIDERATION TO THE OWNER AND ENGINEER IN WRITING PRIOR TO COMMENCEMENT OF WORK. ALL SUBSTITUTIONS MUST BE SUBMITTED TO THE ENGINEER FOR HIS REVIEW AND APPROVAL. SUCH REVIEW SHALL NOT RELIEVE THE CONTRACTOR FROM COMPLYING WITH THE REQUIREMENTS OF THE DRAWINGS AND SPECIFICATIONS, THE CONTRACTOR SHALL BE RESPONSIBLE AT HIS OWN EXPENSE FOR ANY CHANGES RESULTING FROM HIS PROPOSED SUBSTITUTIONS WHICH AFFECT OTHER PARTS OF HIS OWN WORK OR THE WORK OF OTHER CONTRACTORS.</div> <div>9. THE ELECTRICAL DRAWINGS ARE DIAGRAMMATIC ONLY. DO NOT SCALE THE ELECTRICAL DRAWINGS TO DETERMINE THE LOCATION OF EQUIPMENT OR OUTLETS. COMPLY WITH ALL THE CLEARANCES AND MOUNTING HEIGHT REQUIREMENTS. ROUTE CONDUITS PER FIELD CONDITIONS, PREVENTING CONFLICTS WITH STRUCTURAL ELEMENTS AND EXISTING EQUIPMENT AND UTILITIES. COMPLY WITH THE NATIONAL ELECTRICAL CODE.</div> <div>10. ALL FINAL CONNECTIONS TO FURNISHED EQUIPMENT SHALL BE MADE BY THE CONTRACTOR UNLESS OTHERWISE NOTED. VERIFY ELECTRICAL CHARACTERISTICS AND U.L. LISTING PRIOR TO CONNECTION.</div> <div>11. SEAL ALL PENETRATIONS THROUGH FIRE RATED WALLS, CEILINGS, FLOORS, ETC., TO MAINTAIN THE EXISTING FIRE RATING. FURNISH AND INSTALL FIRE RATED ENCLOSURE FOR ALL EQUIPMENT PENETRATING INTO FIRE RATED ENVELOPES, SPACES, ETC. PER NEC 300-21.</div> <div>12. ELECTRICAL OUTLETS ON OPPOSITE SIDES OF FIRE RATED WALLS AND PARTITIONS MUST BE SEPARATED BY A DISTANCE OF 24 INCHES HORIZONTAL. OPENINGS IN FIRE RATED WALLS MUST BE FIRE STOPPED.</div> <div>13. CONDUCTORS SHALL BE COPPER XHHW/XHHW-2 600 VOLT INSULATION, UNLESS NOTED. USE PROPER TEMPERATURE RATING OF CONDUCTORS BASED ON THE AMBIENT AIR TEMPERATURE WHERE CONDUCTORS ARE LOCATED. HIGHER AMPACITY CONDUCTORS AND LARGER RACEWAY SHALL BE PROVIDED AS REQUIRED TO MEET THE AMPACITY CORRECTION FACTORS AS INDICATED IN NEC TABLE 310 AND ELSEWHERE IN CODE.</div> <div>14. THE SEISMIC BRACING AND ANCHORAGE OF ELECTRICAL CONDUITS, BUS DUCTS, WIREWAYS AND CABLE TRAYS SHALL BE IN ACCORDANCE WITH THE "GUIDELINE FOR SEISMIC RESTRAINTS OF MECHANICAL SYSTEMS AND PLUMBING PIPING SYSTEMS" PUBLISHED BY SMACNA LATEST VERSION.</div> <div>15. WHERE BRACING AND ANCHORAGE DETAILS ARE NOT SHOWN ON THE DRAWINGS OR IN THE GUIDELINE, THE FIELD INSTALLATION SHALL BE SUBJECT TO THE APPROVAL OF THE PROJECT ENGINEER. ALL EQUIPMENT ANCHORAGE SHALL BE DESIGNED PER 2019 CBC & ASCE 7-05 FORMULA 13.3-1, 13.3-2, AND 13.3-3.</div> <div>16. PRIOR TO COMMENCEMENT OF WORK, CONTRACTOR SHALL SURVEY THE ENTIRE PROJECT SITE AND BECOME THOROUGHLY FAMILIAR WITH ACTUAL EXISTING CONDITIONS. THE INTENT OF THE WORK IS SHOWN ON THE DRAWINGS AND DESCRIBED HEREIN. THE CONTRACTOR SHALL BE DEEMED TO HAVE MADE SUCH A STUDY AND EXAMINATION AND TO ACCEPT ALL CONDITIONS PRESENT AT THE SITE. NO REQUEST FOR ADDITIONAL PAYMENT SHALL BE CONSIDERED VALID, DUE TO CONTRACTOR FAILURE TO ALLOW IN COST ESTIMATE FOR CONDITIONS WHICH MAY EXIST.</div> <div>17. EXISTING CONDITIONS SHOWN ARE FROM AVAILABLE RECORD DRAWINGS AND VISUAL FIELD SURVEYS AND SHOWN FOR REFERENCE ONLY. CONTRACTOR SHALL VERIFY ACTUAL EXISTING CONDITIONS AT SITE PRIOR TO STARTING WORK.</div> <div>18. ALL ELECTRICAL WORK SHALL BE PERFORMED PER NEC, UTILIZING THE CODE ISSUED IN FORCE AT THE LOCATION OF THE CONSTRUCTION SITE. ELECTRICAL WORK SHALL COMPLY WITH ALL APPLICABLE CURRENT BASE CODES AND REGULATIONS.</div> <div>19. ALL ELECTRICAL EQUIPMENT UTILIZED AT THIS PROJECT SHALL BE U.L. LABELED OR U.L. LISTED.</div> <div>20. INSTALL ALL WIRING IN CONDUITS.</div> <div>21. ALL ELECTRICAL PANEL BOARD BUSES SHALL BE COPPER.</div> <div>22. ALL ELECTRICAL DEVICES AND EQUIPMENT MOUNTED ON THE EXTERIOR OF THE BUILDING OR EXPOSED TO WEATHER SHALL BE NEMA 3R WEATHERPROOF TYPE.</div> <div>23. CONSTRUCTION WORK SHALL BE DONE IN A MANNER WHICH WILL NOT CAUSE INCONVENIENCE OR DANGER TO USERS OF THE PREMISES AND ADJACENT AREAS AND NOT INTERFERE WITH THEIR WORK. ANY CONSTRUCTION WORK TO BE PERFORMED MUST BE PLANNED IN ADVANCE. SCHEDULING SHALL BE DONE IN COOPERATION WITH AUTHORIZED PROJECT MANAGER, WHO WILL BE AVAILABLE BEFORE AND DURING THE PERFORMANCE OF THE WORK. INCLUDE ALL PREMIUM TIME CHARGES IN BID TO COVER THE AFTER-HOURS AND WEEKEND WORK.</div> <div>24. DO ALL DRILLING, CUTTING, CHANNELING AND PATCHING REQUIRED TO INSTALL ELECTRICAL WORK AS INDICATED OR HEREIN SPECIFIED. ALL HOLES, CURBS, ETC., IN FLOORS, CEILINGS AND WALLS SHALL BE PATCHED, UNLESS INDICATED OTHERWISE. PAINT ALL NEW EXPOSED ELECTRICAL RACEWAYS, CABINETS, ENCLOSURES AND FITTINGS TO MATCH THE COLOR OF ADJACENT SURFACES IN FINISHED AREAS.</div>	<div>A AMPERE</div> <div>AC AIR CONDITIONING</div> <div>AF AMPERE FUSE OR AMP FRAME</div> <div>AFC AVAILABLE FAULT CURRENT</div> <div>AFF ABOVE FINISHED FLOOR</div> <div>AFG ABOVE FINISHED GRADE</div> <div>AIC AMPERES INTERRUPTING CAPACITY (SYMMETRICAL)</div> <div>ALT ALTERNATE</div> <div>ARCH ARCHITECTURAL</div> <div>AS AMPERE SWITCH</div> <div>AT AMPERE TRIP</div> <div>ATS AUTOMATIC TRANSFER SWITCH</div> <div>AWG AMERICAN WIRE GAUGE</div> <div>BATT BATTERY</div> <div>BCC BARE COPPER CONDUCTOR</div> <div>BD BOARD</div> <div>BFG BELOW FINISHING GRADE</div> <div>BKBD. BACKBOARD</div> <div>BLDG. BUILDING</div> <div>C CONDUIT</div> <div>CAT CATALOG</div> <div>CATV CABLE TELEVISION</div> <div>CB CIRCUIT BREAKER</div> <div>CEC CALIFORNIA ELECTRICAL CODE</div> <div>CL CL</div> <div>CLF CURRENT LIMITING FUSES</div> <div>CLG CEILING</div> <div>CLK CLOCK</div> <div>C.O. CONDUIT ONLY</div> <div>COMM. COMMUNICATION</div> <div>CONT. CONTINUATION</div> <div>CT CURRENT TRANSFORMER</div> <div>CTC COMMUNICATION TERMINAL CABINET</div> <div>CTRL CONTROL</div> <div>CU COPPER</div> <div>CW COLD WATER</div> <div>DB DECIBEL</div> <div>DC DIRECT CURRENT</div> <div>DE DUAL ELEMENT</div> <div>DEF DUAL ELEMENT SWITCH</div> <div>DISC. SW. DISCONNECT SWITCH</div> <div>DN DOWN</div> <div>DP DEPTH</div> <div>DPP DISTRIBUTION POWER PANEL</div> <div>DWG. DRAWING</div> <div>(E) EXISTING</div> <div>EA EACH</div> <div>E.C. EMPTY CONDUIT</div> <div>EF EXHAUST FAN</div> <div>ELECT. ELECTRICAL</div> <div>ELEV ELEVATION</div> <div>EMAC ENERGY MANAGEMENT AND CONTROL</div> <div>EMRG. EMERGENCY</div> <div>EMS ENERGY MANAGEMENT AND ENVIRONMENTAL CONTROL SYSTEM</div> <div>EMT ELECTRICAL METALLIC TUBING</div> <div>EN EXISTING AT NEW LOCATION</div> <div>EQPT. EQUIPMENT</div> <div>EXIST. EXISTING</div> <div>EXT EXTERIOR</div> <div>F FUSE</div> <div>FA FIRE ALARM, FORCED AIR</div> <div>FACP FIRE ALARM CONTROL PANEL</div> <div>FAU FURNACE</div> <div>FBO FURNISHED BY OTHERS</div> <div>FD FIRE DEPARTMENT</div> <div>FDR FEEDER</div> <div>FL FLOOR</div> <div>FLA FULL LOAD AMPERES</div> <div>FOC FLOOR MATERIAL CHANGE</div> <div>FOS FACE OF STUD</div> <div>FS FUSIBLE SWITCH</div> <div>FT. FOOT/FEET</div> <div>G GROUND</div> <div>GA GAUGE</div> <div>GFI GROUND FAULT CIRCUIT INTERRUPTER</div> <div>GFP GROUND FAULT PROTECTION</div> <div>GND GROUND</div> <div>GSA GENERAL SERVICES AGENCY</div> <div>H HOOD (KITCHEN)</div> <div>HD HEAVY DUTY</div> <div>HID HIGH INTENSITY DISCHARGE</div> <div>HOA HAND-OFF-AUTO</div> <div>HP HORSEPOWER</div> <div>HPF HIGH POWER FACTOR</div> <div>HPS HIGH PRESSURE SODIUM</div> <div>HW HOT WATER</div> <div>HZ HERTZ</div> <div>IC INTERCOM</div> <div>IG ISOLATED GROUND</div> <div>IMC INTERMEDIATE METALLIC CONDUIT</div> <div>INC INCANDESCENT</div> <div>I.E. INVERT ELEVATION</div> <div>J-BOX JUNCTION BOX</div> <div>KVA KILOVOLT AMPERES</div> <div>KW KILOWATT</div> <div>LA LIGHTING ARRESTOR</div> <div>LCL LONG CONTINUOUS LOAD</div> <div>L.O. LUGS ONLY</div> <div>LTG. LIGHTING</div> <div>MCB MAIN CIRCUIT BREAKER</div> <div>MCC THOUSAND CIRCULAR MIL(S)</div> <div>MECH MECHANICAL</div> <div>MH MANHOLE OR MOUNTING HEIGHT</div> <div>MIN MINIMUM</div> <div>MLO MAIN LUGS ONLY</div> <div>LOD MOTOR OPERATED DAMPER</div> <div>MTD MOUNTED</div> <div>MTG MOUNTING</div> <div>N NEUTRAL</div> <div>(N) NEW</div> <div>NA NON-AUTOMATIC</div> <div>N.C. NORMALLY CLOSED</div> <div>NEC NATIONAL ELECTRICAL CODE</div> <div>NEMA NATIONAL ELECTRICAL MANUFACTURER'S ASSOCIATION</div> <div>NFPA NATIONAL FIRE PROTECTION ASSOCIATION</div> <div>N.I.C. NOT IN CONTRACT</div> <div>NL NIGHT LIGHT</div> <div>N.O. NORMALLY OPEN</div> <div>NTS NOT TO SCALE</div> <div>O.C. ON CENTER</div> <div>OD OUTSIDE DIAMETER</div> <div>OL OVER LOAD</div> <div>P POLE</div> <div>PB PULLBOX</div> <div>P/B PUSH BUTTON</div> <div>PH PHASE</div> <div>PL PHILIPS FLUORESCENT LAMPS</div> <div>PIV POST INDICATING VALVE</div> <div>PNL PANEL</div> <div>POC POINT OF CONNECTION</div> <div>PP POWER PANEL</div> <div>PR PAIR</div> <div>PRI PRIMARY</div> <div>POT. POTENTIAL TRANSFORMER</div> <div>PVC POLYVINYL CHLORIDE</div> <div>PVS PHOTO VOLTIC SYSTEM</div> <div>PWR POWER</div> <div>R EXISTING TO BE RELOCATED</div> <div>RECEPT. RECEPTACLE</div> <div>REQ'D REQUIRED</div> <div>REQMT'S REQUIREMENTS</div> <div>RF RETURN FAN</div> <div>RGS RIGID GALVANIZED STEEL</div> <div>RLA RUNNING LOAD AMPS</div> <div>RM ROOM</div> <div>RMS ROOT-MEAN-SQUARE</div> <div>RMR REMOVE AND RELOCATE</div> <div>RSC RIGID STEEL CONDUIT</div> <div>SEC SECURITY</div> <div>SF SQUARE FEET</div> <div>SHT. SHEET</div> <div>SP SINGLE POLE</div> <div>ST SINGLE THROW</div> <div>STA STATION</div> <div>SURF SURFACE</div> <div>SW. SWITCH</div> <div>TCL TOTAL CONNECTED LOAD</div> <div>TD TIME DELAY</div> <div>TEL TELEPHONE</div> <div>TEMP TEMPORARY</div> <div>TTB TELEPHONE TERMINAL BOARD</div> <div>TV TELEVISION</div> <div>TYP. TYPICAL</div> <div>UE UNDERGROUND ELECTRICAL</div> <div>UG UNDERGROUND</div> <div>U.L. UNDERWRITERS LABORATORIES</div> <div>U.O.N. UNLESS OTHERWISE NOTED</div> <div>UPS UNINTERRUPTED POWER SUPPLY</div> <div>UT UNDERGROUND TELEPHONE</div> <div>V VOLT</div> <div>VA VOLTAMP(S)</div> <div>VAR VARIABLE</div> <div>VL VERIFY LOCATION</div> <div>VISCO VALLEY IRON STEEL CO.</div> <div>W WATTS OR WIRE</div> <div>W/ WITH</div> <div>WH WATER HEATE</div> <div>W/O WITHOUT</div> <div>WP WEATHERPROOF</div> <div>X EXISTING TO BE REMOVED</div> <div>XFMR TRANSFORMER</div> <div>+12" HEIGHT FROM FINISHED FLOOR TO CENTER LINE OF DEVICE</div> <div>1P, 2P SINGLE OR DOUBLE POLE</div> <div>ø PHASE PROVIDE FURNISH & INSTALL</div>	<div> PANEL BOARD</div> <div> (E) RECESSED MOUNTED BRANCH CIRCUIT PANEL BOARD</div> <div> (E) SURFACE MOUNTED BRANCH CIRCUIT PANEL BOARD</div> <div> (N) SURFACE MOUNTED BRANCH CIRCUIT PANEL BOARD</div> <div> (N) RECESSED MOUNTED BRANCH CIRCUIT PANEL BOARD</div> <div> WP WEATHERPROOF</div> <div> HOMERUN TO PANEL "A", CIRCUIT 4</div> <div> CONDUIT CONCEALED IN WALL OR CEILING</div> <div> CONDUIT BELOW FLOOR OR GRADE, OR IN SLAB</div> <div> CONDUIT EXPOSED</div> <div> WIREMOLD</div> <div> CONDUIT EXPOSED</div> <div> 3/4"C-2#12, 1#12N, 1#12G</div> <div> 3/4"C-3#12, 1#12N, 1#12G</div> <div> CONDUIT STUBBED AND CAPPED</div> <div> CONDUIT RUNNING UP</div> <div> CONDUIT RUNNING DOWN</div> <div> WEATHERTIGHT FLEX CONDUIT TO EQUIPMENT</div> <div> CONDUIT, FLEXIBLE WITH WIRING AS INDICATED</div> <div> PULLBOX, SIZE AS SHOWN ON PLAN</div> <div> METER</div> <div> GENERATOR</div> <div> CONTACTOR</div> <div> OVERLOAD RELAY</div> <div> GROUND</div> <div> ELECTRICAL MOTOR OR EXHAUST FAN (5 HORSEPOWER)</div> <div> TRANSFORMER</div> <div> THERMOSTAT</div> <div> PHOTOCELL</div> <div> WALL MOUNTED COMBINATION DATA TELEPHONE OUTLET AT +15" U.O.N</div> <div> WALL MOUNTED TELEPHONE OUTLET AT +15" U.O.N</div> <div> PROVIDE FLEXIBLE FINAL CONNECTION. LIQUID TIGHT FOR EXTERIOR OR DAMP LOCATIONS.</div> <div> S SINGLE POLE SWITCH. +48" AFF. UNLESS OTHERWISE NOTED</div> <div> S³ THREE WAY SWITCH. +48" AFF. UNLESS OTHERWISE NOTED</div> <div> Ssb SUB-LETTERS AT SWITCH IDENTIFIED SWITCH LEG</div> <div> Sm MOTOR RATED SWITCH</div> <div> S^s NEW WALL SWITCH OCCUPANCY SENSOR. +48" AFF. UNLESS OTHERWISE NOTED. LEVITON OSSMT-MDA OR APPROVE EQUAL.</div> <div> E₁ DUPLEX RECEPTACLE. +26"AFF., U.O.N 1 = CIRCUIT NUMBER</div> <div> E₂ DOUBLE DUPLEX RECEPTACLE. +26"AFF., U.O.N 1 = CIRCUIT NUMBER</div> <div> WP,GFI E₁ DUPLEX RECEPTACLE, WEATHERPROOF, GROUND FAULT CIRCUIT INTERRUPTER, +15" AFF UON. 1 = CIRCUIT NUMBER</div> <div> E₁ 208/230V RECEPTACLE. +26"AFF., U.O.N 1 = CIRCUIT NUMBER</div> <div> E₁ 250V RECEPTACLE. +26"AFF., U.O.N 1 = CIRCUIT NUMBER</div> <div> E₁ 480V RECEPTACLE. +15"AFF., U.O.N 1 = CIRCUIT NUMBER</div> <div> E₂ SWITCHED DUPLEX RECEPTACLE</div> <div> E₂ SPECIAL RECEPTACLE. SIZE AS NOTED.</div> <div> E₂ DUPLEX-RECEPTACLE IN NON-METALLIC BOX WITH STAINLESS STEEL COVER IN CONCRETE (MANUFACTURE: CARLON, ROUND FLOOR BOX MODEL #E971FB, TWO-DOOR COVER MODEL #E97SS2). NOTE REFERENCE CALL OUT</div> <div> LIGHT LINE WEIGHT INDICATES EXISTING TO REMAIN</div> <div> HEAVY THICK LINE INDICATES NEW WORK</div> <div> DASHED LINE INDICATES DEMOLITION</div>	<div>(E) INDICATES EXISTING</div> <div>(N) INDICATES NEW</div> <div> LIGHT FIXTURE CALL-OUT. TOP NUMBER: IDENTIFICATION NUMBER. BOTTOM NUMBER: INPUT WATTAGE.</div> <div> NON-FUSED DISCONNECT SWITCH</div> <div> FUSED DISCONNECT SWITCH, FUSED PER EQUIPMENT MANUFACTURER'S NAMEPLATE RATING</div> <div> MOTOR STARTER, NEMA SIZE AS INDICATED.</div> <div> MOTOR STARTER WITH O.L. PROTECTION, H.O.A SWITCH A RED PILOT LIGHT, AUXILIARY CONTACTS AND L.V. TRANSFORMER, PROVIDE NAMEPLATES. NUMBER ADJACENT INDICATES STARTER SIZE.</div> <div> COMBINATION MOTOR STARTER WITH THERMAL/MAGNETIC C/B AND ELECTRONIC OVERLOAD RELAYS</div> <div> MOLDED CASE CIRCUIT BREAKER SIZE AS INDICATED ON SINGLE LINE DIAGRAM.</div> <div> FUSED SWITCH. "AS" INDICATES AMPERE SWITCH RATING, "AFU" AMPERE FUSE RATING, NUMBER OF POLES AS INDICATED.</div> <div> SWITCH</div> <div> UTILITY METER SOCKET, WITH C.T.S, CLIPS, ETC., PER SERVING UTILITY COMPANY.</div> <div></div>		

GENERAL NOTES

1.

ALL WIRES SHALL BE RUN IN CONDUIT AND/OR APPROVED CABLE RACEWAYS AND SHALL CONFORM TO NEC AND LOCAL ELECTRICAL CODES.

2.

FIRE ALARM VERBATIM NOTES SHALL BE ENFORCED WHEN APPLICABLE:

2.1 ALL WIRING, INITIATING DEVICES, AND ANNUNCIATOR PANEL SHALL BE SUPERVISED TO THE PRINCIPAL POINT OF ANNUNCIATION (F/A PANEL TO SUPERVISE THE ANNUNCIATOR PANEL, ALL CIRCUITS, AND INITIATING DEVICES).

2.2 WIRES SHALL NOT BE LOOPED THROUGH DEVICES; WIRES MUST BE CUT FOR IN AND OUT.

2.3 POINT AND COMMON ANNUNCIATION PROHIBITED. NON-ADDRESSABLE CIRCUITS T-TAPPING IS PROHIBITED.

2.4 ALL DEVICES IN THE ALARM SYSTEM SHALL BE COMPATIBLE AND INSTALLED TO MANUFACTURES SPECIFICATIONS.

2.5 AUDIBILITY OF ALARM AND VOICE COMMUNICATION SHALL BE NOT LESS THAN 15dBA ABOVE AMBIENT SOUNDS, BUT NOT LESS THAN 75dBA, THROUGHOUT AREA OF ALARM.

2.6 AREAS HAVING MORE THAN 2 STROBES IN THE FIELD OF VIEW SHALL BE SYNCHRONIZED.

2.7 SMOKE DETECTOR AND HEAT DETECTOR LOCATIONS ARE BASED ON SMOOTH CEILING WITH MAXIMUM HEIGHT OF 10 FEET UNLESS OTHERWISE NOTED.

2.8 STROBE LOCATION IS BASED ON 10 FOOT CEILING HEIGHT AND ARE INSTALLED ACCORDING TO NFPA 72 REQUIREMENTS UNLESS OTHERWISE NOTED.

2.9 WALL-MOUNTED STROBES SHALL HAVE THEIR BOTTOMS NOT LESS THAN 80 INCHES ABOVE FINISHED FLOOR AND NOT GREATER THAN 96 INCHES ABOVE FINISHED FLOOR.

2.10 STROBES IN SLEEPING AREAS SHALL BE LOCATED WITHIN 16 FEET OF PILLOW AND HAVE A MINIMUM INTENSITY OF 110cd. FOR STROBES LOCATED LESS THAN 24 INCHES FROM CEILING, MINIMUM INTENSITY SHALL BE 177cd.

2.11 TOP OF PULL STATION SHALL BE MOUNTED AT 48" ABOVE FLOOR LEVEL. (L AFC 57.122.07).

2.12 FIRE ALARM SIGNAL SHALL MEET ANSI S3.41, AUDIBLE EMERGENCY EVACUATION SIGNAL (TEMPORAL PATTERN).

3.

ALARM SIGNALS SHALL BE DISTINCTIVE FROM ANY OTHER SIGNAL AND SHALL NOT BE USED FOR ANY OTHER PURPOSE. (NFPA 1-5.4.7) SUPERVISORY SIGNALS AND TROUBLE SIGNALS SHALL ACTIVATE THE SAME SOUND AT THE CONTROL PANEL AND WILL BE DISTINCTIVELY ANNUNCIATED ON THE LCD DISPLAY OF THE CONTROL UNIT (REMOTE ANNUNCIATORS WHERE PROVIDED) PANELS HAVE SEPARATE DISPLAY QUEUES FOR ALARM, SUPERVISORY & TROUBLE. (NFPA 1-5.4.4.1-5.4.7)

4.

A.D.A. STROBES SHALL PRODUCE A MINIMUM OF 15 CANDELA AND SHALL FLASH NO MORE THAN 2 FLASHES PER SECOND & NOT LESS THAN 1 FLASH PER SECOND.

IN ROOMS:CEILING MOUNTED STROBES SHALL BE MOUNTED IN ACCORDANCE WITH: NFPA 72, 2013 EDITION, TABLE 18.5.4.1.1(B)

IN CORRIDORS:STROBES SHALL BE MOUNTED IN ACCORDANCE WITH: NFPA 72, 2013 EDITION, 18.5.5.4.1(A)

5.

ALL HOME RUNS SHALL BE TO FIRE ALARM TERMINAL CABINET LOCATED IN ELECTRICAL ROOM UNLESS OTHERWISE NOTED. NEW SPEAKERS SHALL BE CONNECTED TO EXISTING FIRE ALARM SPEAKER CIRCUIT AND SHALL BE FULLY SUPERVISED. NEW A.D.A. STROBES SHALL BE CONNECTED TO BPS10A POWER SUPPLY LOCATED ADJACENT TO FIRE ALARM CABINET.

6.

CONNECT EQUIPMENT TO A DEDICATED 120 V CIRCUIT. CIRCUIT BREAKER SHALL BE LOCKED IN THE ON POSITION WITH AN APPROVED MECHANICAL CLIP. CIRCUIT DISCONNECTING MEANS SHALL HAVE A RED MARKING, SHALL BE ACCESSIBLE ONLY TO AUTHORIZED PERSONNEL, AND SHALL BE IDENTIFIED AS "FIRE ALARM". THE LOCATION OF THE CIRCUIT DISCONNECTING MEANS SHALL BE PERMANENTLY IDENTIFIED AT THE FIRE ALARM CONTROL UNIT.

7.

FIRE ALARM PANELS REQUIRE 120V FROM EMERGENCY POWER SOURCE PER NFPA STANDARD 72-E. ACCORDANCE WITH NEC.

8.

DOOR HOLDERS SHALL BE RELEASED BY SMOKE DETECTORS. ALARM SMOKE DETECTORS SHALL BE ANNUNCIATED AND IDENTIFIED BY ZONE. DETECTOR LOCATIONS SHALL BE PER NFPA STANDARD 72-E.

9.

THE VOICE EVACUATION MESSAGE SHALL INCLUDE 5 SECONDS OF THREE SLOW WHOOP IN FRONT OF MALE VOICE, 15 SECOND MESSAGE: "ATTENTION, ATTENTION, AN EMERGENCY HAS BEEN REPORTED IN THIS BUILDING. PLEASE LEAVE THE BUILDING UTILIZING THE NEAREST EXIT OR STAIRWAY, DO NOT USE THE ELEVATOR."

10.

THE FIRE ALARM PANEL SHALL BE MONITORED 24 HOURS BY AM-TECH (A THIRD PARTY FOR OUTSIDE MONITORING, AVAILABLE BY PHONE AT 1-800-609-2527 AND/OR 1-833-248-2223) AND OCTA CENTRAL COMMUNICATIONS LOCATED IN GARDEN GROVE, CA. TWO (2) DEDICATED TELEPHONE LINES SHALL BE PROVIDED BY THE OWNER FOR CENTRAL STATION CONNECTION. UL # S8126-1. ONE LINE SHALL BE DEDICATED FOR MONITORING.

11.

THE TYPE OF FIRE PROTECTIVE SIGNALING SYSTEMS IS: POWER LIMITED.

FIRE PROTECTION AND ALARM SYSTEM NOTES

1.

INSTALLATION SHALL BE PER NFPA-72.

2.

FIRE PROTECTION SYSTEMS SHALL BE PER NFPA-72.

3.

FIRE ALARM SYSTEMS - INSPECTION, TESTING, AND MAINTENANCE SHALL BE PER NFPA-72.

4.

EXISTING FIRE ALARM SHUT DOWN REQUIRES A FIREWATCH AT SITE TO REMAIN UNTIL SYSTEM RETURNS TO SERVICE, PER NFPA-72.

5.

STATE OF CALIFORNIA APPLICABLE PROVISIONS: TITLE-24, PART 2, CALIFORNIA BUILDING CODE, CHAPTER 34, TITLE 24, PART 9 CA. FIRE CODE, ARTICLE 87.

6.

INSTALL END-OF-LINE DEVICES AS REQUIRED TO MAINTAIN CIRCUIT SUPERVISION.

7.

SENSORS, CONDUITS, AND WIRING IN CNG FUELING BUILDING, FUELING AREA, AND PRODUCTION PLANT SHALL COMPLY WITH NEC CLASS I, DIV II. THOSE IN HYDROGEN (H2) FUELING BUILDING, FUELING AREA, AND PRODUCTION PLANT SHALL COMPLY WITH NEC CLASS I, DIV I.

8.

SENSORS, CONDUITS, AND WIRING IN BRAKE CHECK PITS SHALL BE OF THE EXPLOSION PROOF TYPES.

9.

SENSORS IN MAINTENANCE BUILDING - BUS SERVICE BAYS, PAINT BOOTH AND PAINT MIX ROOM SHALL BE WITHIN 18" OF THE CEILING AND TO BE OF NEC CLASS I, DIV II TYPE.

10.

SENSORS IN BRAKE CHECK BUILDING, INSPECTION AREA AND TUNNEL SHALL BE WITHIN 18" OF THE CEILING AND TO BE OF NEC CLASS I, DIV II TYPE.

11.

CONTRACTOR SHALL FIELD VERIFY CLEARANCE OF ALL OBSTRUCTION BEFORE INSTALLING THE FIRE ALARM AND FUEL GAS DETECTION SYSTEMS.

12.

THE SMOKE AND FUEL GAS DETECTORS SHALL NOT BE PLACED WITHIN 24" IN FRONT OF THE DISCHARGE OF THE VENTILATION DUCTS OR WITHIN 24" OF HOLES IN WALLS OR CEILINGS UNLESS PART OF THE AIR RETURN SYSTEM.

13.

A LICENSED FIRE ALARM CONTRACTOR SHALL MAKE ALL CONNECTIONS AND TEST THE SYSTEM. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE A TESTING PLAN FOR REVIEW BY THE ENGINEER AND A WORKING SYSTEM MEETING THE FIRE INSPECTOR'S APPROVAL.

14.

AN UPDATED FIRE ALARM ZONE MAP SHALL BE PROVIDED TO COVER THE EXISTING AND NEW AREAS. A LAMINATED COPY OF IT SHALL BE SECURELY FASTENED AT THE FIRE ALARM CONTROL/ANNUNCIATOR PANEL IN ALL BUILDINGS.

15.

ALL SPACES PROTECTED BY THE EXISTING FIRE ALARM SYSTEM SHALL BE PROTECTED DURING CONSTRUCTION. THE FIRE ALARM SYSTEM LOCATED WITHIN THE CONSTRUCTION AREA SHALL BE FULLY OPERATIONAL AT ALL TIMES.

16.

WHENEVER THE CONSTRUCTION SPACE IS NOT MANNED BY CONTRACTOR, THE FIRE ALARM SYSTEM SHALL BE FULLY OPERATIONAL.

17.

WHERE ONE OR MORE ZONES THAT COVER THE CONSTRUCTION AREA AND SPACES WHICH ARE NOT WITHIN THE CONSTRUCTION AREA, THE CIRCUIT CONTINUITY SHALL BE MAINTAINED SO THAT ALL SPACES INCLUDING THOSE OUTSIDE OF THE CONSTRUCTION AREA SHALL BE FULLY PROTECTED BY THE FIRE ALARM SYSTEM.


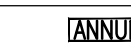
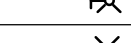

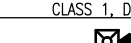

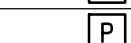


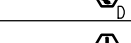

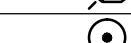


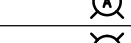




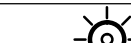



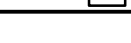
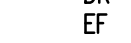
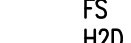



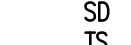



WIRE SCHEDULE

WIRE TYPE DESIGNATION	CIRCUIT TYPE	WIRE DESCRIPTION
D	SLC ADDRESSABLE DATA CIRCUITS	2-CONDUCTOR TWISTER PAIR SOLID CABLE NON-SHIELDED #18 AWG
V	NOTIFICATION APPLIANCE CIRCUIT	2-CONDUCTOR TWISTED #12 AWG SOLID THHN
P	AUXILIARY POWER	2-CONDUCTOR TWISTED PAIR CABLE SOLID NON-SHIELDED #14 AWG AUXILIARY POWER
S	SBUS REMOTE ANNUNCIATORS & REMOTE CONTROL PANELS	2-CONDUCTOR TWISTED PAIR CABLE SOLID NON-SHIELDED #14 AWG 2-CONDUCTOR TWISTED PAIR SOLID CABLE NON-SHIELDED #18 AWG
X	METHANE GAS/HYDROGEN DETECTOR	2-CONDUCTOR #14 AWG SOLID THHN

SEQUENCE OF OPERATION

	MANUAL PULL STATION	AREA FIRE/HEAT/SMOKE DETECTOR	BUILDING POWER FAILURE	GROUND FAULT	OPEN CIRCUIT	CNG/HYDROGEN
ANNUNCIATE AT FIRE CONTROL PANEL (alarm & trouble)	YES	YES	YES	TROUBLE	TROUBLE	-
ACTIVATE AUDIO / VISUAL SIGNAL THROUGHOUT BUILDING	YES	YES	NO	NO	NO	-
CENTRAL STATION MONITORING SYSTEM	YES	YES	YES	YES	YES	-
SHUNT DOWN ALL AIR HANDLING (HVAC) THROUGHOUT BUILDING	NO	YES	YES	NO	NO	-

FIRE ALARM, CNG AND HYDROGEN DEVICE LEGEND

SYMBOL	QTY.	MODEL	MAKE	DESCRIPTION	CSFM #	MOUNTING
	4	6820EVS	SILENT KNIGHT	FIRE ALARM CONTROL PANEL	-	-
	4	6860	SILENT KNIGHT	FIRE ALARM ANNUNCIATOR	-	-
	-	-	-	STROBE WALL MOUNT	-	-
	-	-	-	STROBE CEILING MOUNT	-	-
	131	P2RL	SYSTEM SENSOR	HORN/STROBE WALL MOUNT	-	-
	8	-	SYSTEM SENSOR	HORN/STROBE WALL MOUNT (SEPARATE RATED UNITS)	-	-
	-	-	-	HORN/STROBE CEILING MOUNT	-	-
	31	SK-PULL-SA	SILENT KNIGHT	MANUAL PULL STATION	-	-
	-	-	-	PULL STATION WEATHERPROOF BACK BOX	-	-
	2	-	SILENT KNIGHT	EXPLOSION PROOF PULL STATION	-	-
	3	-	SILENT KNIGHT	RELAY MODULE FOR FIRE DOOR RELEASE	-	-
	58	SK-PHOTO-W	SILENT KNIGHT	SMOKE DETECTOR	-	-
	-	-	-	EXPLOSION PROOF SMOKE DETECTOR	-	-
	18	SK-DUCT-W	SILENT KNIGHT	DUCT SMOKE DETECTOR	-	-
	-	-	-	HEAT DETECTOR	-	-
	-	-	-	EXPLOSION PROOF SMOKE DETECTOR	-	-
	32	SK-FIRE-CO-W	SILENT KNIGHT	FLAME DETECTOR	-	-
	56	-	SILENT KNIGHT	METHANE DETECTOR	-	-
	-	-	-	METHANE DETECTOR W/ YELLOW BEACON	-	-
	-	-	-	YELLOW STROBE LIGHT	-	-
	-	-	-	RED STROBE LIGHT	-	-
	-	-	-	AMBER STROBE LIGHT	-	-
	-	-	-	GREEN LIGHT	-	-
	12	-	SILENT KNIGHT	ROLL-UP DOOR	-	-
	16	-	SILENT KNIGHT	EMERGENCY EXHAUST FAN	-	-
	-	-	-	PAINT EXHAUST FAN	-	-
	-	-	-	METHANE GAS SENSOR	-	-
	45	-	SILENT KNIGHT	HYDROGEN GAS SENSOR	-	-
	2	-	SILENT KNIGHT	HYDROGEN AMBER BEACON	-	-
	16	-	SILENT KNIGHT	OUTDOOR TRI-COLOR CHANGING NOTIFICATION LIGHT	-	-
	18	-	SILENT KNIGHT	OUTDOOR TRI-COLOR CHANGING NOTIFICATION LIGHT	-	-
	6	-	-	VALVE TAMPER SWITCH	-	-
	6	-	-	SPRINKLER WATER FLOW SWITCH	-	-

DR = RELAY MODULE FOR FIRE DOOR RELEASE

EF = EMERGENCY EXHAUST FAN

FD = FLAME DETECTOR

FS = SPRINKLER WATER FLOW SWITCH

H2D = HYDROGEN DETECTOR

HDA = HYDROGEN DETECTION ALARM

HS = HORN/STROBE

MD = METHANE DETECTOR

MDA = METHANE DETECTION ALARM

(N) = DESIGNATED NEW DEVICE. OTHERS WITHOUT (N) ARE EXISTING DEVICES.

PS = PULL STATION

RD = ROLL-UP DOOR

S = STROBE

SD = SMOKE DETECTOR

TS = VALVE TAMPER SWITCH

DAHL, TAYLOR & ASSOCIATES

CONSULTING ENGINEERS

2860 DAMLER STREET

SANTA ANA, CALIFORNIA 92705

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FAX: # (949) 502-0777

Sheet Title

FIRE ALARM SYMBOLS, LEGEND, NOTES AND SCHEDULES

Project

FIRE ALARM CONTROL PANELS REPLACEMENT AT SANTA ANA BUS BASE

JOB #1.21.4

DESIGN BY:SDV

DRAWN BY:TMP

CHECKED BY:QV

DATE02-09-2022


SCALEAS NOTED

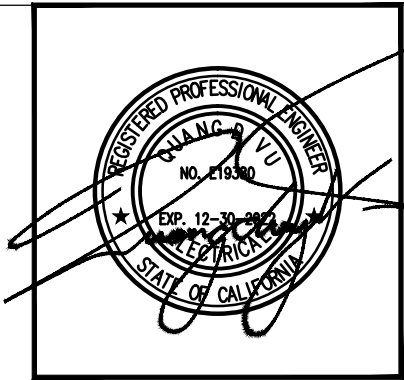
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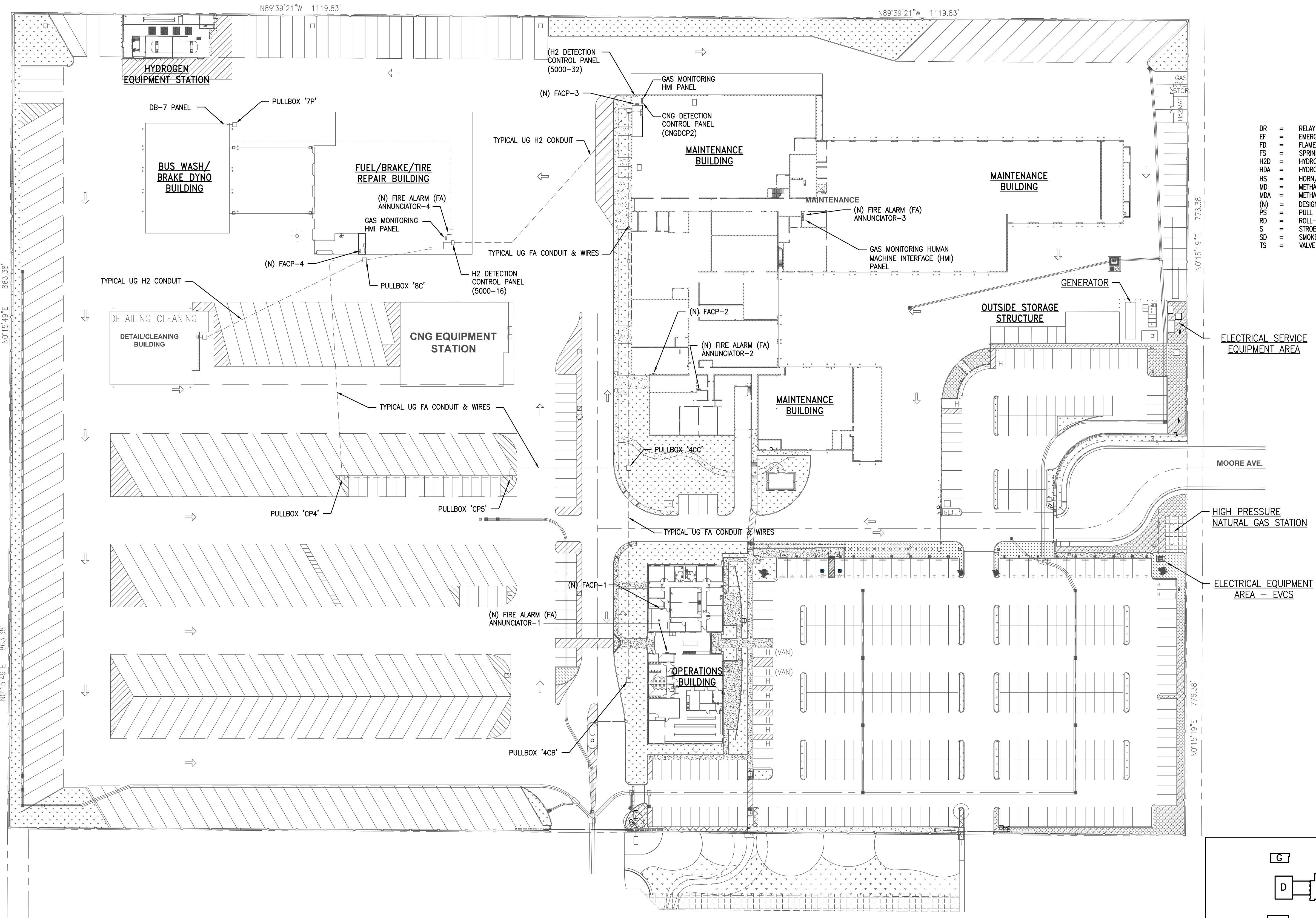
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714/560/OCTA

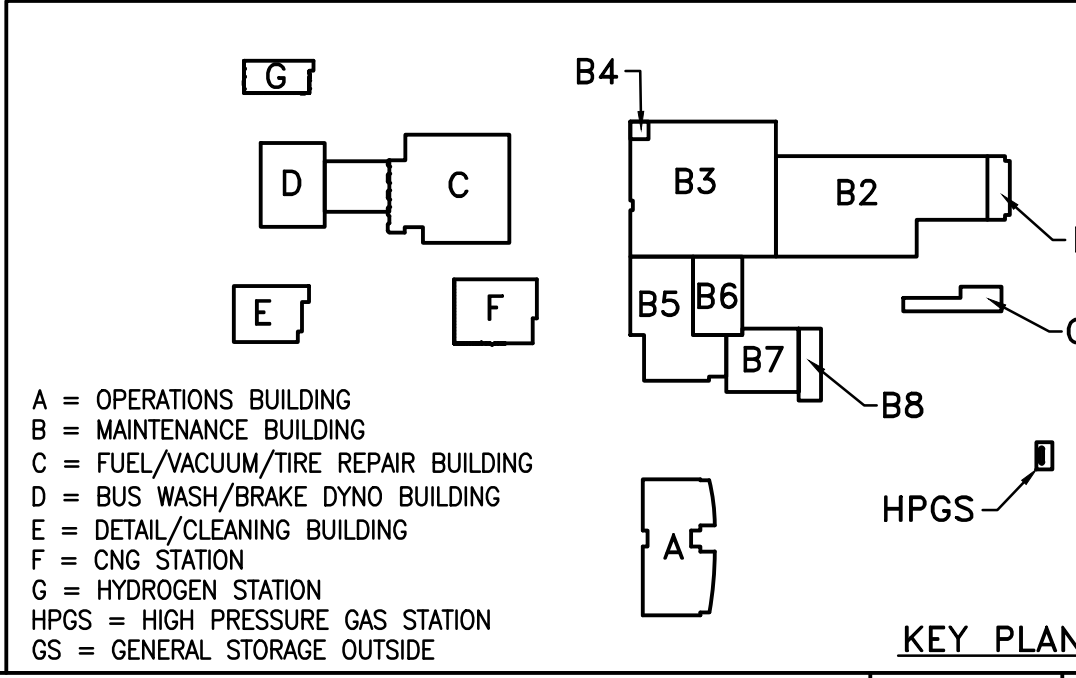
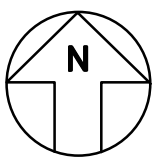




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- DR = RELAY MODULE FOR FIRE DOOR RELEASE
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- PS = PULL STATION
- RD = ROLL-UP DOOR
- S = STROBE TO BE REPLACED WITH HORN AND STROBE
- SD = SMOKE DETECTOR
- TS = VALVE TAMPER SWITCH



- A = OPERATIONS BUILDING
- B = MAINTENANCE BUILDING
- C = FUEL/VACUUM/TIRE REPAIR BUILDING
- D = BUS WASH/BRAKE DYNO BUILDING
- E = DETAIL/CLEANING BUILDING
- F = CNG STATION
- G = HYDROGEN STATION
- HPGS = HIGH PRESSURE GAS STATION
- GS = GENERAL STORAGE OUTSIDE

KEY PLAN

FIRE ALARM AND CNG/HYDROGEN GAS DETECTION SYSTEMS SITE PLAN FOR REMOVAL & REPLACEMENT OF EXISTING FIRE ALARM SYSTEMS

SCALE
1"=50'-0"

1

Sheet Title
FIRE ALARM, CNG AND HYDROGEN GAS DETECTION SYSTEMS
SITE PLAN - REMOVAL & REPLACEMENT OF FIRE ALARM SYSTEMS

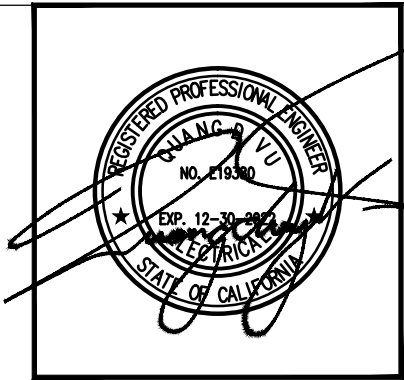
Project
FIRE ALARM CONTROL PANELS REPLACEMENT
AT SANTA ANA BUS BASE

JOB # 1.21.4
DESIGN BY: SDV
DRAWN BY: TMP
CHECKED BY: QV
DATE 02-09-2022
SCALE AS NOTED
SHEET

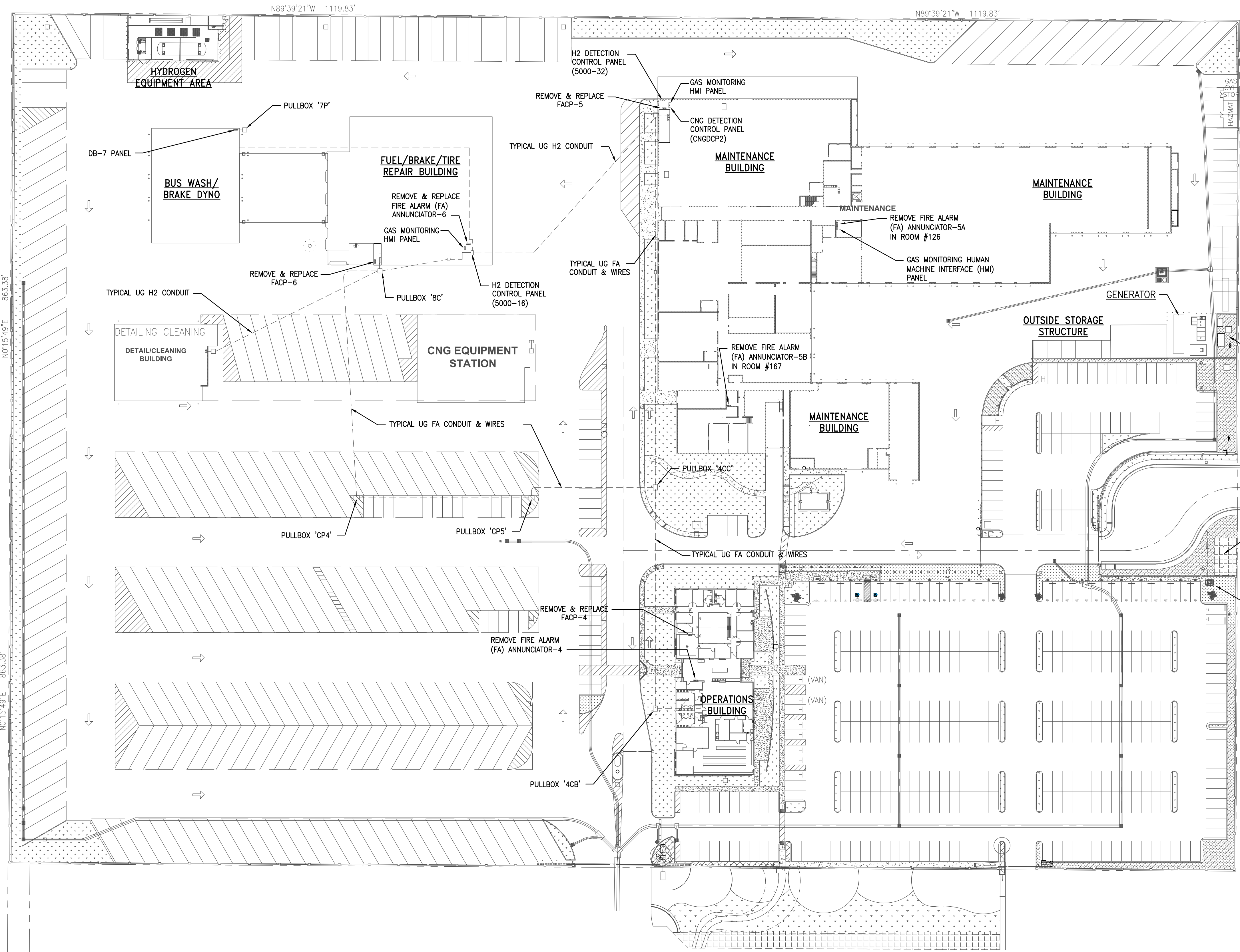
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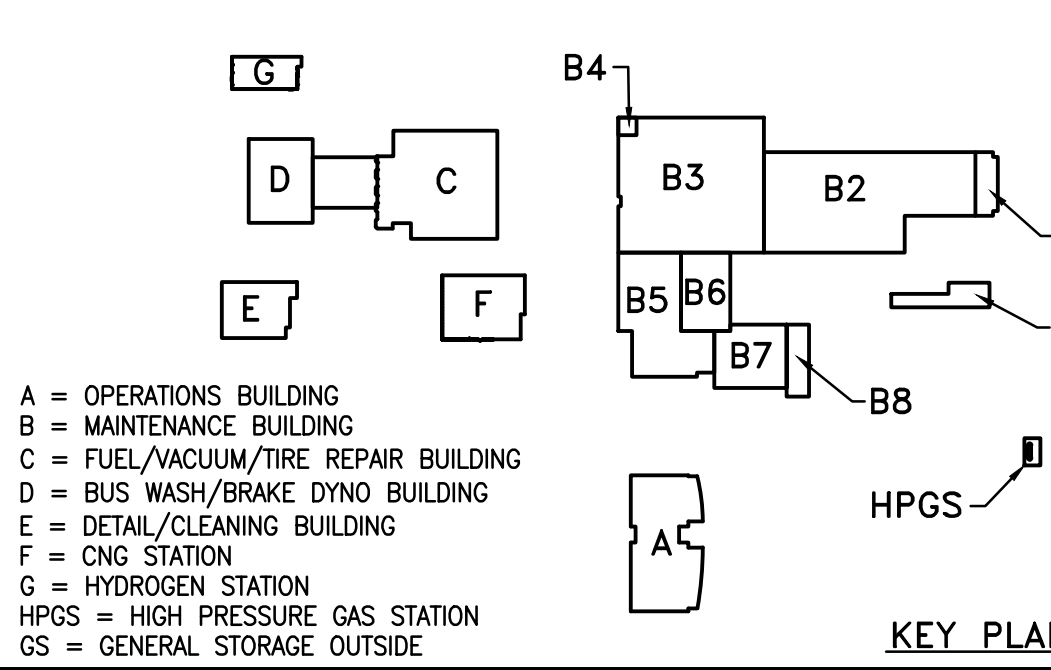
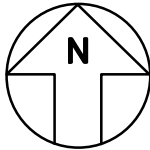




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TEL: # (949) 756-8654
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- DR = RELAY MODULE FOR FIRE DOOR RELEASE
- EF = EMERGENCY EXHAUST FAN
- FD = FLAME DETECTOR
- FS = SPRINKLER WATER FLOW SWITCH
- H2D = HYDROGEN DETECTOR
- HDA = HYDROGEN DETECTION ALARM
- HS = HORN/STROBE
- MD = METHANE DETECTOR
- MDA = METHANE DETECTION ALARM
- (N) = DESIGNATED NEW DEVICE. OTHERS WITHOUT (N) ARE EXISTING DEVICES.
- PS = PULL STATION
- RD = ROLL-UP DOOR
- S = STROBE TO BE REPLACED WITH HORN AND STROBE
- SD = SMOKE DETECTOR
- TS = VALVE TAMPER SWITCH



FIRE ALARM AND CNG/HYDROGEN GAS DETECTION SITE PLAN W/ REMOVAL OF EXISTING FIRE ALARM SYSTEMS

Sheet Title
FIRE ALARM, CNG AND HYDROGEN GAS DETECTION SYSTEMS
SITE PLAN W/ REMOVAL OF FIRE ALARM SYSTEMS

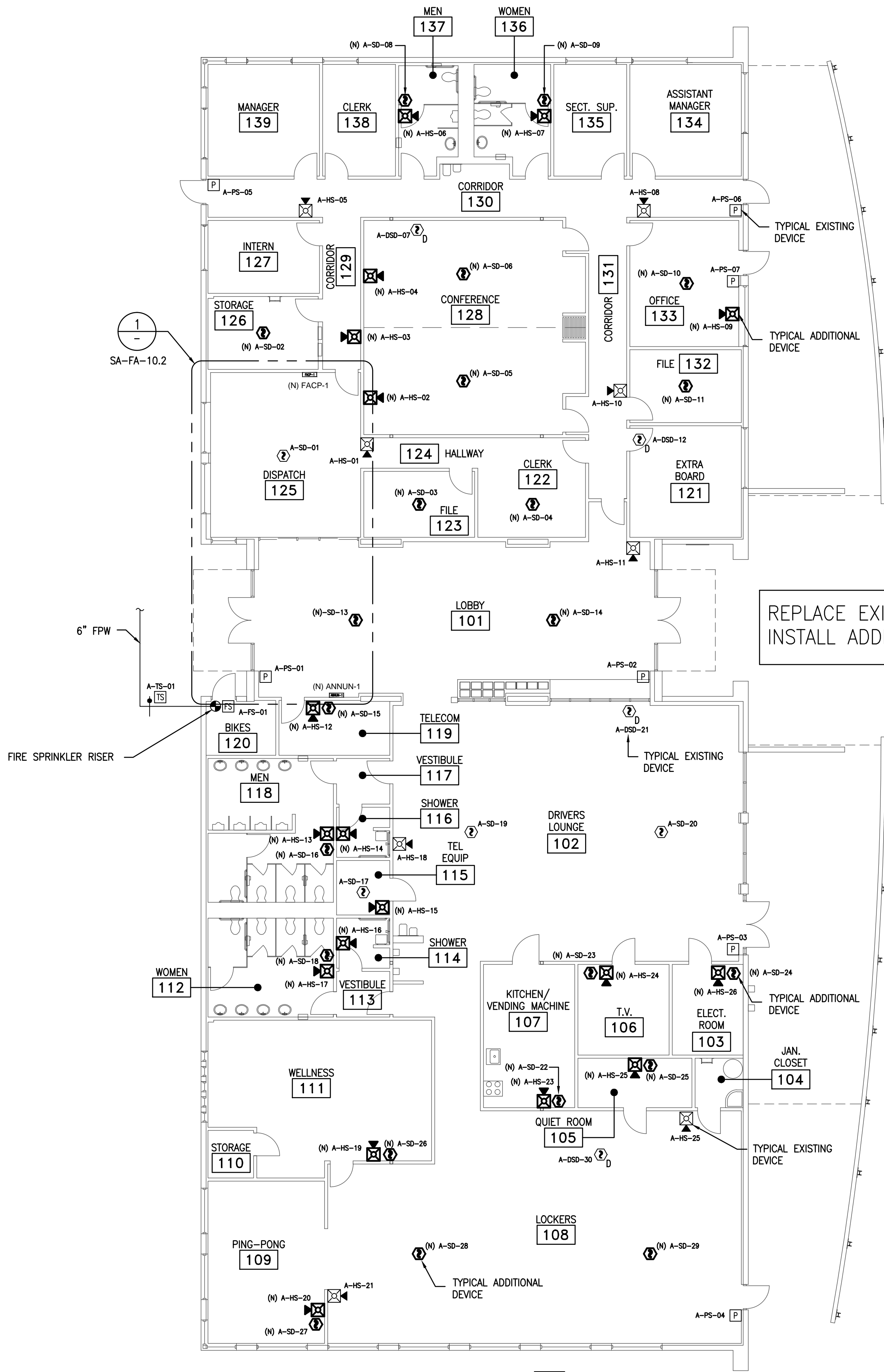
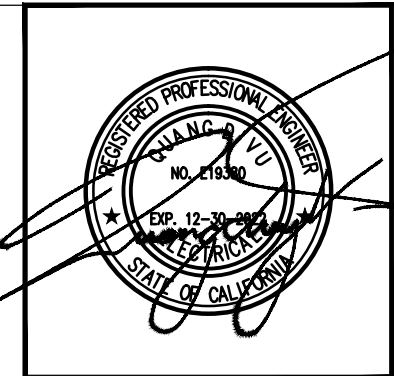
Project
FIRE ALARM CONTROL PANELS REPLACEMENT
AT SANTA ANA BUS BASE

JOB # 1.21.4
DESIGN BY: SDV
DRAWN BY: TMP
CHECKED BY: QV
DATE 02-09-2022
SCALE AS NOTED
SHEET

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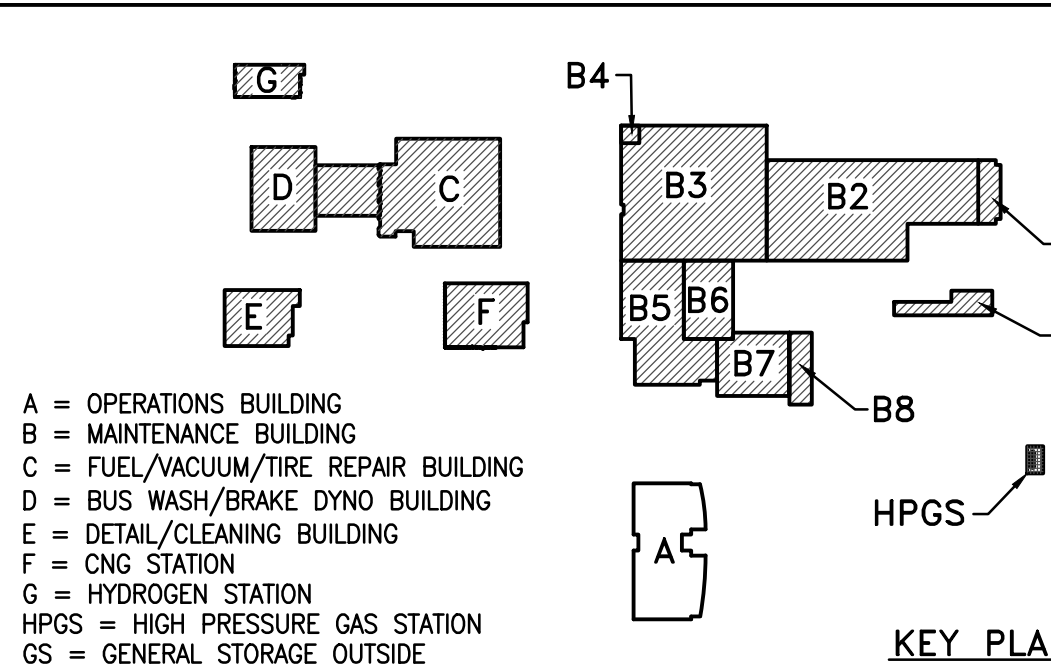
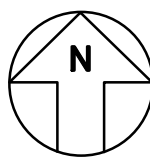
550 South Main Street
Orange, CA 92668
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LEGEND	
SYMBOL	DESCRIPTION
[FACP]	FIRE ALARM CONTROL PANEL
[ANNUN]	FIRE ALARM ANNUNCIATOR
X	STROBE TO BE REPLACED WITH HORN AND STROBE
[Horn/Strobe]	HORN/STROBE WALL MOUNT
[Horn/Strobe]	HORN/STROBE WALL MOUNT (SEPARATE RATED UNITS)
[P]	MANUAL PULL STATION
[P] _{WP}	PULL STATION WEATHERPROOF BACK BOX
[P] _{EXP}	EXPLOSION PROOF PULL STATION
[DR]	RELAY MODULE FOR FIRE DOOR RELEASE
[SD]	SMOKE DETECTOR
[SD] _D	DUCT SMOKE DETECTOR
[SD] _H	HEAT DETECTOR
[SD] _F	FLAME DETECTOR
[SD] _M	METHANE DETECTOR
[SD] _M [Yellow Beacon]	METHANE DETECTOR W/ YELLOW BEACON
[SD] _Y	YELLOW STROBE LIGHT
[SD] _R	RED STROBE LIGHT
[SD] _A	AMBER STROBE LIGHT
[SD] _G	GREEN LIGHT
[RD]	ROLL-UP DOOR
[EF]	EMERGENCY EXHAUST FAN
[GAS]	METHANE GAS SENSOR
[H2D]	HYDROGEN GAS DETECTOR
[H2D] _{AB}	HYDROGEN AMBER BEACON
[H2D] _{TRC}	OUTDOOR TRI-COLOR CHANGING NOTIFICATION LIGHT
[H2D] _{TRC} [Methane]	OUTDOOR TRI-COLOR CHANGING NOTIFICATION LIGHT
[TS]	VALVE TAMPER SWITCH
[FS]	SPRINKLER WATER FLOW SWITCH

- DR = RELAY MODULE FOR FIRE DOOR RELEASE
EF = EMERGENCY EXHAUST FAN
FD = FLAME DETECTOR
FS = SPRINKLER WATER FLOW SWITCH
H2D = HYDROGEN DETECTOR
HDA = HYDROGEN DETECTION ALARM
HS = HORN/STROBE
MD = METHANE DETECTOR
MDA = METHANE DETECTION ALARM
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PS = PULL STATION
RD = ROLL-UP DOOR
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SD = SMOKE DETECTOR
TS = VALVE TAMPER SWITCH



OPERATIONS BUILDING "A" FLOOR PLAN – UPGRADED FIRE ALARM SYSTEM

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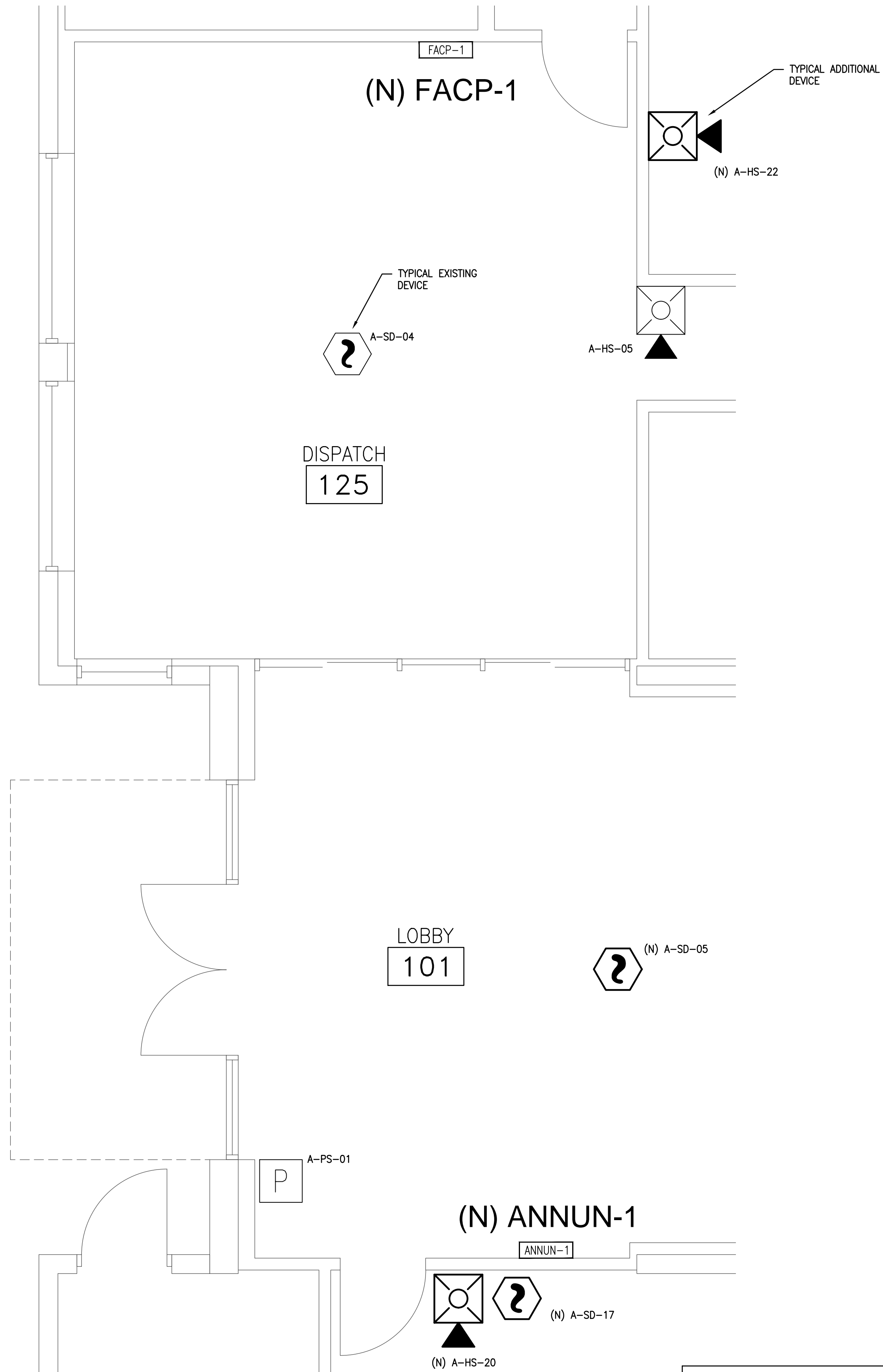
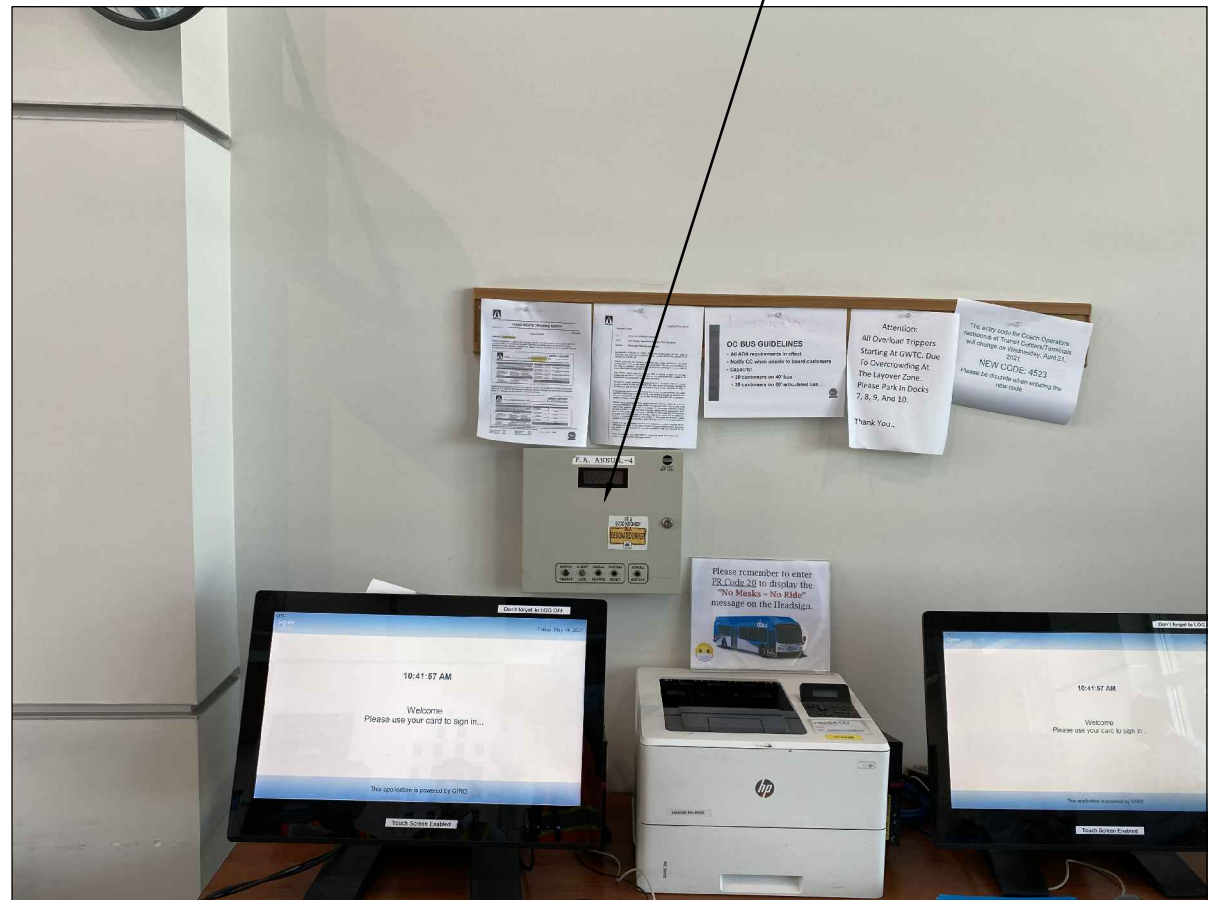
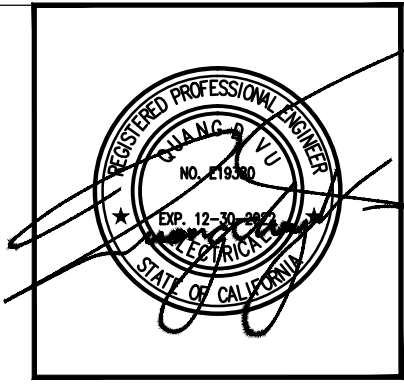
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OPERATIONS BUILDING "A"
UPGRADED FIRE ALARM SYSTEM





























Project
FIRE ALARM CONTROL PANELS REPLACEMENT
AT SANTA ANA BUS BASE

JOB # 1.21.4
DESIGN BY: SDV
DRAWN BY: TMP
CHECKED BY: QV
DATE 02-09-2022
SCALE AS NOTED
SHEET
SA-FA-10.1

550 South Main Street
Orange, CA 92668
714/560/OCTA


































LEGEND	
SYMBOL	DESCRIPTION
	FIRE ALARM CONTROL PANEL
	FIRE ALARM ANNUNCIATOR
	STROBE TO BE REPLACED WITH HORN AND STROBE
	HORN/STROBE WALL MOUNT
 CLASS 1, DIV. 1	HORN/STROBE WALL MOUNT (SEPARATE RATED UNITS)
	MANUAL PULL STATION
 WP	PULL STATION WEATHERPROOF BACK BOX
 EXP	EXPLOSION PROOF PULL STATION
 DR	RELAY MODULE FOR FIRE DOOR RELEASE
	SMOKE DETECTOR
	DUCT SMOKE DETECTOR
	HEAT DETECTOR
	FLAME DETECTOR
	METHANE DETECTOR
	METHANE DETECTOR W/ YELLOW BEACON
	YELLOW STROBE LIGHT
	RED STROBE LIGHT
	AMBER STROBE LIGHT
	GREEN LIGHT
	ROLL-UP DOOR
	EMERGENCY EXHAUST FAN
	METHANE GAS SENSOR
	HYDROGEN GAS DETECTOR
	HYDROGEN AMBER BEACON
	OUTDOOR TRI-COLOR CHANGING NOTIFICATION LIGHT HYDROGEN DETECTION ALARM
 W.P.	OUTDOOR TRI-COLOR CHANGING NOTIFICATION LIGHT METHANE DETECTION ALARM
 TS	VALVE TAMPER SWITCH
 FS	SPRINKLER WATER FLOW SWITCH

- | | | |
|-----|---|--------------------------------------------|
| DR | = | RELAY MODULE FOR FIRE DOOR RELEASE |
| EF | = | EMERGENCY EXHAUST FAN |
| FD | = | FLAME DETECTOR |
| FS | = | SPRINKLER WATER FLOW SWITCH |
| H2D | = | HYDROGEN DETECTOR |
| HDA | = | HYDROGEN DETECTION ALARM |
| HS | = | HORN/STROBE |
| MD | = | METHANE DETECTOR |
| MDA | = | METHANE DETECTION ALARM |
| PS | = | PULL STATION |
| RD | = | ROLL-UP DOOR |
| S | = | STROBE TO BE REPLACED WITH HORN AND STROBE |
| SD | = | SMOKE DETECTOR |
| TS | = | VALVE TAMPER SWITCH |

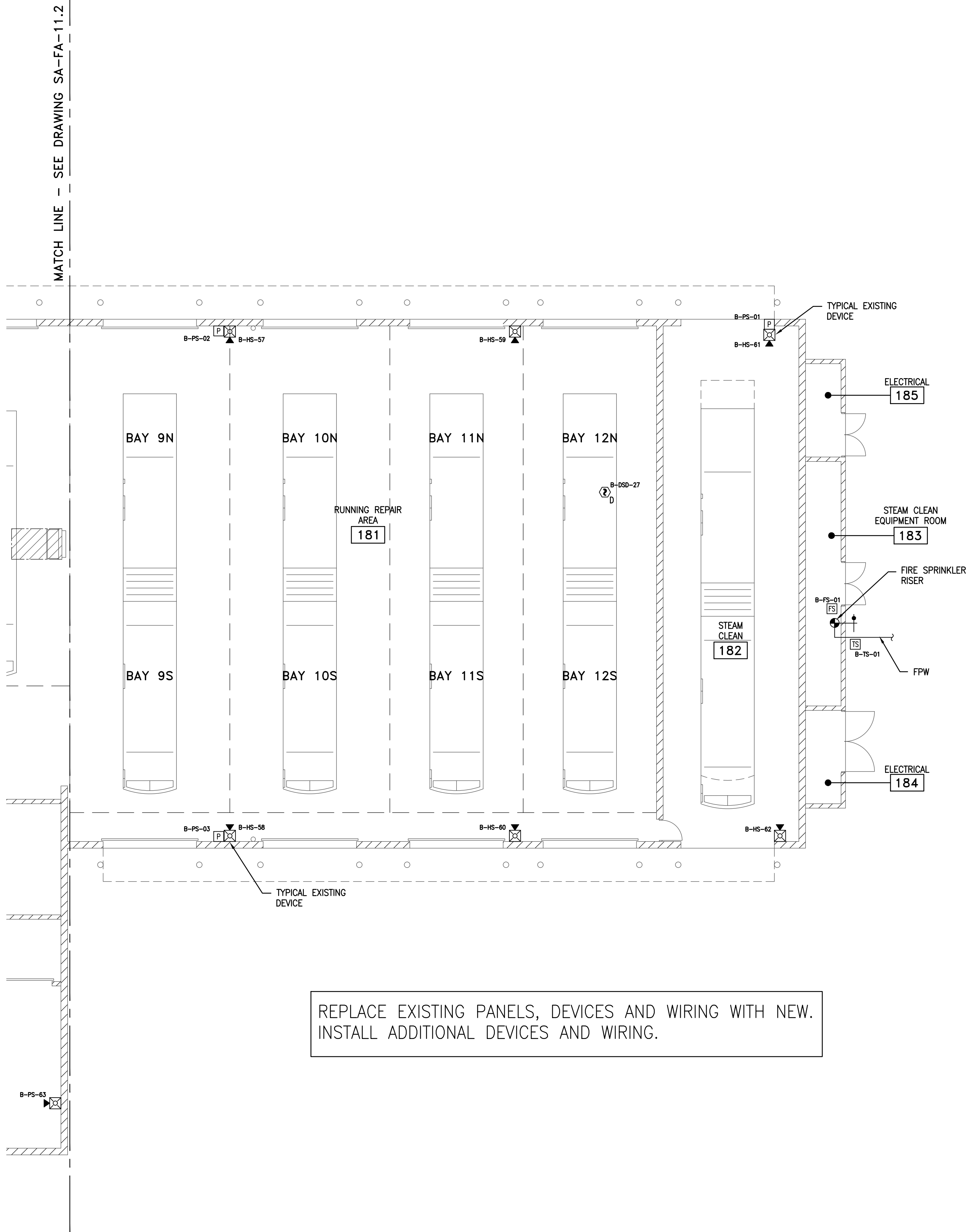
REPLACE EXISTING PANELS, DEVICES AND WIRING WITH NEW.
INSTALL ADDITIONAL DEVICES AND WIRING.



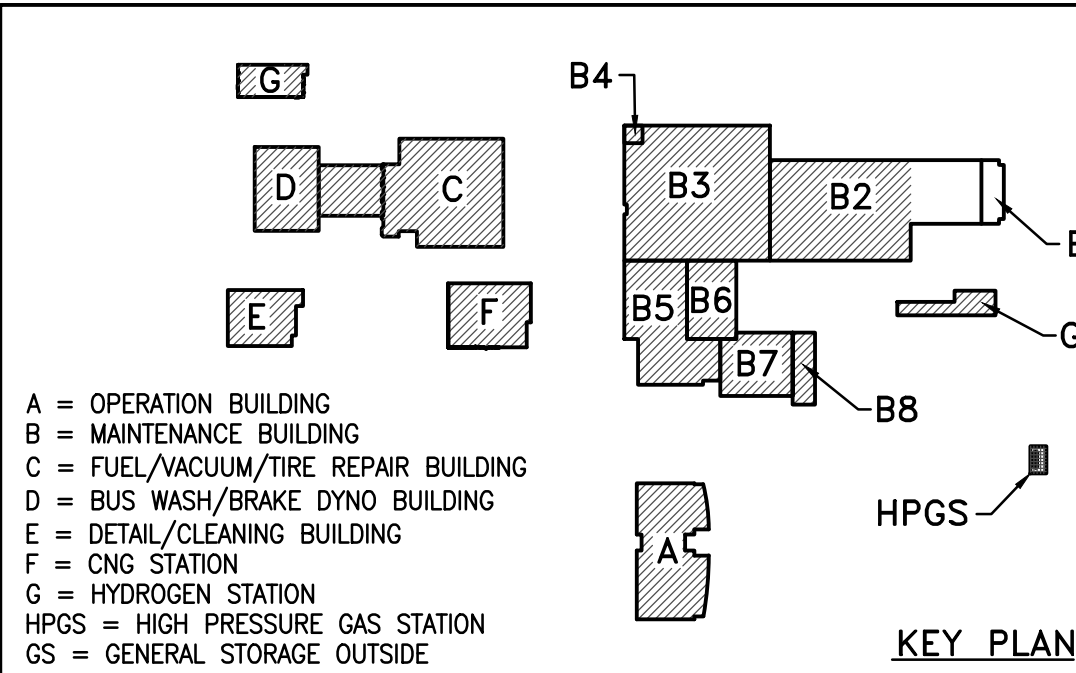


LEGEND	
SYMBOL	DESCRIPTION
	FIRE ALARM CONTROL PANEL
	FIRE ALARM ANNUNCIATOR
	STROBE TO BE REPLACED WITH HORN AND STROBE
	HORN/STROBE WALL MOUNT
 CLASS 1, DIV. 1	HORN/STROBE WALL MOUNT (SEPARATE RATED UNITS)
	MANUAL PULL STATION
 WP	PULL STATION WEATHERPROOF BACK BOX
 EXP	EXPLOSION PROOF PULL STATION
 DR	RELAY MODULE FOR FIRE DOOR RELEASE
	SMOKE DETECTOR
	DUCT SMOKE DETECTOR
	HEAT DETECTOR
	FLAME DETECTOR
	METHANE DETECTOR
	METHANE DETECTOR W/ YELLOW BEACON
	YELLOW STROBE LIGHT
	RED STROBE LIGHT
	AMBER STROBE LIGHT
	GREEN LIGHT
	ROLL-UP DOOR
	EMERGENCY EXHAUST FAN
	METHANE GAS SENSOR
	HYDROGEN GAS DETECTOR
	HYDROGEN AMBER BEACON
	OUTDOOR TRI-COLOR CHANGING NOTIFICATION LIGHT
	HYDROGEN DETECTION ALARM
	OUTDOOR TRI-COLOR CHANGING NOTIFICATION LIGHT METHANE DETECTION ALARM
	VALVE TAMPER SWITCH
	SPRINKLER WATER FLOW SWITCH

DR = RELAY MODULE FOR FIRE DOOR RELEASE
EF = EMERGENCY EXHAUST FAN
FD = FLAME DETECTOR
FS = SPRINKLER WATER FLOW SWITCH
H2D = HYDROGEN DETECTOR
HDA = HYDROGEN DETECTION ALARM
HS = HORN/STROBE
MD = METHANE DETECTOR
MDS = METHANE DETECTION ALARM
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SD = SMOKE DETECTOR
TS = VALVE TAMPER SWITCH



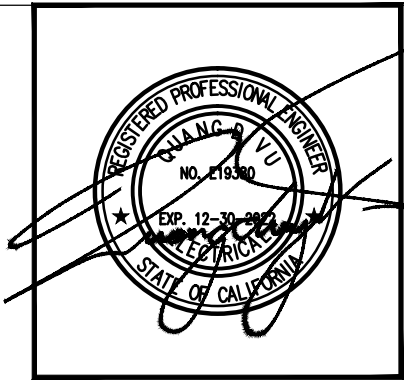
REPLACE EXISTING PANELS, DEVICES AND WIRING WITH NEW.
INSTALL ADDITIONAL DEVICES AND WIRING.



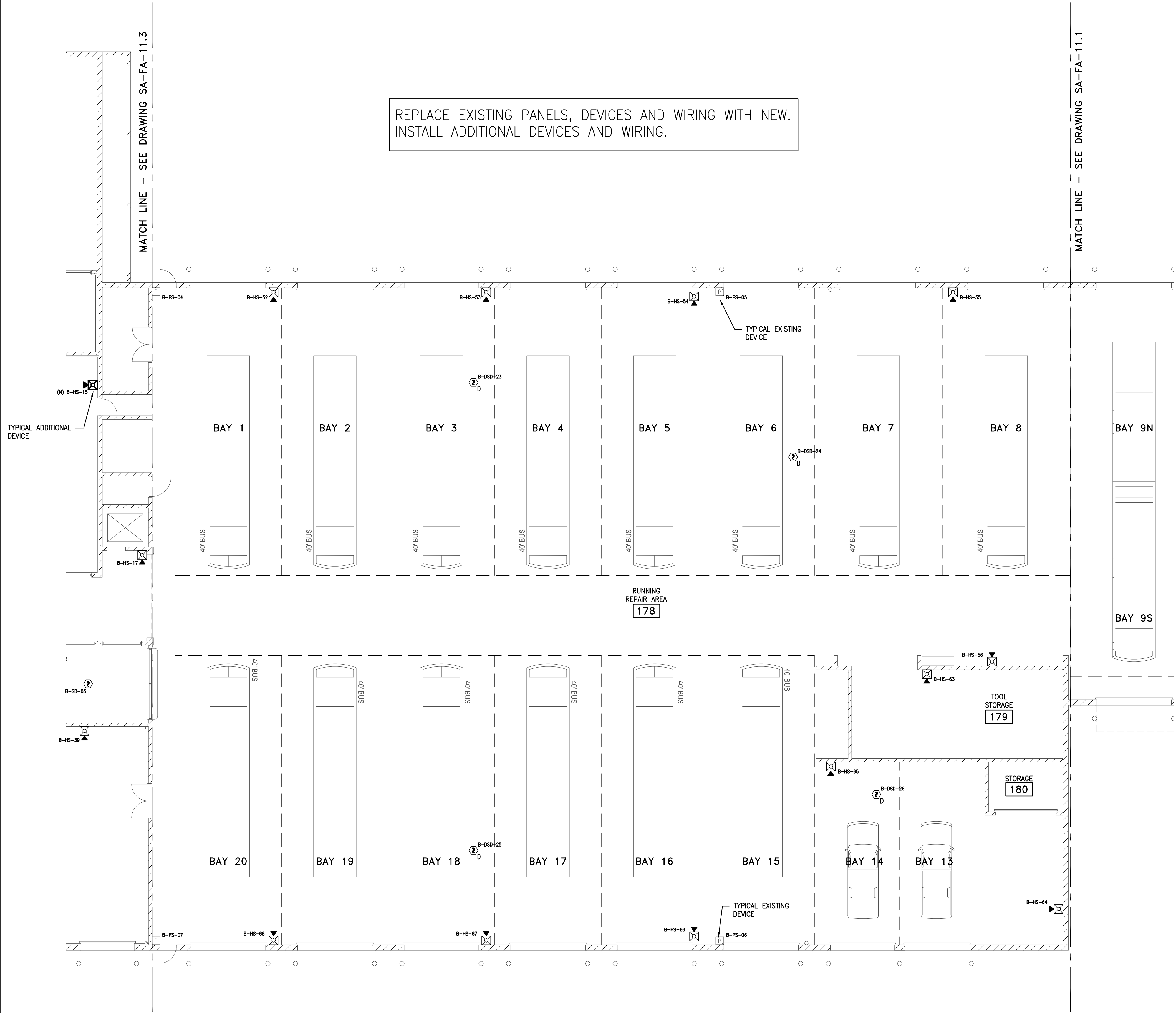
KEY PLAN

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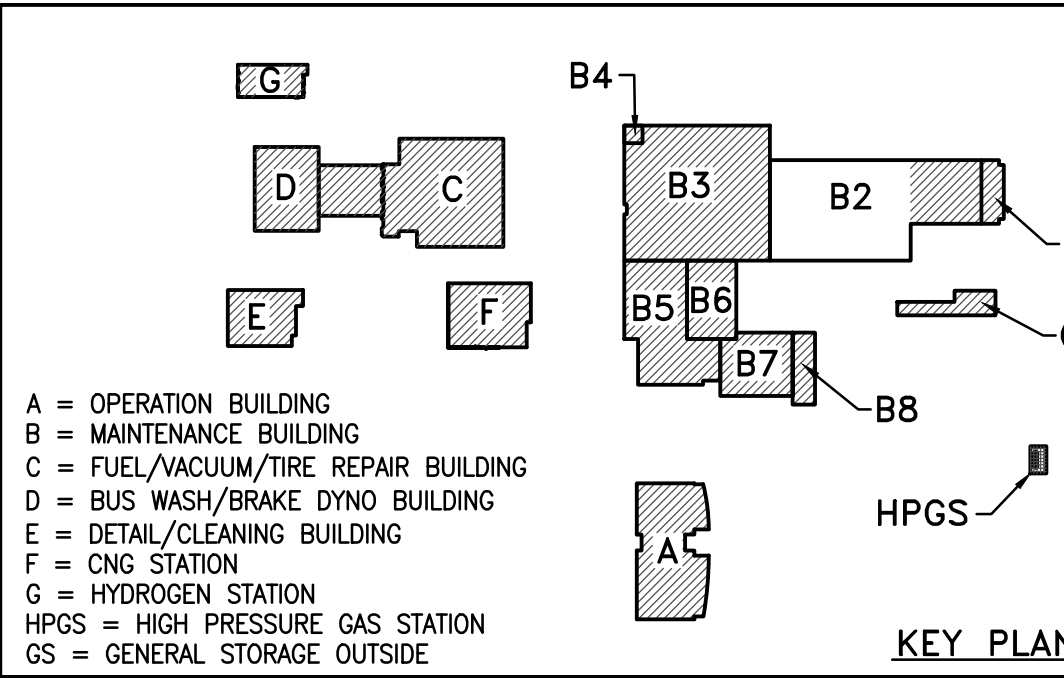
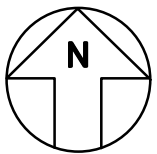


REPLACE EXISTING PANELS, DEVICES AND WIRING WITH NEW.
INSTALL ADDITIONAL DEVICES AND WIRING.



LEGEND	
SYMBOL	DESCRIPTION
[FACP]	FIRE ALARM CONTROL PANEL
[ANNUN]	FIRE ALARM ANNUNCIATOR
[X]	STROBE TO BE REPLACED WITH HORN AND STROBE
[HSM]	HORN/STROBE WALL MOUNT
[HSMW]	HORN/STROBE WALL MOUNT (SEPARATE RATED UNITS)
[P]	MANUAL PULL STATION
[PWP]	PULL STATION WEATHERPROOF BACK BOX
[PEP]	EXPLOSION PROOF PULL STATION
[DR]	RELAY MODULE FOR FIRE DOOR RELEASE
[SD]	SMOKE DETECTOR
[SDD]	DUCT SMOKE DETECTOR
[HED]	HEAT DETECTOR
[FD]	FLAME DETECTOR
[MD]	METHANE DETECTOR
[MDYB]	METHANE DETECTOR W/ YELLOW BEACON
[YSL]	YELLOW STROBE LIGHT
[RSL]	RED STROBE LIGHT
[ASL]	AMBER STROBE LIGHT
[GL]	GREEN LIGHT
[RUD]	ROLL-UP DOOR
[EEF]	EMERGENCY EXHAUST FAN
[MGS]	METHANE GAS SENSOR
[HGD]	HYDROGEN GAS DETECTOR
[HAB]	HYDROGEN AMBER BEACON
[OTCLN]	OUTDOOR TRI-COLOR CHANGING NOTIFICATION LIGHT
[OTCLN]	HYDROGEN DETECTION ALARM
[OTCLN]	OUTDOOR TRI-COLOR CHANGING NOTIFICATION LIGHT
[OTCLN]	METHANE DETECTION ALARM
[TS]	VALVE TAMPER SWITCH
[FS]	SPRINKLER WATER FLOW SWITCH

- DR = RELAY MODULE FOR FIRE DOOR RELEASE
EF = EMERGENCY EXHAUST FAN
FD = FLAME DETECTOR
FS = SPRINKLER WATER FLOW SWITCH
HGD = HYDROGEN DETECTOR
HDA = HYDROGEN DETECTION ALARM
HS = HORN/STROBE
MD = METHANE DETECTOR
MDA = METHANE DETECTION ALARM
NDA = DESIGNATED NEW DEVICE. OTHERS WITHOUT (N) ARE EXISTING DEVICES.
PS = PULL STATION
RD = ROLL-UP DOOR
S = STROBE TO BE REPLACED WITH HORN AND STROBE
SD = SMOKE DETECTOR
TS = VALVE TAMPER SWITCH



PARTIAL MAINTENANCE BUILDING B2 – FIRE ALARM SYSTEM FLOOR PLAN

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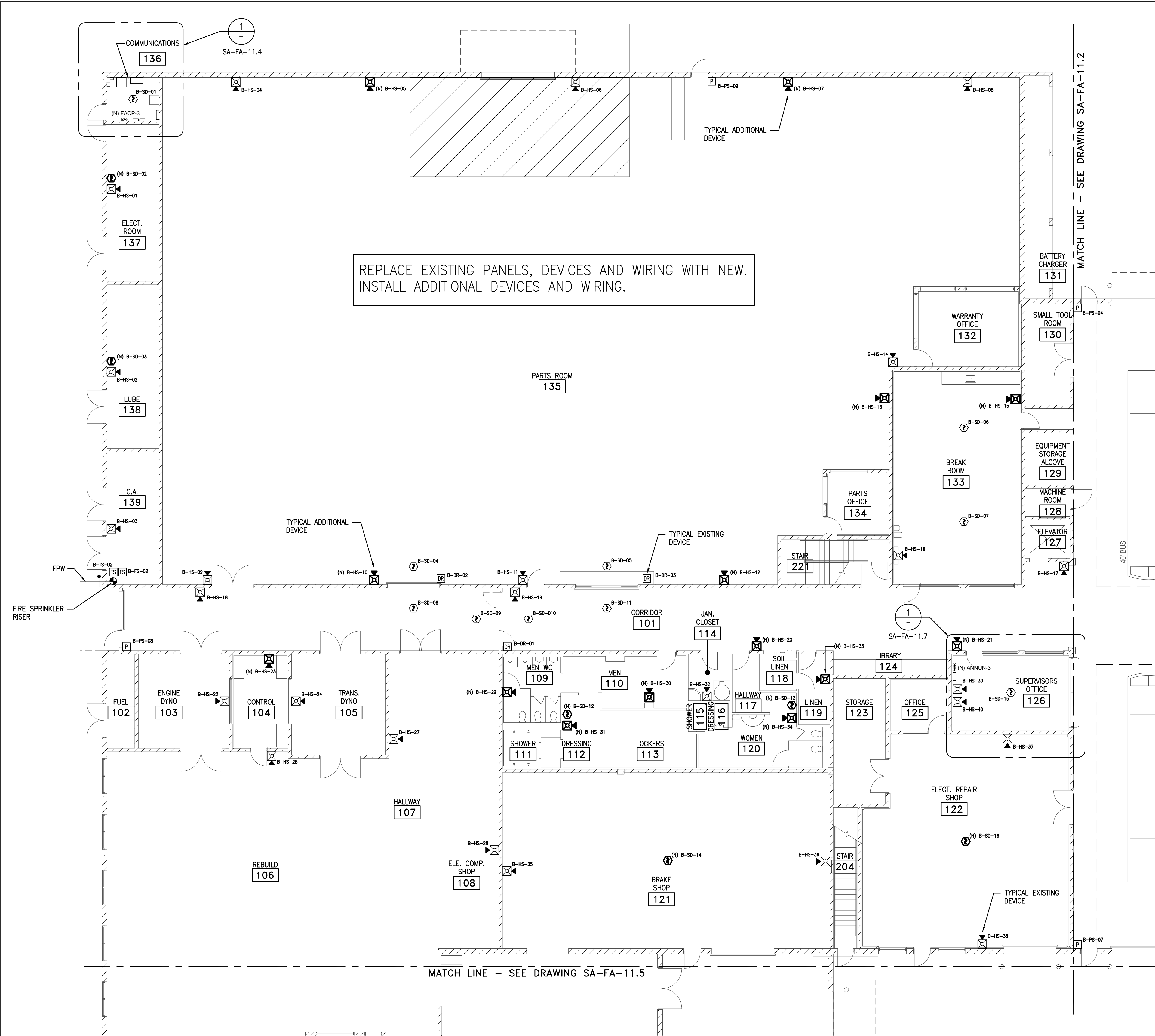
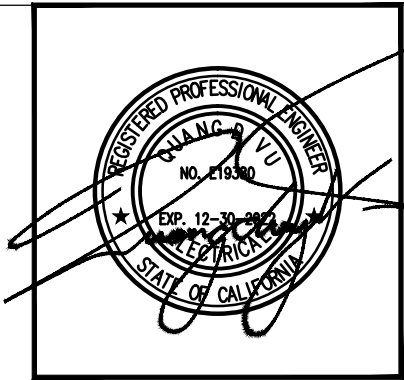
Sheet Title
MAINTENANCE BUILDING "B2"
FIRE ALARM SYSTEM FLOOR PLAN

Project
FIRE ALARM CONTROL PANELS REPLACEMENT
AT SANTA ANA BUS BASE

JOB # 1.21.4
DESIGN BY: SDV
DRAWN BY: TMP
CHECKED BY: QV
DATE 02-09-2022
SCALE AS NOTED
SHEET SA-FA-11.2

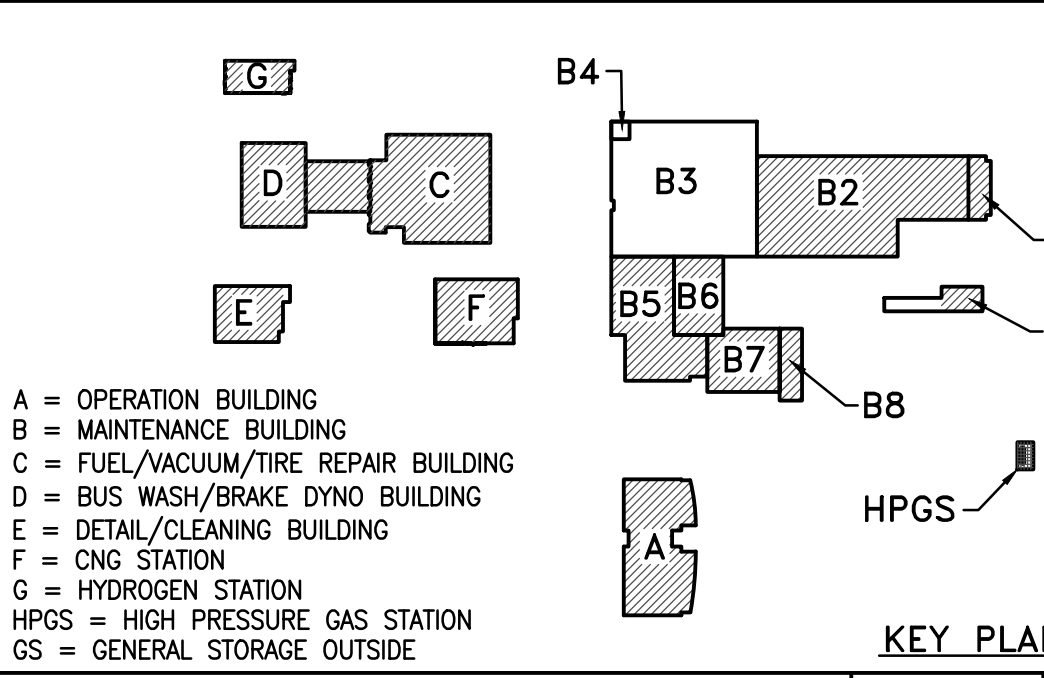
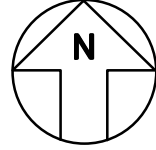
550 South Main Street
Orange, CA 92668
714/560/OCTA





LEGEND	
SYMBOL	DESCRIPTION
[FACP]	FIRE ALARM CONTROL PANEL
[ANNUN]	FIRE ALARM ANNUNCIATOR
[X]	STROBE TO BE REPLACED WITH HORN AND STROBE
[HORN]	HORN/STROBE WALL MOUNT
[HORN-STROBE]	HORN/STROBE WALL MOUNT (SEPARATE RATED UNITS)
[P]	MANUAL PULL STATION
[P-WE]	PULL STATION WEATHERPROOF BACK BOX
[P-EXP]	EXPLOSION PROOF PULL STATION
[DR]	RELAY MODULE FOR FIRE DOOR RELEASE
[SD]	SMOKE DETECTOR
[SD-DUCT]	DUCT SMOKE DETECTOR
[SD-HEAT]	HEAT DETECTOR
[SD-FLAME]	FLAME DETECTOR
[SD-METHANE]	METHANE DETECTOR
[SD-METHANE-YB]	METHANE DETECTOR W/ YELLOW BEACON
[YB]	YELLOW STROBE LIGHT
[RSL]	RED STROBE LIGHT
[ASL]	AMBER STROBE LIGHT
[GL]	GREEN LIGHT
[RUD]	ROLL-UP DOOR
[EF]	EMERGENCY EXHAUST FAN
[MS]	METHANE GAS SENSOR
[HGD]	HYDROGEN GAS DETECTOR
[HAB]	HYDROGEN AMBER BEACON
[OCCN]	OUTDOOR TRI-COLOR CHANGING NOTIFICATION LIGHT HYDROGEN DETECTION ALARM
[OCCN-MD]	OUTDOOR TRI-COLOR CHANGING NOTIFICATION LIGHT METHANE DETECTION ALARM
[TS]	VALVE TAMPER SWITCH
[FS]	SPRINKLER WATER FLOW SWITCH

- DR = RELAY MODULE FOR FIRE DOOR RELEASE
EF = EMERGENCY EXHAUST FAN
FD = FLAME DETECTOR
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H2D = HYDROGEN DETECTOR
HDA = HYDROGEN DETECTION ALARM
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PS = PULL STATION
RD = ROLL-UP DOOR
S = STROBE TO BE REPLACED WITH HORN AND STROBE
SD = SMOKE DETECTOR
TS = VALVE TAMPER SWITCH



MAINTENANCE BUILDING B3 & B4 FIRE ALARM SYSTEM FLOOR PLAN W/ NEW DEVICES

SCALE
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Sheet Title
MAINTENANCE BUILDING "B3" & "B4"
FIRE ALARM SYSTEM FLOOR PLAN W/ NEW DEVICES

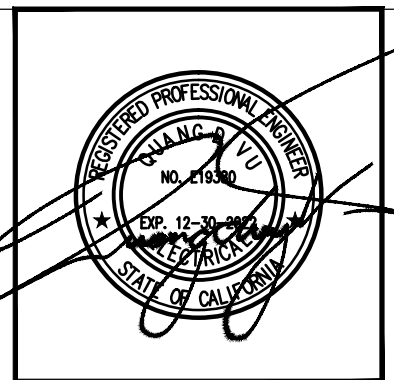
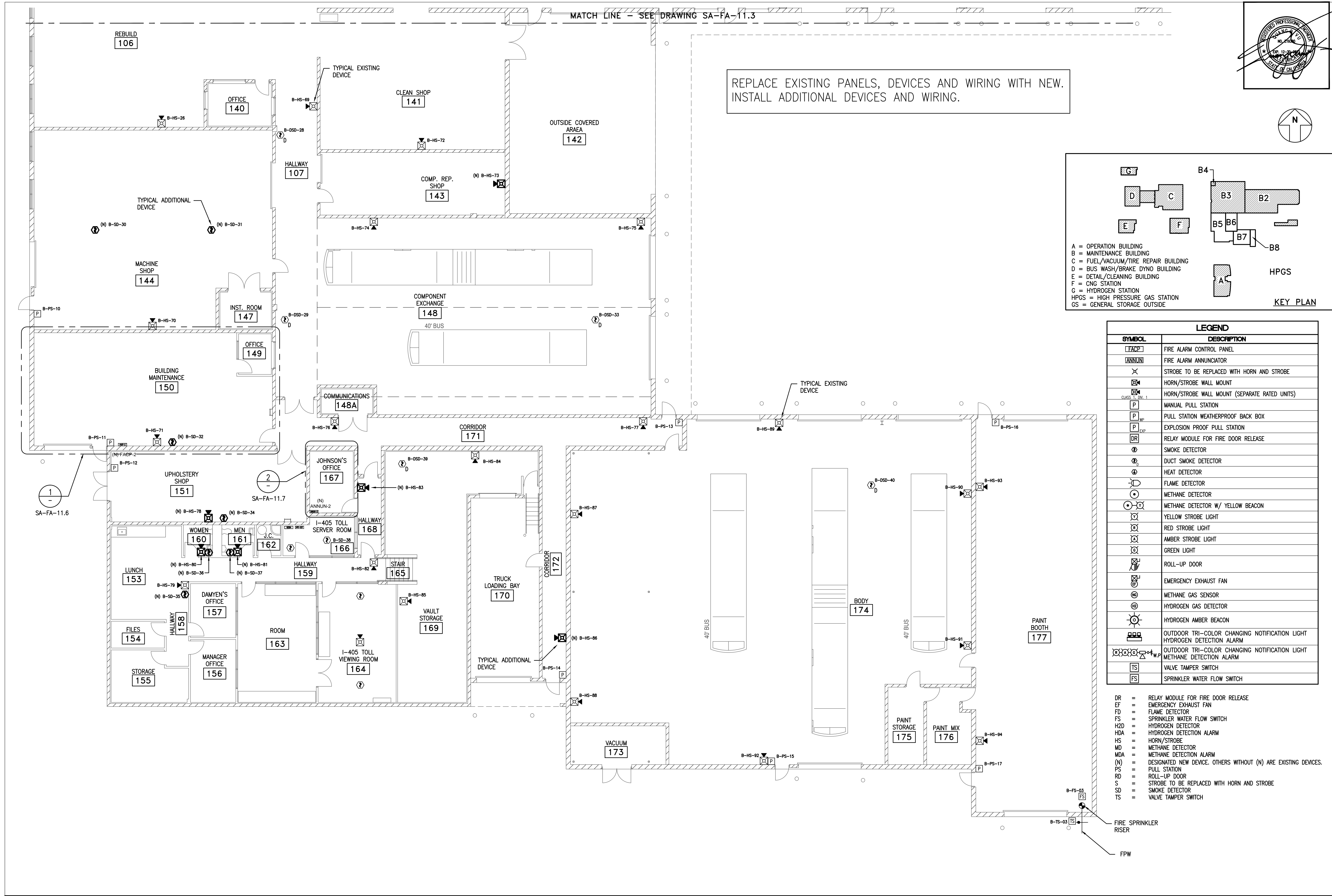
Project
FIRE ALARM CONTROL PANELS REPLACEMENT
AT SANTA ANA BUS BASE

JOB # 1.21.4
DESIGN BY: SDV
DRAWN BY: TMP
CHECKED BY: QV
DATE 02-09-2022
SCALE AS NOTED
SHEET

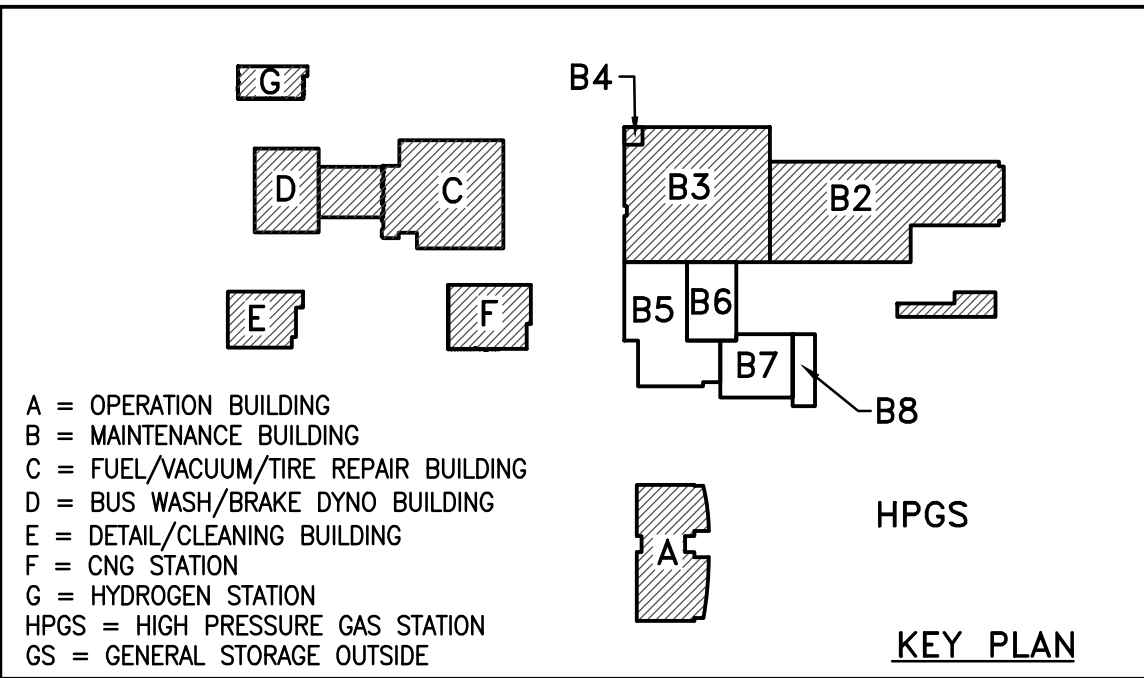
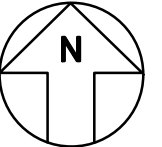
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550 South Main Street
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714/560/OCTA





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CONSULTING ENGINEERS
2960 DAILER STREET
SANTA ANA, CALIFORNIA 92705
TEL: # (949) 756-8654
FAX: # (949) 502-0777



MARK	DATE	BY	REVISIONS

Sheet Title
MAINTENANCE BUILDING "B5", "B6", "B7" & "B8"
FIRE ALARM SYSTEM FLOOR PLAN

Project
FIRE ALARM CONTROL PANELS REPLACEMENT
AT SANTA ANA BUS BASE

JOB # 1.21.4
DESIGN BY: SDV
DRAWN BY: TMP
CHECKED BY: QV
DATE 02-09-2022
SCALE AS NOTED
SHEET
SA-FA-11.5


























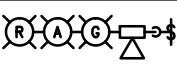


550 South Main Street
Orange, CA 92668
714/560/OCTA



SCALE
1"=10'-0"

1



LEGEND	
SYMBOL	DESCRIPTION
	FIRE ALARM CONTROL PANEL
	FIRE ALARM ANNUNCIATOR
	STROBE TO BE REPLACED WITH HORN AND STROBE
	HORN/STROBE WALL MOUNT
 CLASS 1, DIV. 1	HORN/STROBE WALL MOUNT (SEPARATE RATED UNITS)
	MANUAL PULL STATION
 WP	PULL STATION WEATHERPROOF BACK BOX
 EXP	EXPLOSION PROOF PULL STATION
 DR	RELAY MODULE FOR FIRE DOOR RELEASE
	SMOKE DETECTOR
	DUCT SMOKE DETECTOR
	HEAT DETECTOR
	FLAME DETECTOR
	METHANE DETECTOR
	METHANE DETECTOR W/ YELLOW BEACON
	YELLOW STROBE LIGHT
	RED STROBE LIGHT
	AMBER STROBE LIGHT
	GREEN LIGHT
	ROLL-UP DOOR
	EMERGENCY EXHAUST FAN
	METHANE GAS SENSOR
	HYDROGEN GAS DETECTOR
	HYDROGEN AMBER BEACON
	OUTDOOR TRI-COLOR CHANGING NOTIFICATION LIGHT HYDROGEN DETECTION ALARM
	OUTDOOR TRI-COLOR CHANGING NOTIFICATION LIGHT METHANE DETECTION ALARM
 TS	VALVE TAMPER SWITCH
 FS	SPRINKLER WATER FLOW SWITCH

- DR = RELAY MODULE FOR FIRE DOOR RELEASE
EF = EMERGENCY EXHAUST FAN
FD = FLAME DETECTOR
FS = SPRINKLER WATER FLOW SWITCH
HZD = HYDROGEN DETECTOR
HDA = HYDROGEN DETECTION ALARM
HS = HORN/STROBE
MD = METHANE DETECTOR
MSA = METHANE DETECTION ALARM
N = DESIGNATED NEW DEVICE. OTHERS WITHOUT (N) ARE EXISTING DEVICES
PS = PULL STATION
RD = ROLL-UP DOOR
S = STROBE TO BE REPLACED WITH HORN AND STROBE
SD = SMOKE DETECTOR
TS = VALVE TAMPER SWITCH

MAINTENANCE BUILDING - ROOMS #149 AND #150
ENLARGED FLOOR PLAN

Sheet Title MAINTENANCE BUILDING - ROOMS #149 AND #150 ENLARGED FLOOR PLAN	Project FIRE ALARM CONTROL PANELS REPLACEMENT AT SANTA ANA BUS BASE
-----------------------------------------------------------------------------------------	----------------------------------------------------------------------------------

JOB #	1.21.4
DESIGN BY:	SDV
DRAWN BY:	TMP
CHECKED BY:	QV
DATE	02-09-2022
SCALE	AS NOTED

SA-FA-11.6

550 South Main Street
Orange, CA 92668
714/560/OCTA





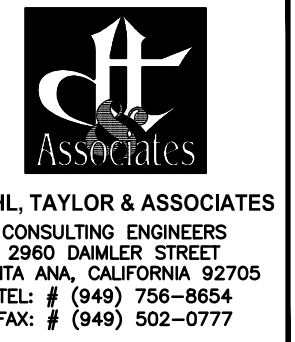
The floor plan shows a rectangular room with a door on the right wall. On the left wall, from top to bottom, there is a label 'ANNUN-3' in a box, a 'GAS MONITORING REMOTE DISPLAY' with a pointer, and two square ventilation units labeled 'B-HS-39' and 'B-HS-40' with arrows pointing towards the center. In the center of the room is a hexagonal symbol containing a question mark, labeled 'B-SD-06' and 'TYPICAL EXISTING DEVICE' with a pointer.

SCALE	2
1/2"=1'-0"	

DR	=	RELAY MODULE FOR FIRE DOOR RELEASE
EF	=	EMERGENCY EXHAUST FAN
FD	=	FLAME DETECTOR
FS	=	SPRINKLER WATER FLOW SWITCH
H2D	=	HYDROGEN DETECTOR
HDA	=	HYDROGEN DETECTION ALARM
HS	=	HORN/STROBE
MD	=	METHANE DETECTOR
MDA	=	METHANE DETECTION ALARM
(N)	=	DESIGNATED NEW DEVICE. OTHERS WITHOUT (N) ARE EXISTING DEVICES.
PS	=	PULL STATION
R	=	ROLL-UP DOOR
SD	=	STROBE TO BE REPLACED WITH HORN AND STROBE
SD	=	SMOKE DETECTOR
TS	=	VALVE TAMPER SWITCH



SCALE	1
1/2"=1'-0"	

[illegible]

Sheet Title





























**FIRE ALARM CONTROL PANELS REPLACEMENT
AT SANTA ANA BUS BASE**

SA-FA-11.7

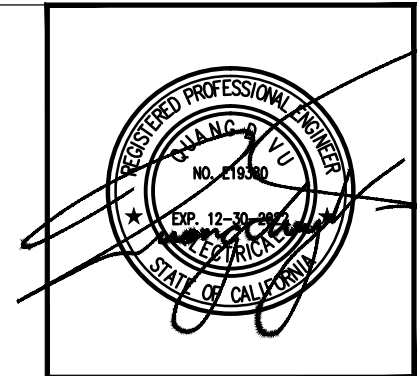
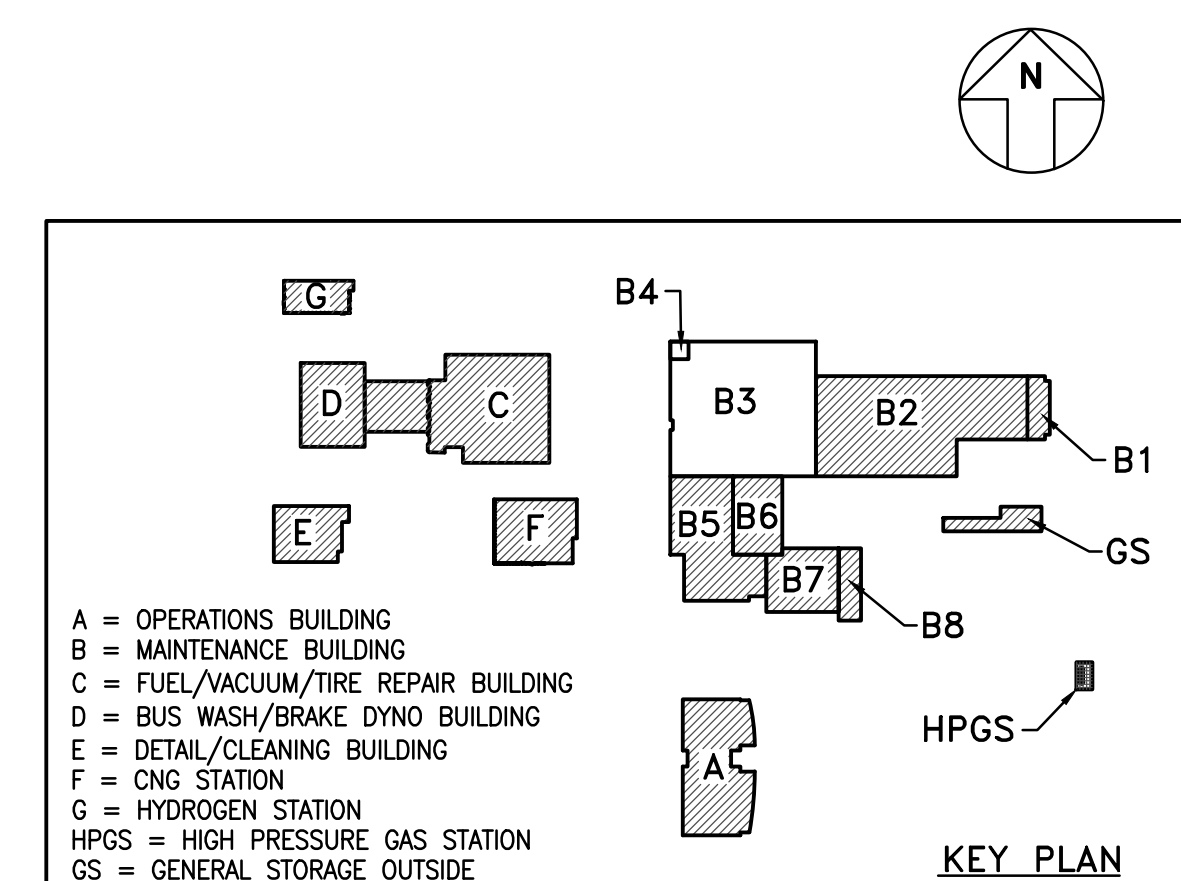
550 South Main Street
Orange, CA 92668
714/560/OCTA



Floor plan of the second floor showing room layouts and proposed security device locations. Rooms include: STAIR 221, ELECT. ROOM 220, J.C. 219, STAIR 204, TECH. SERV. 205, COFFEE ROOM 211, RECEPT. 210, ASSIST. 209, BASE MANAGER 208, REBUILD 207, INTERN/FILES 206, TRAINING ROOM 215, WORK ROOM 212, MEN 214, WOMEN 213, FUTURE CONSULTANT WORK AREA 218, LAN 217, and ELEVATOR 127. Hallways are labeled 201, 202, and 203. Security devices are marked with symbols: a square with an 'X' for typical additional devices and a circle with an 'X' for typical existing devices. Callouts provide details for each device, including its type (e.g., B-HS-49, B-SD-18) and location (e.g., (N) B-HS-49, (N) B-SD-18).

LEGEND	
SYMBOL	DESCRIPTION
	FIRE ALARM CONTROL PANEL
	FIRE ALARM ANNUNCIATOR
	STROBE TO BE REPLACED WITH HORN AND STROBE
	HORN/STROBE WALL MOUNT
 CLASS 1, DIV. 1	HORN/STROBE WALL MOUNT (SEPARATE RATED UNITS)
	MANUAL PULL STATION
	PULL STATION WEATHERPROOF BACK BOX
	EXPLOSION PROOF PULL STATION
	RELAY MODULE FOR FIRE DOOR RELEASE
	SMOKE DETECTOR
	DUCT SMOKE DETECTOR
	HEAT DETECTOR
	FLAME DETECTOR
	METHANE DETECTOR
	METHANE DETECTOR W/ YELLOW BEACON
	YELLOW STROBE LIGHT
	RED STROBE LIGHT
	AMBER STROBE LIGHT
	GREEN LIGHT
	ROLL-UP DOOR
	EMERGENCY EXHAUST FAN
	METHANE GAS SENSOR
	HYDROGEN GAS DETECTOR
	HYDROGEN AMBER BEACON
	OUTDOOR TRI-COLOR CHANGING NOTIFICATION LIGHT HYDROGEN DETECTION ALARM
	OUTDOOR TRI-COLOR CHANGING NOTIFICATION LIGHT METHANE DETECTION ALARM
	VALVE TAMPER SWITCH
	SPRINKLER WATER FLOW SWITCH

DR	=	RELAY MODULE FOR FIRE DOOR RELEASE
EF	=	EMERGENCY EXHAUST FAN
FD	=	FLAME DETECTOR
FS	=	SPRINKLER WATER FLOW SWITCH
H2D	=	HYDROGEN DETECTOR
HDA	=	HYDROGEN DETECTION ALARM
HS	=	HORN/STROBE
MD	=	METHANE DETECTOR
MDA	=	METHANE DETECTION ALARM
(N)	=	DESIGNATED NEW DEVICE, OTHERS WITHOUT (N) ARE EXISTING DEVICES.
PS	=	PULL STATION
RD	=	ROLL-UP DOOR
S	=	STROBE TO BE REPLACED WITH HORN AND STROBE
SD	=	SMOKE DETECTOR
TS	=	VALVE TAMPER SWITCH



DAHL, TAYLOR & ASSOCIATES
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2960 DAIMLER STREET
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TEL: # (949) 756-8654
FAX: # (949) 502-0777

[illegible]

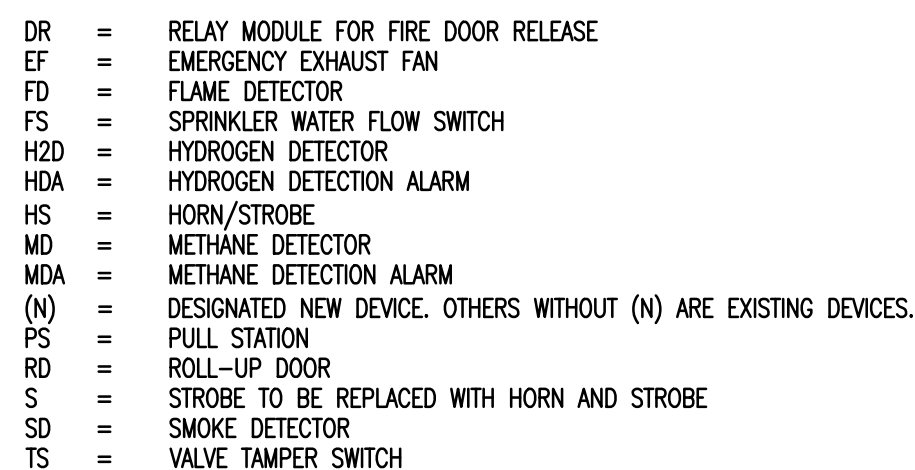
Sheet Title	Project
MAINTENANCE BUILDING "B3" SECOND FLOOR UPGRADED FIRE ALARM SYSTEM FLOOR PLAN	FIRE ALARM CONTROL PANELS REPLACEMENT AT SANTA ANA BUS BASE

JOB #	1.21.4
DESIGN BY:	SDV
DRAWN BY:	TMP
CHECKED BY:	QV
DATE	02-09-2022
SCALE	AS NOTED
SHEET	

SA-FA-11.8

550 South Main Street
Orange, CA 92668
714/560/OCTA





A = OPERATION BUILDING
 B = MAINTENANCE BUILDING
 C = FUEL/VACUUM/TIRE REPAIR BUILDING
 D = BUS WASH/BAKE, DYNO BUILDING
 E = DETAIL/CLEANING BUILDING
 F = CNG STATION
 G = HYDROGEN STATION
 HPGS = HIGH PRESSURE GAS STATION
 GS = GENERAL STORAGE OUTSIDE

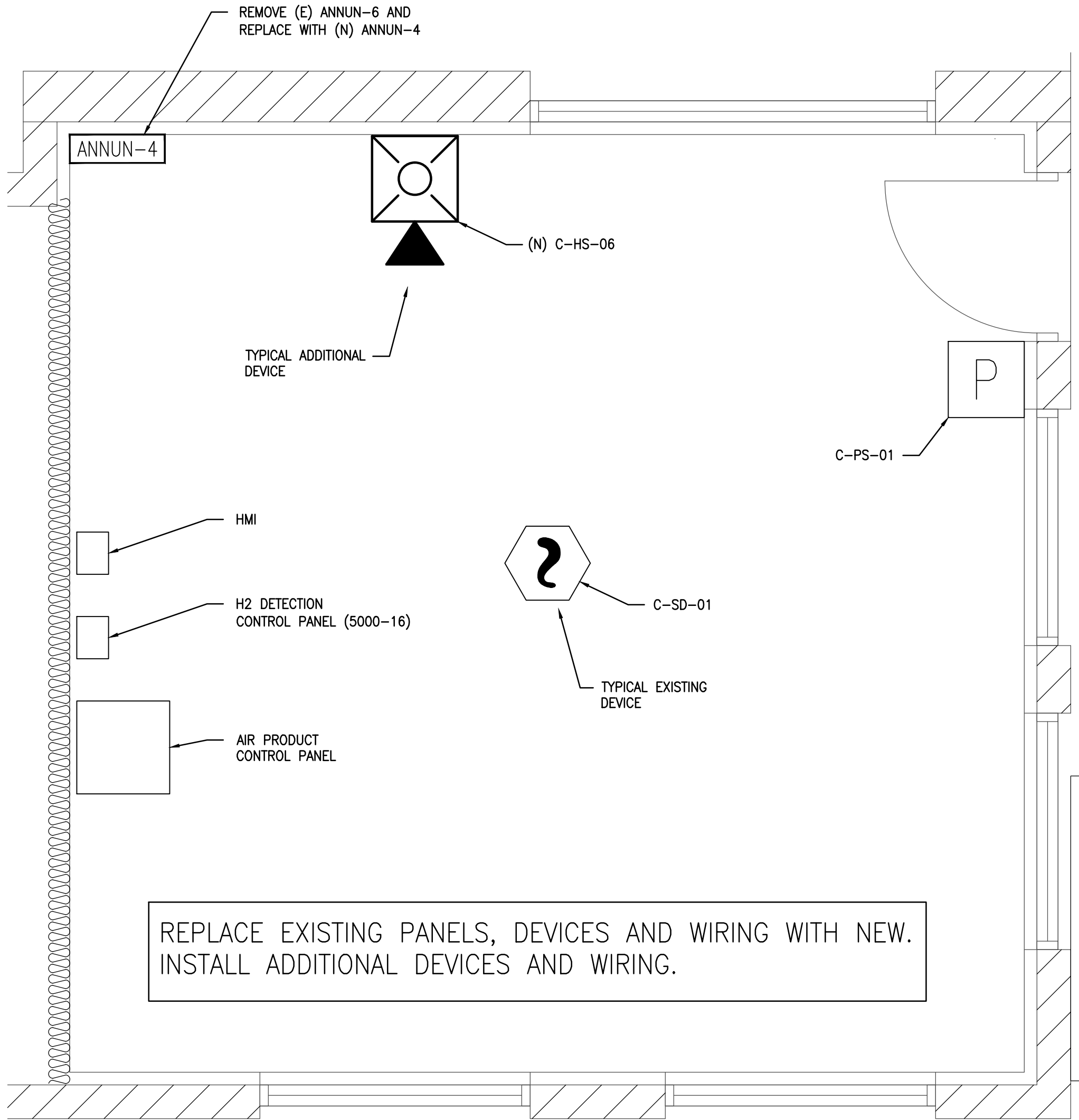
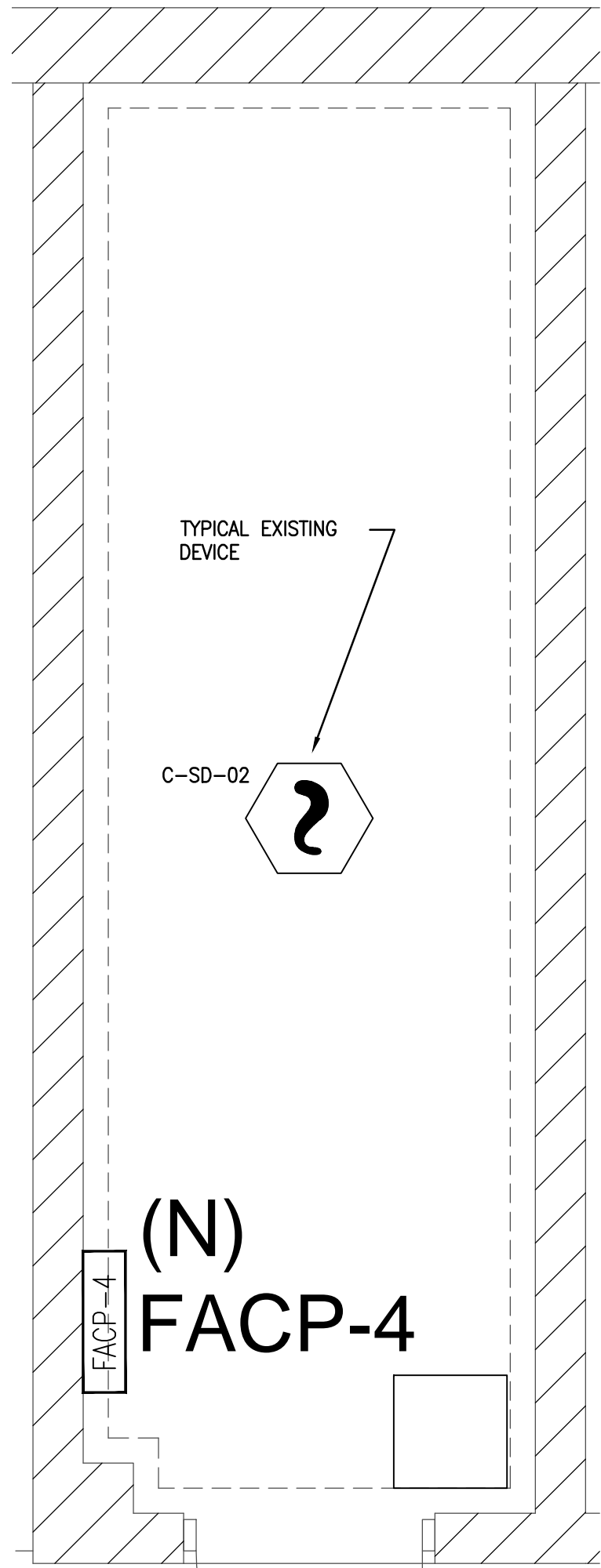
KEY PLAN



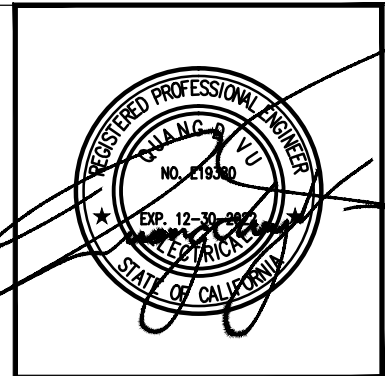
SCALE	1
1"=10'-0"	



REPLACE EXISTING PANELS, DEVICES AND WIRING WITH NEW.
INSTALL ADDITIONAL DEVICES AND WIRING.



REPLACE EXISTING PANELS, DEVICES AND WIRING WITH NEW.
INSTALL ADDITIONAL DEVICES AND WIRING.



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SANTA ANA, CALIFORNIA 92705
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FAX: # (949) 502-0777

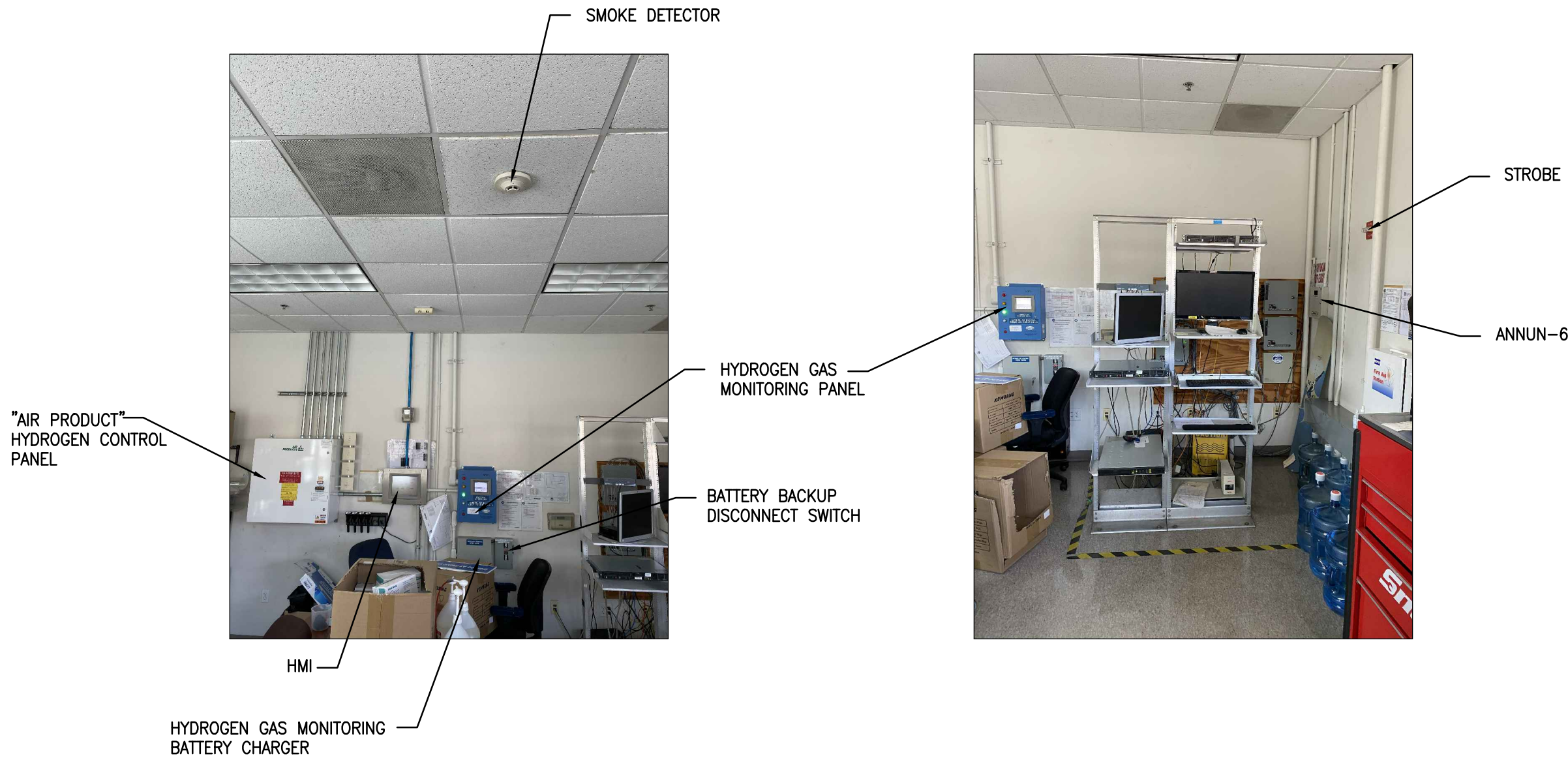
ENLARGED FLOOR PLAN – ROOM #113

SCALE
1/2"=1'-0"

2

LEGEND			
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
[FACP]	FIRE ALARM CONTROL PANEL	[X]	YELLOW STROBE LIGHT
[ANNUN]	FIRE ALARM ANNUNCIATOR	[X]	RED STROBE LIGHT
[X]	STROBE TO BE REPLACED WITH HORN AND STROBE	[X]	AMBER STROBE LIGHT
[HORN]	HORN/STROBE WALL MOUNT	[X]	GREEN LIGHT
[HORN]	HORN/STROBE WALL MOUNT (SEPARATE RATED UNITS)	[X]	ROLL-UP DOOR
[P]	MANUAL PULL STATION	[X]	EMERGENCY EXHAUST FAN
[P]	PULL STATION WEATHERPROOF BACK BOX	[X]	METHANE GAS SENSOR
[P]	EXPLOSION PROOF PULL STATION	[X]	HYDROGEN GAS DETECTOR
[DR]	RELAY MODULE FOR FIRE DOOR RELEASE	[X]	HYDROGEN AMBER BEACON
[S]	SMOKE DETECTOR	[X]	OUTDOOR TRI-COLOR CHANGING NOTIFICATION LIGHT
[S]	DUCT SMOKE DETECTOR	[X]	HYDROGEN DETECTION ALARM
[S]	HEAT DETECTOR	[X]	METHANE DETECTOR ALARM
[S]	FLAME DETECTOR	[X]	METHANE DETECTION ALARM
[S]	METHANE DETECTOR	[X]	OUTDOOR TRI-COLOR CHANGING NOTIFICATION LIGHT
[S]	METHANE DETECTOR W/ YELLOW BEACON	[X]	METHANE DETECTION ALARM
		[TS]	VALVE TAMPER SWITCH
		[FS]	SPRINKLER WATER FLOW SWITCH

DR = RELAY MODULE FOR FIRE DOOR RELEASE
EF = EMERGENCY EXHAUST FAN
FD = FLAME DETECTOR
FS = SPRINKLER WATER FLOW SWITCH
H2D = HYDROGEN DETECTOR
HDA = HYDROGEN DETECTION ALARM
HS = HORN/STROBE
MD = METHANE DETECTOR
MDA = METHANE DETECTION ALARM
(N) = DESIGNATED NEW DEVICE. OTHERS WITHOUT (N) ARE EXISTING DEVICES.
PS = PULL STATION
RD = ROLL-UP DOOR
S = STROBE TO BE REPLACED WITH HORN AND STROBE
SD = SMOKE DETECTOR
TS = VALVE TAMPER SWITCH



ENLARGED FLOOR PLAN – ROOM #101

SCALE
1/2"=1'-0"

1

Sheet Title

FUEL / VACUUM / TIRE REPAIR BUILDING
ENLARGED FLOOR PLANS - ROOMS #101 & #113

Project

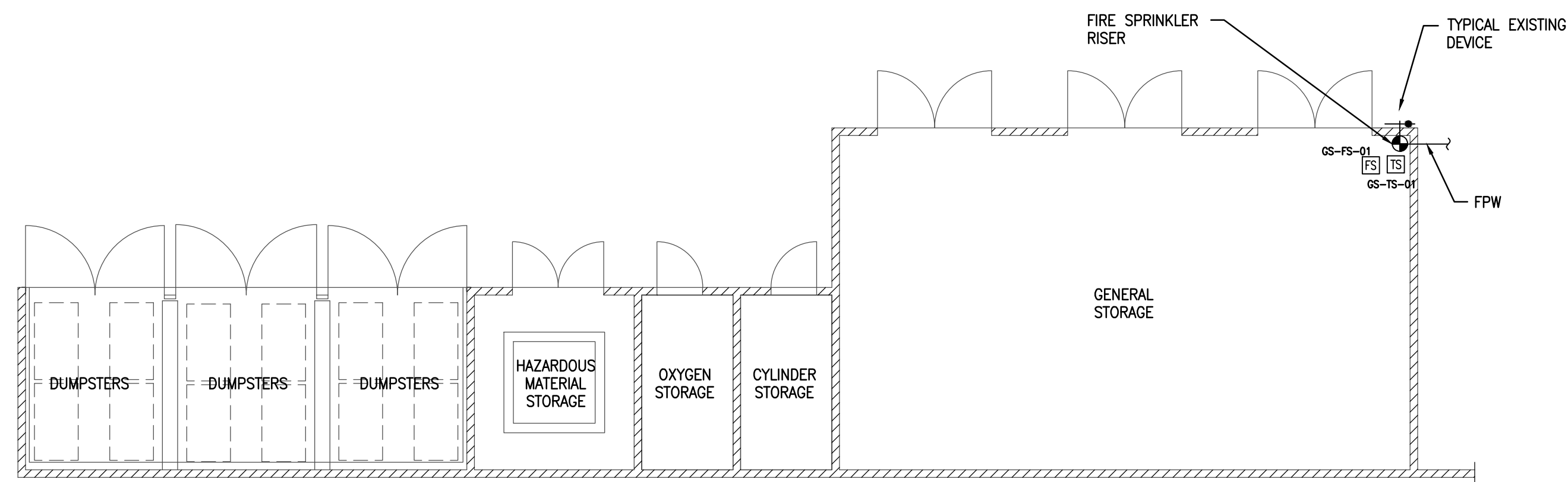
FIRE ALARM CONTROL PANELS REPLACEMENT
AT SANTA ANA BUS BASE

JOB # 1.21.4
DESIGN BY: SDV
DRAWN BY: TMP
CHECKED BY: QV
DATE 02-09-2022
SCALE AS NOTED
SHEET

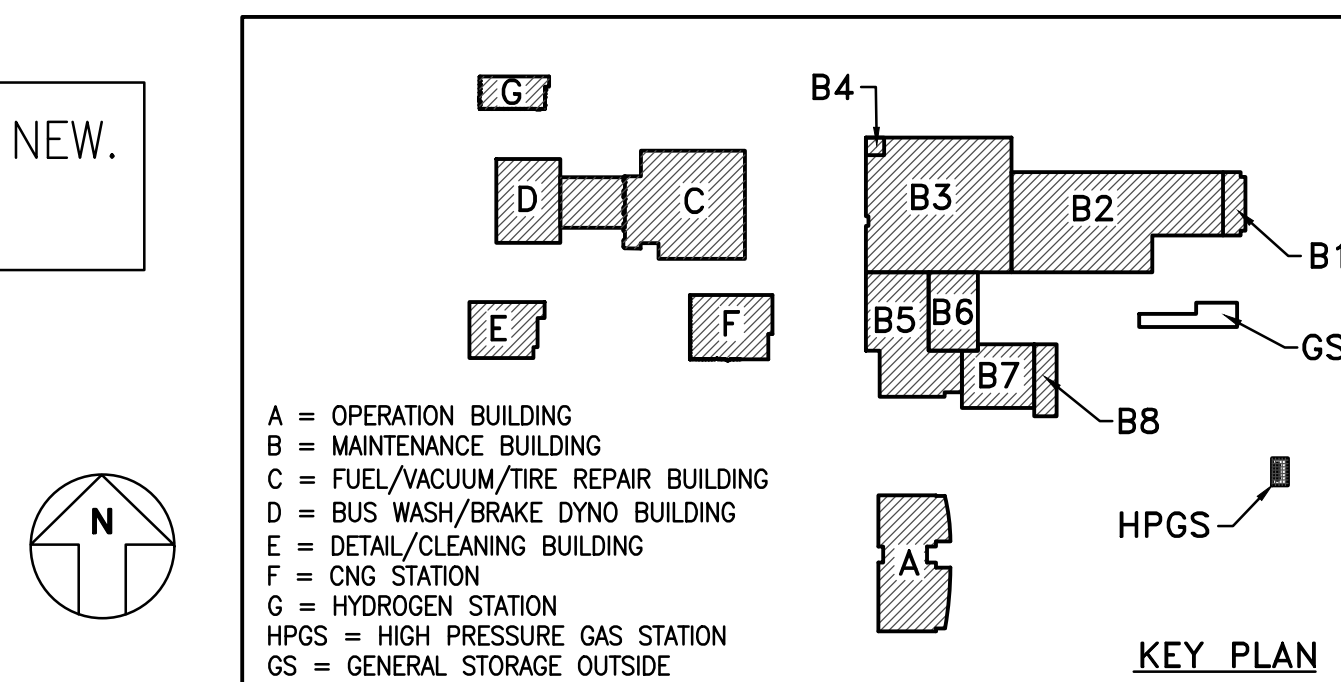
SA-FA-12.2

550 South Main Street
Orange, CA 92668
714/560/OCTA





REPLACE EXISTING PANELS, DEVICES AND WIRING WITH NEW.
INSTALL ADDITIONAL DEVICES AND WIRING.

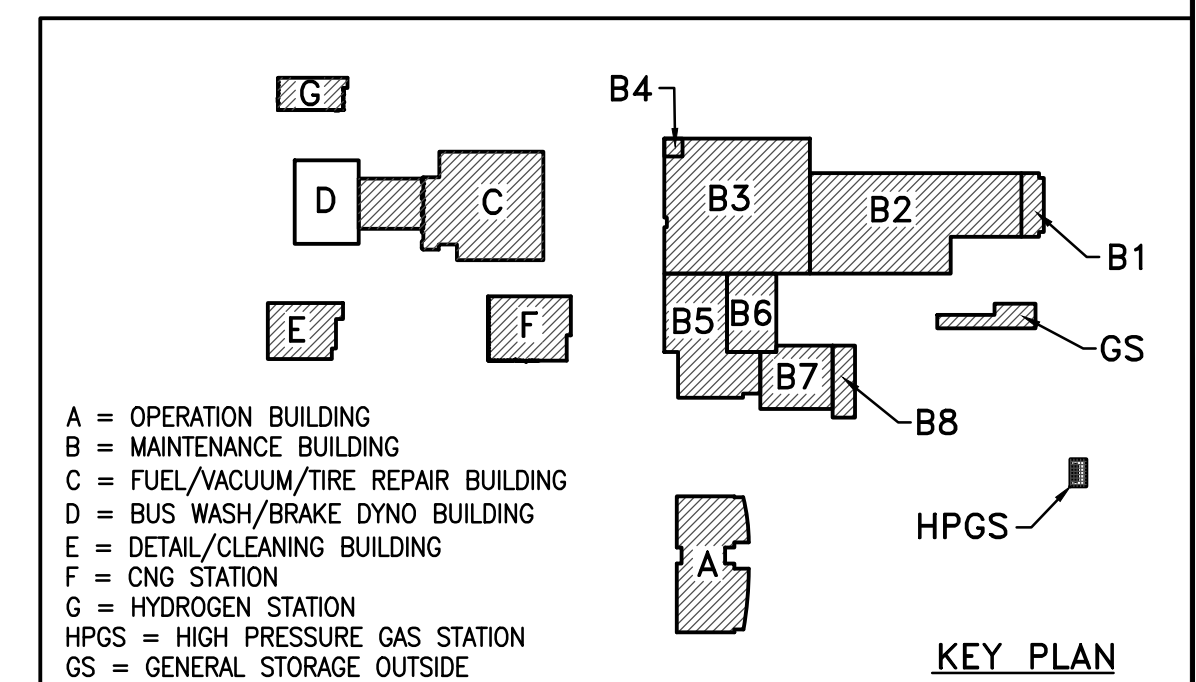
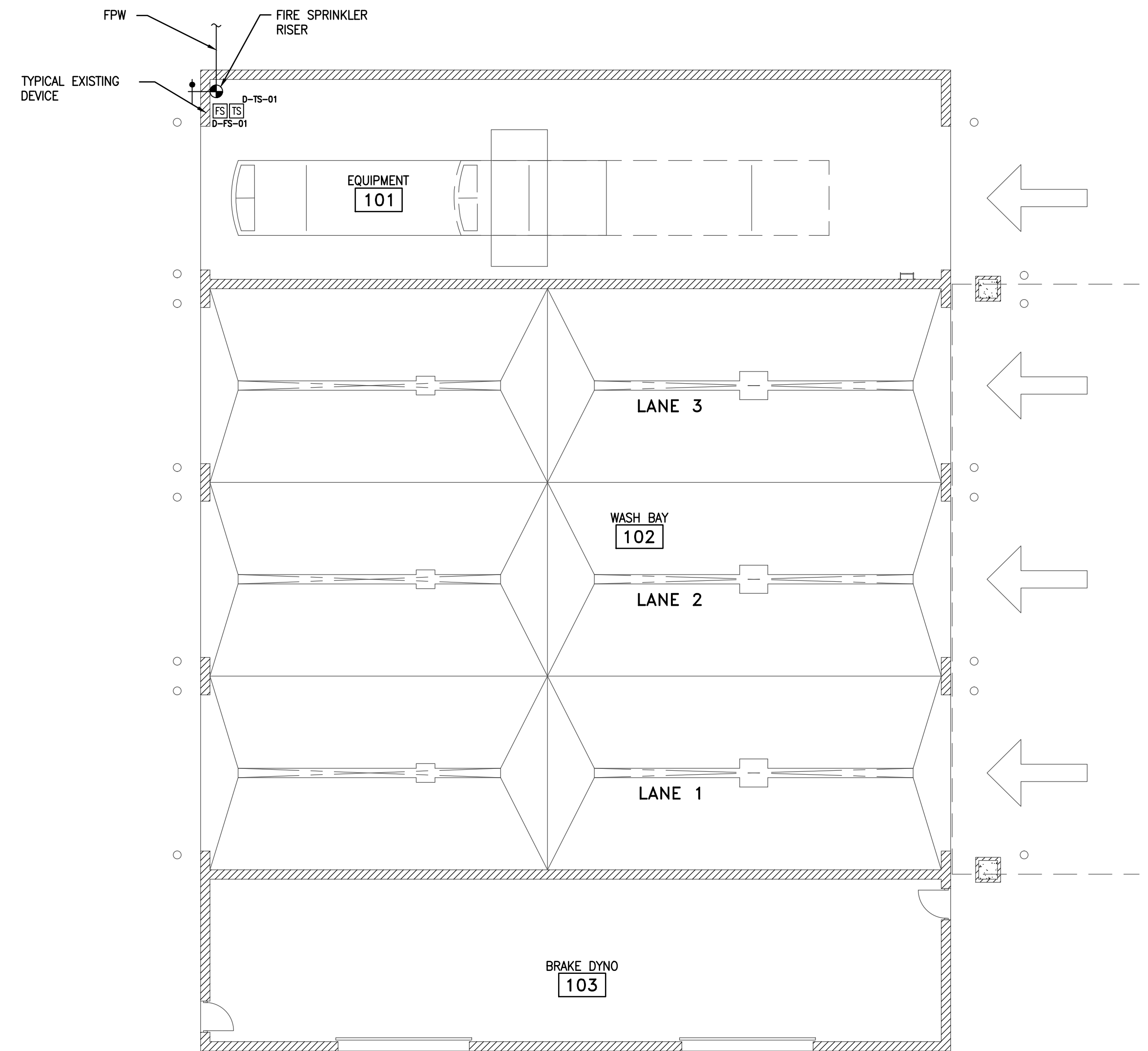


OUTSIDE STORAGE STRUCTURE "GS" FLOOR PLAN

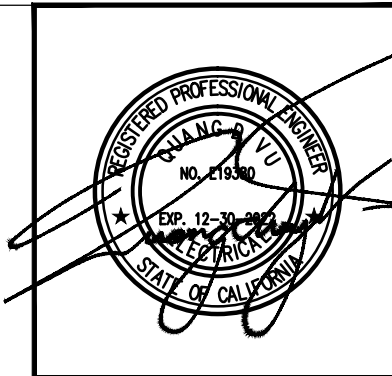
LEGEND	
SYMBOL	DESCRIPTION
	FIRE ALARM CONTROL PANEL
	FIRE ALARM ANNUNCIATOR
	STROBE TO BE REPLACED WITH HORN AND STROBE
	HORN/STROBE WALL MOUNT
	HORN/STROBE WALL MOUNT (SEPARATED RATED UNITS)
	MANUAL PULL STATION
	PULL STATION WEATHERPROOF BACK BOX
	EXPLOSION PROOF PULL STATION
	RELAY MODULE FOR FIRE DOOR RELEASE
	SMOKE DETECTOR
	DUCT SMOKE DETECTOR
	HEAT DETECTOR
	FLAME DETECTOR
	METHANE DETECTOR
	METHANE DETECTOR W/ YELLOW BEACON
	YELLOW STROBE LIGHT
	RED STROBE LIGHT
	AMBER STROBE LIGHT
	GREEN LIGHT
	ROLL-UP DOOR
	EMERGENCY EXHAUST FAN
	METHANE GAS SENSOR
	HYDROGEN GAS DETECTOR
	HYDROGEN AMBER BEACON
	OUTDOOR TRI-COLOR CHANGING NOTIFICATION LIGHT
	HYDROGEN DETECTION ALARM
	OUTDOOR TRI-COLOR CHANGING NOTIFICATION LIGHT METHANE DETECTION ALARM
	VALVE TAMPER SWITCH
	SPRINKLER WATER FLOW SWITCH

DR = RELAY MODULE FOR FIRE DOOR RELEASE
EF = EMERGENCY EXHAUST FAN
FD = FLAME DETECTOR
FS = SPRINKLER WATER FLOW SWITCH
H2D = HYDROGEN DETECTOR
HDA = HYDROGEN DETECTION ALARM
HS = HORN/STROBE
MD = METHANE DETECTOR
MDA = METHANE DETECTION ALARM
(N) = DESIGNATED NEW DEVICE. OTHERS WITHOUT (N) ARE EXISTING DEVICES.
PS = PULL STATION
RD = ROLL-UP DOOR
S = STROBE TO BE REPLACED WITH HORN AND STROBE
SD = SMOKE DETECTOR
TS = VALVE TAMPER SWITCH

REPLACE EXISTING PANELS, DEVICES AND WIRING WITH NEW.
INSTALL ADDITIONAL DEVICES AND WIRING.



BUS WASH / BRAKE DYNO BUILDING "D" FLOOR PLAN



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CONSULTING ENGINEERS
2960 DAIMLER STREET
SANTA ANA, CALIFORNIA 92705
TEL: # (949) 756-8654
FAX: # (949) 502-0777

[illegible]OUTSIDE STORAGE STRUCTURE "GS" AND
BUS WASH / BRAKE DYNO BUILDING "D"
FIRE ALARM SYSTEM FLOOR PLANS

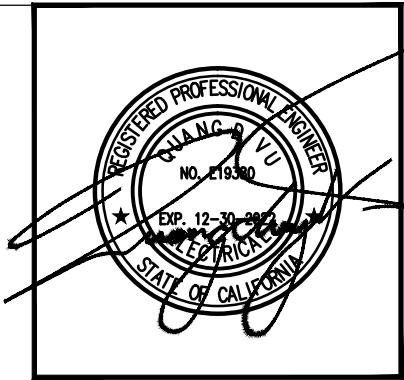
**FIRE ALARM CONTROL PANELS REPLACEMENT
AT SANTA ANA BUS BASE**

JOB #	1.21.4
DESIGN BY:	SDV
DRAWN BY:	TMP
CHECKED BY:	QV
DATE	02-09-2022
SCALE	AS NOTED

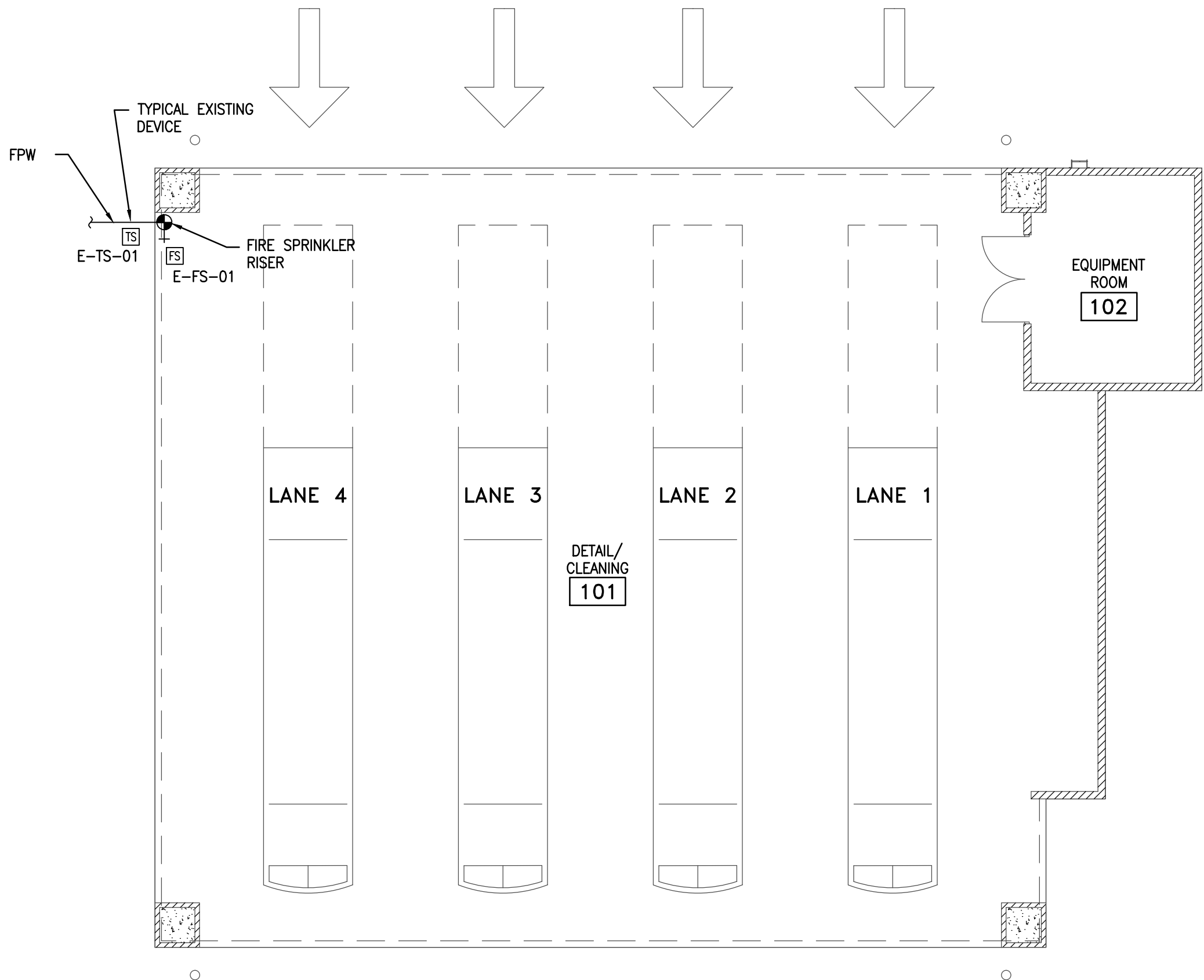
SA-FA-13

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714/560/OCTA



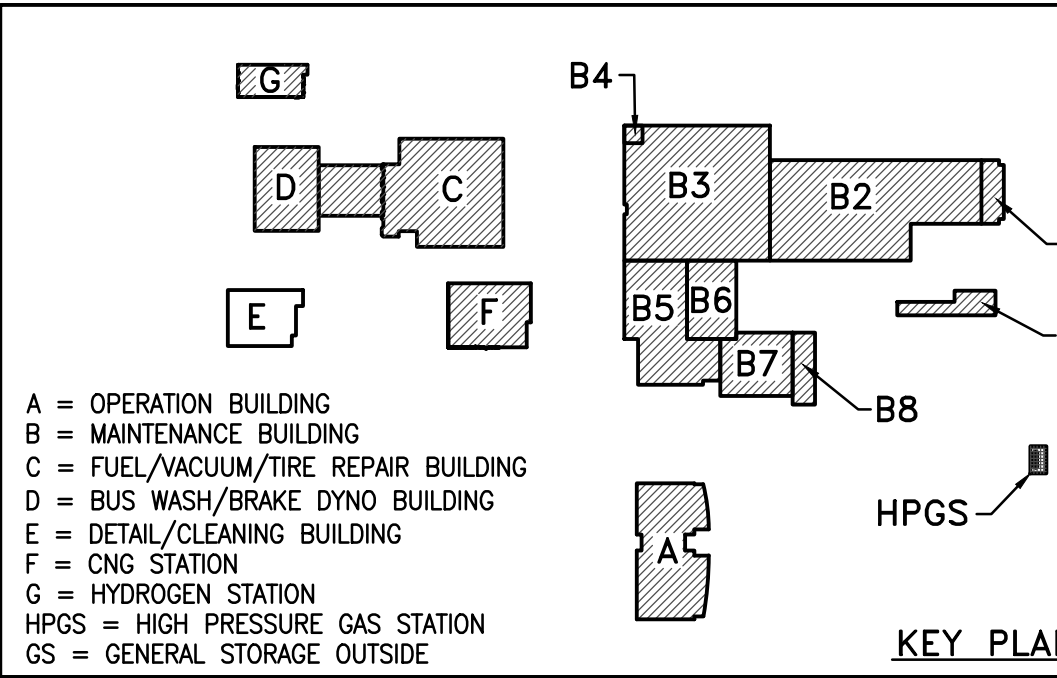
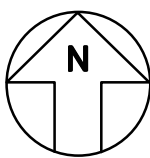


REPLACE EXISTING PANELS, DEVICES AND WIRING WITH NEW.
INSTALL ADDITIONAL DEVICES AND WIRING.



LEGEND	
SYMBOL	DESCRIPTION
[FACP]	FIRE ALARM CONTROL PANEL
[ANNUN]	FIRE ALARM ANNUNCIATOR
X	STROBE TO BE REPLACED WITH HORN AND STROBE
[HSM]	HORN/STROBE WALL MOUNT
[HSM] CLASS 1, DIV. 1	HORN/STROBE WALL MOUNT (SEPARATE RATED UNITS)
[P]	MANUAL PULL STATION
[P] WP	PULL STATION WEATHERPROOF BACK BOX
[P] EXP	EXPLOSION PROOF PULL STATION
[DR]	RELAY MODULE FOR FIRE DOOR RELEASE
[S]	SMOKE DETECTOR
[DS]	DUCT SMOKE DETECTOR
[H]	HEAT DETECTOR
[FD]	FLAME DETECTOR
[MD]	METHANE DETECTOR
[MD] w/ YB	METHANE DETECTOR W/ YELLOW BEACON
[YSL]	YELLOW STROBE LIGHT
[RSL]	RED STROBE LIGHT
[ASL]	AMBER STROBE LIGHT
[GL]	GREEN LIGHT
[RUD]	ROLL-UP DOOR
[EFF]	EMERGENCY EXHAUST FAN
[H2D]	METHANE GAS SENSOR
[H2D]	HYDROGEN GAS DETECTOR
[H2D]	HYDROGEN AMBER BEACON
[H2D]	OUTDOOR TRI-COLOR CHANGING NOTIFICATION LIGHT
[H2D] w/ P	HYDROGEN DETECTION ALARM
[H2D] w/ P	OUTDOOR TRI-COLOR CHANGING NOTIFICATION LIGHT
[H2D] w/ P	METHANE DETECTION ALARM
[TS]	VALVE TAMPER SWITCH
[FS]	SPRINKLER WATER FLOW SWITCH

- DR = RELAY MODULE FOR FIRE DOOR RELEASE
EF = EMERGENCY EXHAUST FAN
FD = FLAME DETECTOR
FS = SPRINKLER WATER FLOW SWITCH
H2D = HYDROGEN DETECTOR
HDA = HYDROGEN DETECTION ALARM
HS = HORN/STROBE
MD = METHANE DETECTOR
MDA = METHANE DETECTION ALARM
(N) = DESIGNATED NEW DEVICE. OTHERS WITHOUT (N) ARE EXISTING DEVICES.
PS = PULL STATION
RD = ROLL-UP DOOR
S = STROBE TO BE REPLACED WITH HORN AND STROBE
SD = SMOKE DETECTOR
TS = VALVE TAMPER SWITCH



- A = OPERATION BUILDING
B = MAINTENANCE BUILDING
C = FUEL/VACUUM/TIRE REPAIR BUILDING
D = BUS WASH/BRAKE DYNO BUILDING
E = DETAIL/CLEANING BUILDING
F = CNG STATION
G = HYDROGEN STATION
HPGS = HIGH PRESSURE GAS STATION
GS = GENERAL STORAGE OUTSIDE

KEY PLAN

SCALE
1"=10'-0"

1

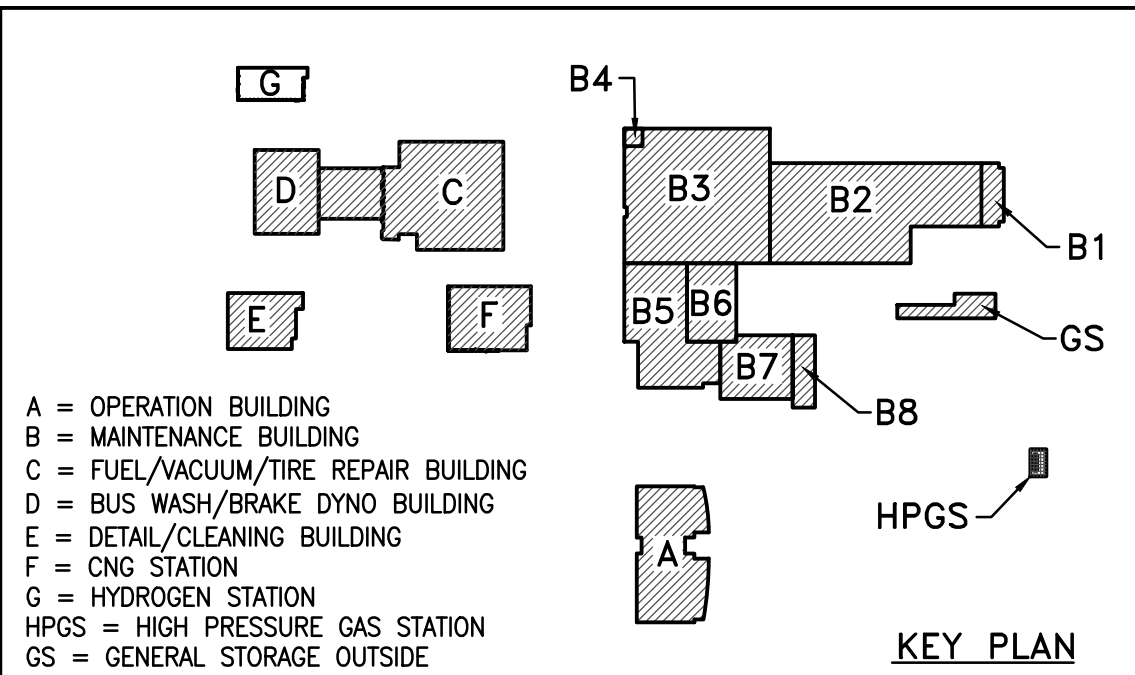
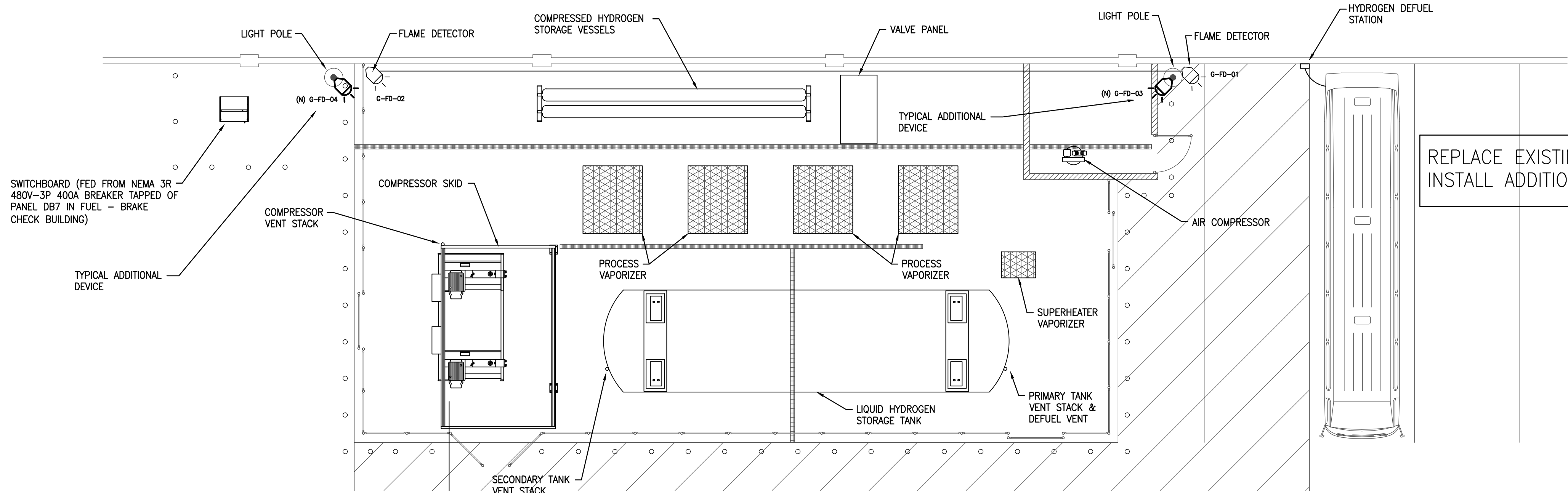
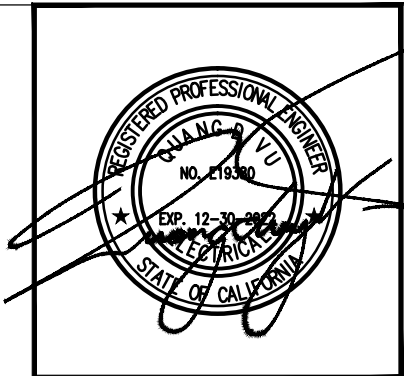
Sheet Title
DETAIL / CLEANING BUILDING "E"
FIRE ALARM SYSTEM FLOOR PLAN

Project
FIRE ALARM CONTROL PANELS REPLACEMENT
AT SANTA ANA BUS BASE

JOB # 1.21.4
DESIGN BY: SDV
DRAWN BY: TMP
CHECKED BY: QV
DATE 02-09-2022
SCALE AS NOTED
SHEET SA-FA-14

550 South Main Street
Orange, CA 92668
714/560/OCTA

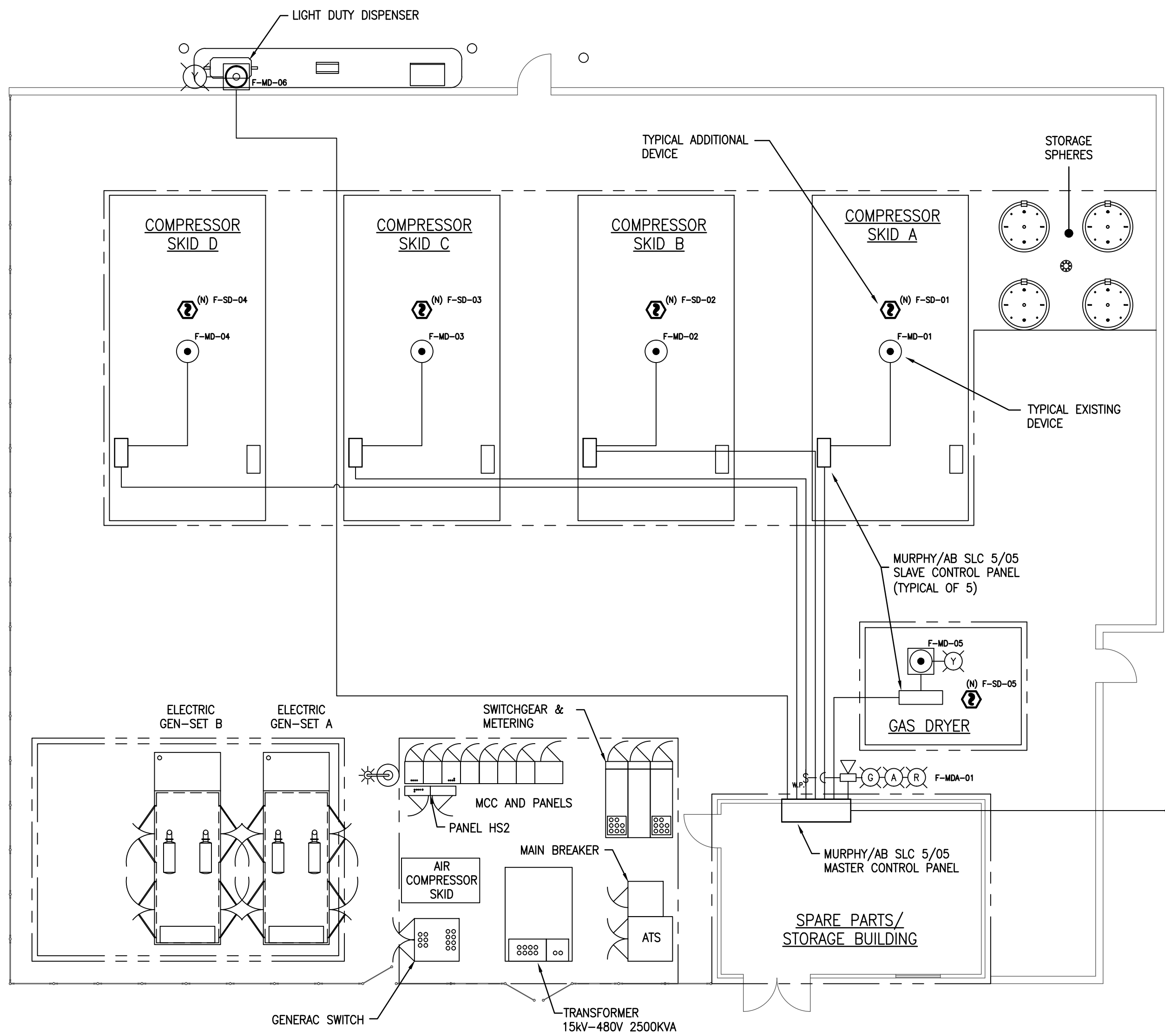




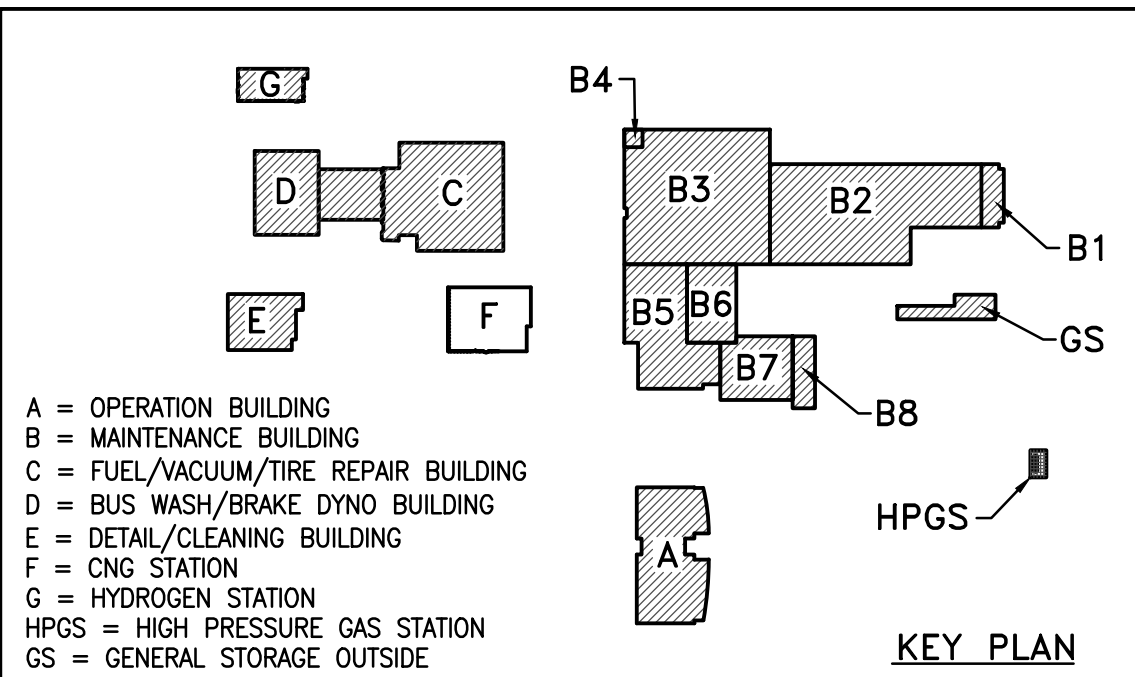
HYDROGEN (H2) STATION "G" PLAN

LEGEND	
SYMBOL	DESCRIPTION
[FACP]	FIRE ALARM CONTROL PANEL
[ANNUN]	FIRE ALARM ANNUNCIATOR
X	STROBE TO BE REPLACED WITH HORN AND STROBE
[H/S]	HORN/STROBE WALL MOUNT
[H/S] CLASS 1 DIV. 1	HORN/STROBE WALL MOUNT (SEPARATE RATED UNITS)
[P]	MANUAL PULL STATION
[P] WP	PULL STATION WEATHERPROOF BACK BOX
[P] EXP	EXPLOSION PROOF PULL STATION
[DR]	RELAY MODULE FOR FIRE DOOR RELEASE
[SD]	SMOKE DETECTOR
[SD] D	DUCT SMOKE DETECTOR
[HD]	HEAT DETECTOR
[FD]	FLAME DETECTOR
[MD]	METHANE DETECTOR
[MD] Y	METHANE DETECTOR W/ YELLOW BEACON
[YSL]	YELLOW STROBE LIGHT
[RSL]	RED STROBE LIGHT
[ASL]	AMBER STROBE LIGHT
[GL]	GREEN LIGHT
[RUD]	ROLL-UP DOOR
[EF]	EMERGENCY EXHAUST FAN
[MGS]	METHANE GAS SENSOR
[HGS]	HYDROGEN GAS DETECTOR
[HAB]	HYDROGEN AMBER BEACON
[OCTCA]	OUTDOOR TRI-COLOR CHANGING NOTIFICATION LIGHT HYDROGEN DETECTION ALARM
[OCTCA] W.P.	OUTDOOR TRI-COLOR CHANGING NOTIFICATION LIGHT METHANE DETECTION ALARM
[TS]	VALVE TAMPER SWITCH
[FS]	SPRINKLER WATER FLOW SWITCH

DR	=	RELAY MODULE FOR FIRE DOOR RELEASE
EF	=	EMERGENCY EXHAUST FAN
FD	=	FLAME DETECTOR
FS	=	SPRINKLER WATER FLOW SWITCH
H2D	=	HYDROGEN DETECTOR
HDA	=	HYDROGEN DETECTION ALARM
HS	=	HORN/STROBE
MD	=	METHANE DETECTOR
MDA	=	METHANE DETECTION ALARM
(N)	=	DESIGNATED NEW DEVICE. OTHERS WITHOUT (N) ARE EXISTING DEVICES.
PS	=	PULL STATION
RD	=	ROLL-UP DOOR
S	=	STROBE TO BE REPLACED WITH HORN AND STROBE
SD	=	SMOKE DETECTOR
TS	=	VALVE TAMPER SWITCH



REPLACE EXISTING PANELS, DEVICES AND WIRING WITH NEW.
INSTALL ADDITIONAL DEVICES AND WIRING.



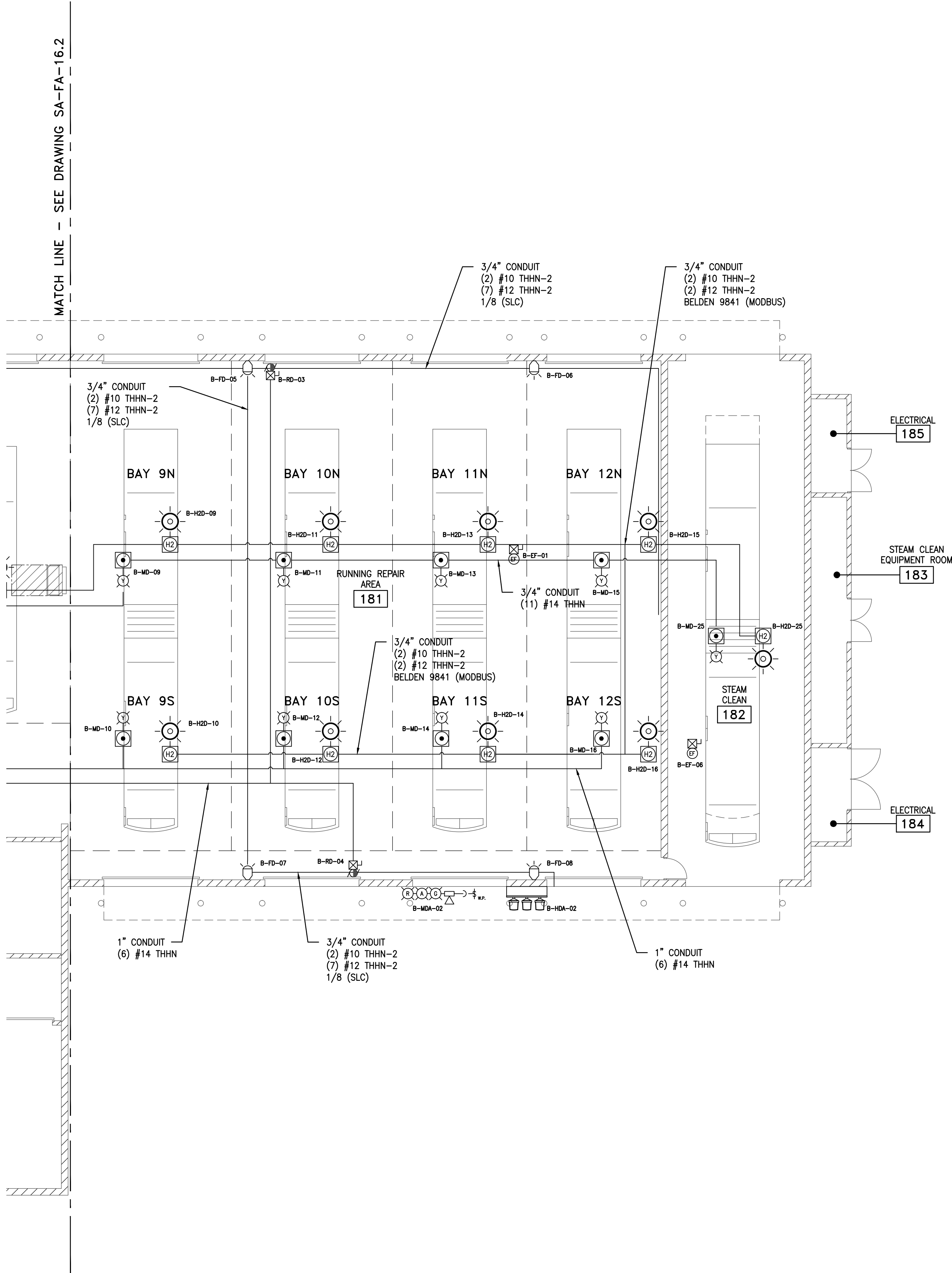
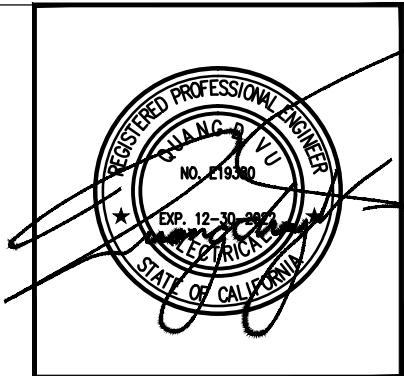
COMPRESSED NATURAL GAS (CNG) STATION "F" PLAN

Sheet Title
CNG STATION "F" AND HYDROGEN STATION "G"
HYDROGEN AND FLAME PROTECTION SYSTEM PLANS

Project
FIRE ALARM CONTROL PANELS REPLACEMENT
AT SANTA ANA BUS BASE

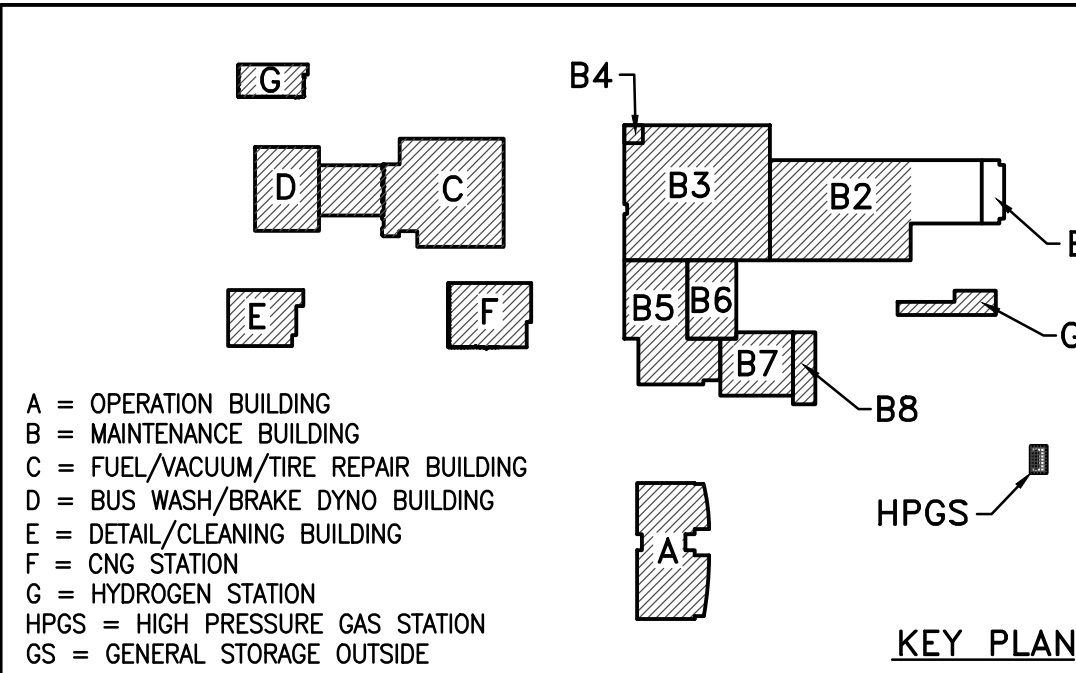
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DESIGN BY:	SDV
DRAWN BY:	TMP
CHECKED BY:	QV
DATE	02-09-2022
SCALE	AS NOTED
SHEET	SA-FA-15
550 South Main Street Orange, CA 92668 714/560/OCTA	





LEGEND	
SYMBOL	DESCRIPTION
[FACP]	FIRE ALARM CONTROL PANEL
[ANNUN]	FIRE ALARM ANNUNCIATOR
X	STROBE TO BE REPLACED WITH HORN AND STROBE
[HWS]	HORN/STROBE WALL MOUNT
[HWS] CLASS 1, DIV. 1	HORN/STROBE WALL MOUNT (SEPARATE RATED UNITS)
[P]	MANUAL PULL STATION
[P] WP	PULL STATION WEATHERPROOF BACK BOX
[P] EXP	EXPLOSION PROOF PULL STATION
[DR]	RELAY MODULE FOR FIRE DOOR RELEASE
[SD]	SMOKE DETECTOR
[SD] D	DUCT SMOKE DETECTOR
[HD]	HEAT DETECTOR
[FD]	FLAME DETECTOR
[MD]	METHANE DETECTOR
[MD] W/ YB	METHANE DETECTOR W/ YELLOW BEACON
[YSL]	YELLOW STROBE LIGHT
[RSL]	RED STROBE LIGHT
[ASL]	AMBER STROBE LIGHT
[GL]	GREEN LIGHT
[RUD]	ROLL-UP DOOR
[EEF]	EMERGENCY EXHAUST FAN
[MGS]	METHANE GAS SENSOR
[HGD]	HYDROGEN GAS DETECTOR
[HAB]	HYDROGEN AMBER BEACON
[OCCN]	OUTDOOR TRI-COLOR CHANGING NOTIFICATION LIGHT HYDROGEN DETECTION ALARM
[OCCN] W/F	OUTDOOR TRI-COLOR CHANGING NOTIFICATION LIGHT METHANE DETECTION ALARM
[TS]	VALVE TAMPER SWITCH
[FS]	SPRINKLER WATER FLOW SWITCH

- DR = RELAY MODULE FOR FIRE DOOR RELEASE
EF = EMERGENCY EXHAUST FAN
FD = FLAME DETECTOR
FS = SPRINKLER WATER FLOW SWITCH
HGD = HYDROGEN DETECTOR
HDA = HYDROGEN DETECTION ALARM
HS = HORN/STROBE
MD = METHANE DETECTOR
MDA = METHANE DETECTION ALARM
(N) = DESIGNATED NEW DEVICE. OTHERS WITHOUT (N) ARE EXISTING DEVICES.
PS = PULL STATION
RD = ROLL-UP DOOR
S = STROBE TO BE REPLACED WITH HORN AND STROBE
SD = SMOKE DETECTOR
TS = VALVE TAMPER SWITCH



MAINTENANCE BUILDING B1 HYDROGEN AND METHANE SYSTEMS FLOOR PLAN

SCALE
1/10"=1'-0"

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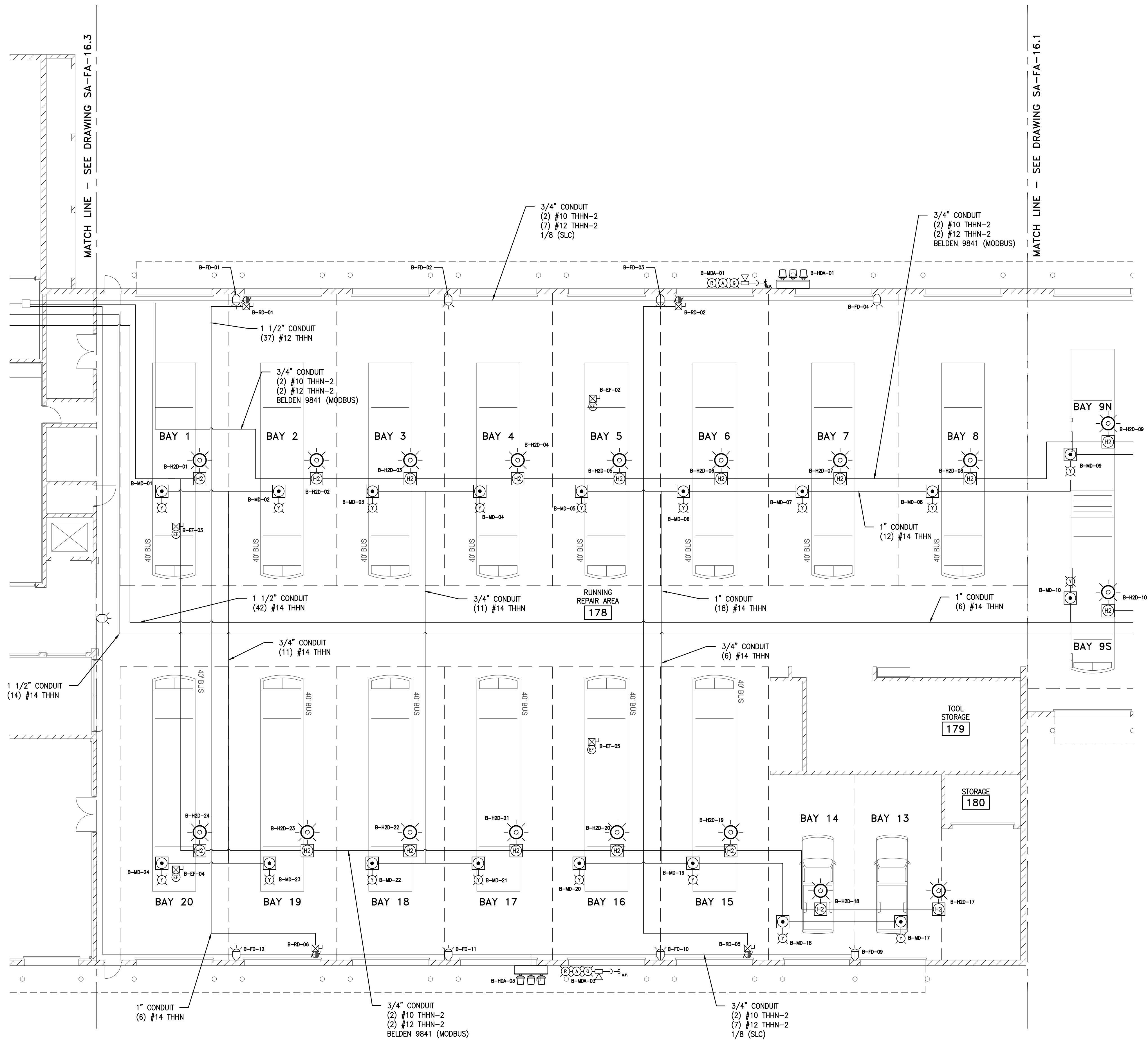
Sheet Title MAINTENANCE BUILDING "B1"
HYDROGEN AND METHANE GAS DETECTION SYSTEMS
FLOOR PLAN

Project FIRE ALARM CONTROL PANELS REPLACEMENT
AT SANTA ANA BUS BASE

JOB # 1.21.4
DESIGN BY: SDV
DRAWN BY: TMP
CHECKED BY: QV
DATE 02-09-2022
SCALE AS NOTED
SA-FA-16.1

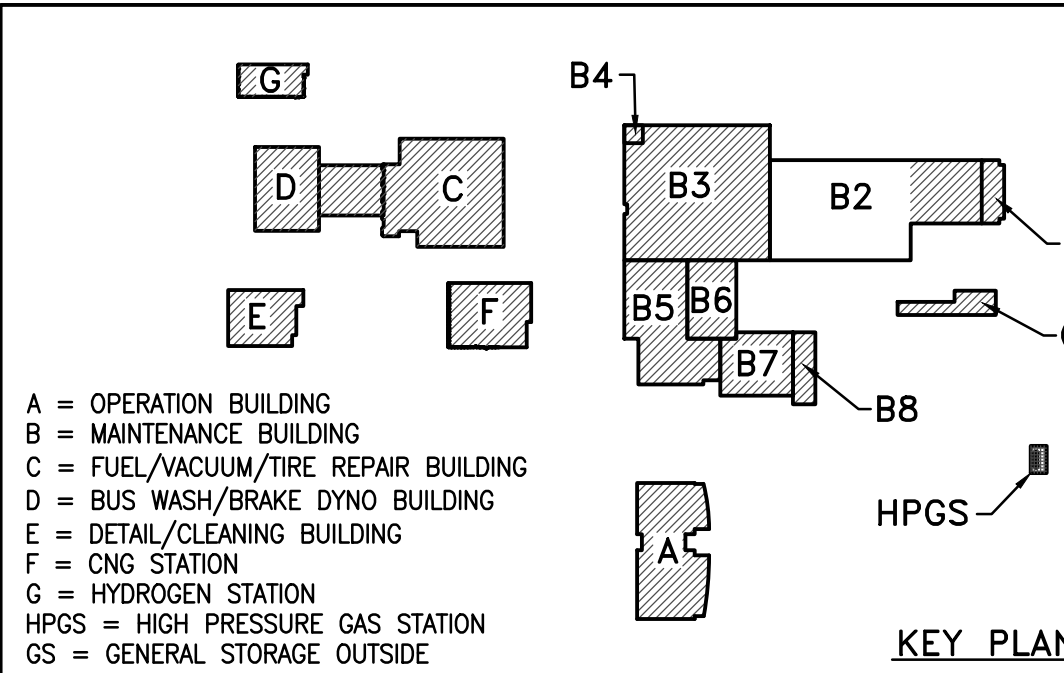
550 South Main Street
Orange, CA 92668
714/560/OCTA





LEGEND	
SYMBOL	DESCRIPTION
	FIRE ALARM CONTROL PANEL
	FIRE ALARM ANNUNCIATOR
	STROBE TO BE REPLACED WITH HORN AND STROBE
	HORN/STROBE WALL MOUNT
CLASS 1 DIV. 1	HORN/STROBE WALL MOUNT (SEPARATE RATED UNITS)
	MANUAL PULL STATION
WP	PULL STATION WEATHERPROOF BACK BOX
EXP	EXPLOSION PROOF PULL STATION
	RELAY MODULE FOR FIRE DOOR RELEASE
	SMOKE DETECTOR
	DUCT SMOKE DETECTOR
	HEAT DETECTOR
	FLAME DETECTOR
	METHANE DETECTOR
	METHANE DETECTOR W/ YELLOW BEACON
	YELLOW STROBE LIGHT
	RED STROBE LIGHT
	AMBER STROBE LIGHT
	GREEN LIGHT
	ROLL-UP DOOR
	EMERGENCY EXHAUST FAN
	METHANE GAS SENSOR
	HYDROGEN GAS DETECTOR
	HYDROGEN AMBER BEACON
	OUTDOOR TRI-COLOR CHANGING NOTIFICATION LIGHT
	OUTDOOR TRI-COLOR CHANGING NOTIFICATION LIGHT
	METHANE DETECTION ALARM
	VALVE TAMPER SWITCH
	SPRINKLER WATER FLOW SWITCH

DR = RELAY MODULE FOR FIRE DOOR RELEASE
EF = EMERGENCY EXHAUST FAN
FD = FLAME DETECTOR
FS = SPRINKLER WATER FLOW SWITCH
H2D = HYDROGEN DETECTOR
HDA = HYDROGEN DETECTION ALARM
HS = HORN/STROBE
MD = METHANE DETECTOR
MS = METHANE DETECTION ALARM
N = DESIGNATED NEW DEVICE. OTHERS WITHOUT (N) ARE EXISTING DEVICES.
PS = PULL STATION
RD = ROLL-UP DOOR
S = STROBE TO BE REPLACED WITH HORN AND STROBE
SD = SMOKE DETECTOR
TS = VALVE TAMPER SWITCH



Sheet Title	Project
MAINTENANCE BUILDING "B2" HYDROGEN AND METHANE GAS DETECTION SYSTEMS FLOOR PLAN	FIRE ALARM CONTROL PANELS REPLACEMENT AT SANTA ANA BUS BASE

JOB #	1.21.4
DESIGN BY:	SDV
DRAWN BY:	TMP
CHECKED BY:	QV
DATE	02-09-2022
SCALE	AS NOTED
SHEET	

SA-FA-16.2

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MAINTENANCE BUILDING B2 HYDROGEN AND METHANE SYSTEMS FLOOR PLAN

SCALE	1
1/10"=1'-0"	



DR = RELAY MODULE FOR FIRE DOOR RELEASE
EF = EMERGENCY EXHAUST FAN
FD = FLAME DETECTOR
FS = SPRINKLER WATER FLOW SWITCH
H2D = HYDROGEN DETECTOR
HDA = HYDROGEN DETECTION ALARM
HS = HORN/STROBE
MD = METHANE DETECTOR
MDA = METHANE DETECTION ALARM
(N) = DESIGNATED NEW DEVICE. OTHERS WITHOUT (N) ARE EXISTING DEVICES.
(N) = PULL STATION
RD = ROLL-UP DOOR
S = STROBE TO BE REPLACED WITH HORN AND STROBE
SD = SMOKE DETECTOR
TS = VALVE TAMPER SWITCH



SCALE
1/10"=1'-0"

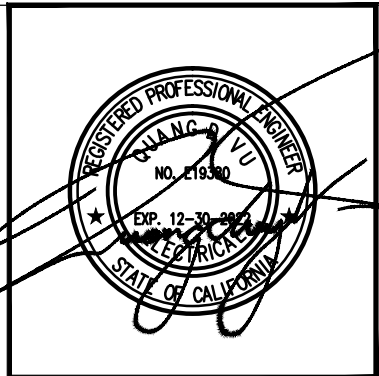
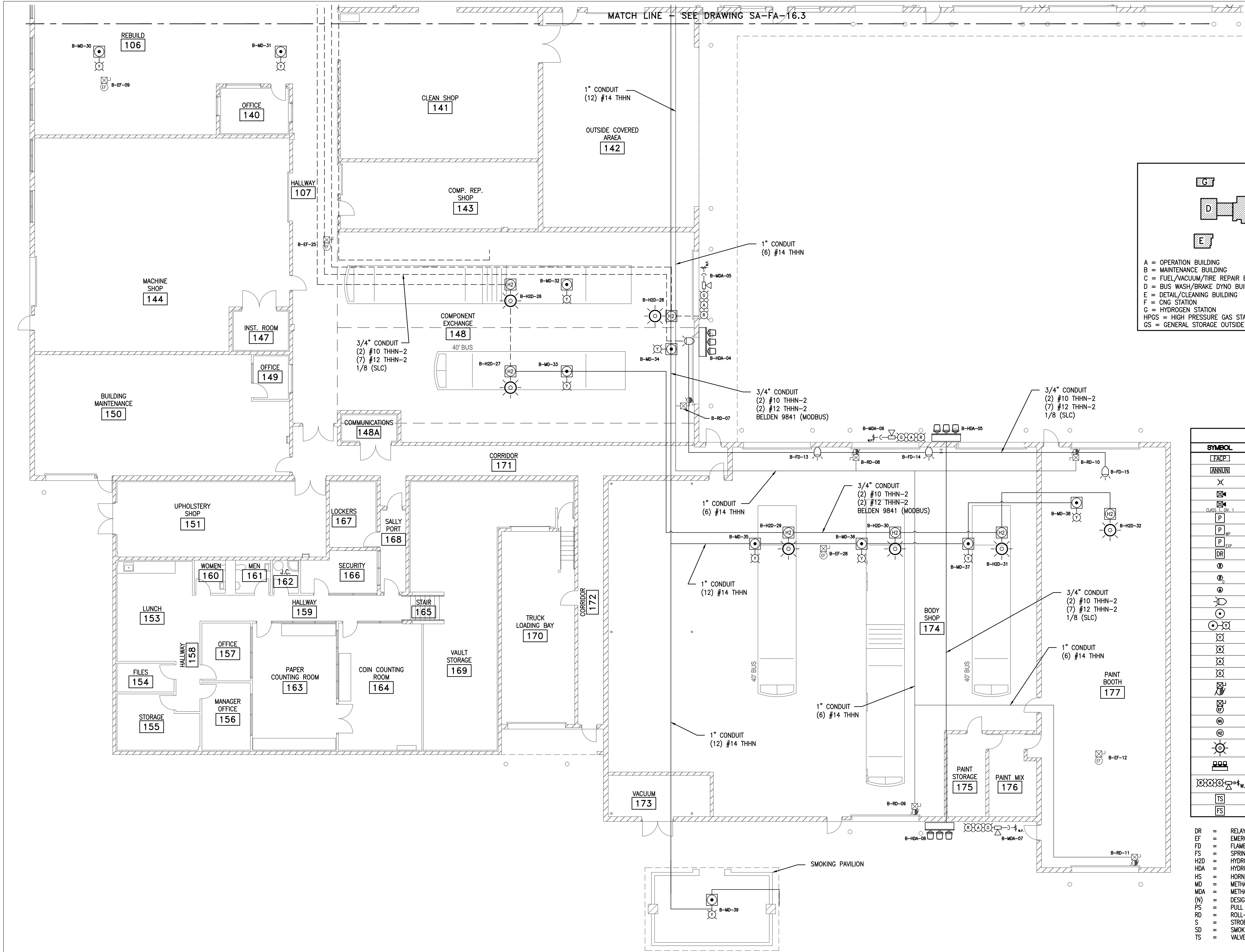
Sheet Title	Project
MAINTENANCE BUILDING 'B3' AND 'B4' HYDROGEN AND METHANE GAS DETECTION SYSTEMS PLAN	FIRE ALARM CONTROL PANELS REPLACEMENT AT SANTA ANA BUS BASE

JOB #	1.21.4
DESIGN BY:	SDV
DRAWN BY:	TMP
CHECKED BY:	QV
DATE	02-09-2022
SCALE	AS NOTED
SHEET	SA-FA-16.3

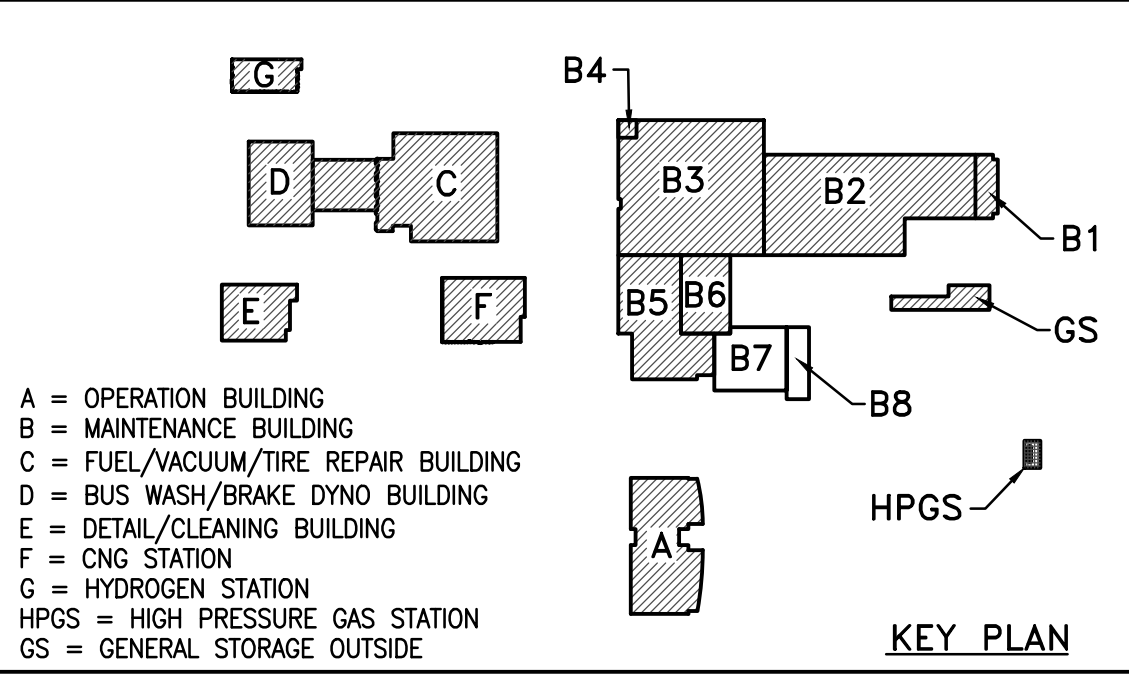
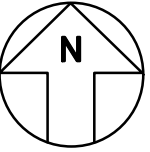
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MAINTENANCE BUILDING B3 AND B4 FLOOR PLAN – HYDROGEN & METHANE GAS DETECTION SYSTEMS



DAHL, TAYLOR & ASSOCIATES
CONSULTING ENGINEERS
2960 DAILMER STREET
SANTA ANA, CALIFORNIA 92705
TEL: # (949) 756-8654
FAX: # (949) 502-0777



LEGEND	
SYMBOL	DESCRIPTION
[FACP]	FIRE ALARM CONTROL PANEL
[ANNUN]	FIRE ALARM ANNUNCIATOR
[X]	STROBE TO BE REPLACED WITH HORN AND STROBE
[H2]	HORN/STROBE WALL MOUNT
[H2S]	HORN/STROBE WALL MOUNT (SEPARATE RATED UNITS)
[P]	MANUAL PULL STATION
[PWP]	PULL STATION WEATHERPROOF BACK BOX
[PEXP]	EXPLOSION PROOF PULL STATION
[DR]	RELAY MODULE FOR FIRE DOOR RELEASE
[S]	SMOKE DETECTOR
[SD]	DUCT SMOKE DETECTOR
[H]	HEAT DETECTOR
[F]	FLAME DETECTOR
[M]	METHANE DETECTOR
[MY]	METHANE DETECTOR W/ YELLOW BEACON
[Y]	YELLOW STROBE LIGHT
[R]	RED STROBE LIGHT
[A]	AMBER STROBE LIGHT
[G]	GREEN LIGHT
[RD]	ROLL-UP DOOR
[EFF]	EMERGENCY EXHAUST FAN
[MS]	METHANE GAS SENSOR
[HGS]	HYDROGEN GAS DETECTOR
[HAB]	HYDROGEN AMBER BEACON
[OTCA]	OUTDOOR TRI-COLOR CHANGING NOTIFICATION LIGHT
[OTCAH2]	HYDROGEN DETECTION ALARM
[OTCAH2M]	OUTDOOR TRI-COLOR CHANGING NOTIFICATION LIGHT
[OTCAH2M]	METHANE DETECTION ALARM
[TS]	VALVE TAMPER SWITCH
[FS]	SPRINKLER WATER FLOW SWITCH

- DR = RELAY MODULE FOR FIRE DOOR RELEASE
EF = EMERGENCY EXHAUST FAN
FD = FLAME DETECTOR
FS = SPRINKLER WATER FLOW SWITCH
H2D = HYDROGEN DETECTOR
HDA = HYDROGEN DETECTION ALARM
HS = HORN/STROBE
MD = METHANE DETECTOR
MDA = METHANE DETECTION ALARM
(N) = DESIGNATED NEW DEVICE. OTHERS WITHOUT (N) ARE EXISTING DEVICES.
PS = PULL STATION
RD = ROLL-UP DOOR
S = STROBE TO BE REPLACED WITH HORN AND STROBE
SD = SMOKE DETECTOR
TS = VALVE TAMPER SWITCH

MAINTENANCE BUILDING B5+B6+B7+B8 FLOOR PLAN – HYDROGEN & METHANE DETECTION SYSTEMS

SCALE
1/10"=1'-0"

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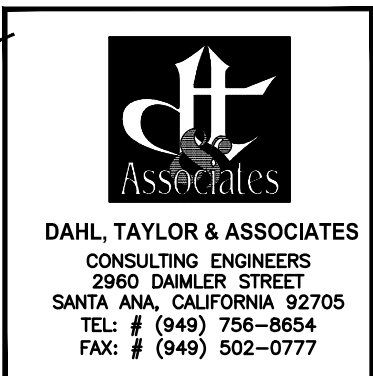
Sheet Title
MAINTENANCE BUILDING "B5" "B6" "B7" & "B8" FLOOR PLAN
HYDROGEN AND METHANE GAS DETECTION SYSTEMS

Project
FIRE ALARM CONTROL PANELS REPLACEMENT
AT SANTA ANA BUS BASE

JOB # 1.21.4
DESIGN BY: SDV
DRAWN BY: TMP
CHECKED BY: QV
DATE 02-09-2022
SCALE AS NOTED
SHEET
SA-FA-16.4

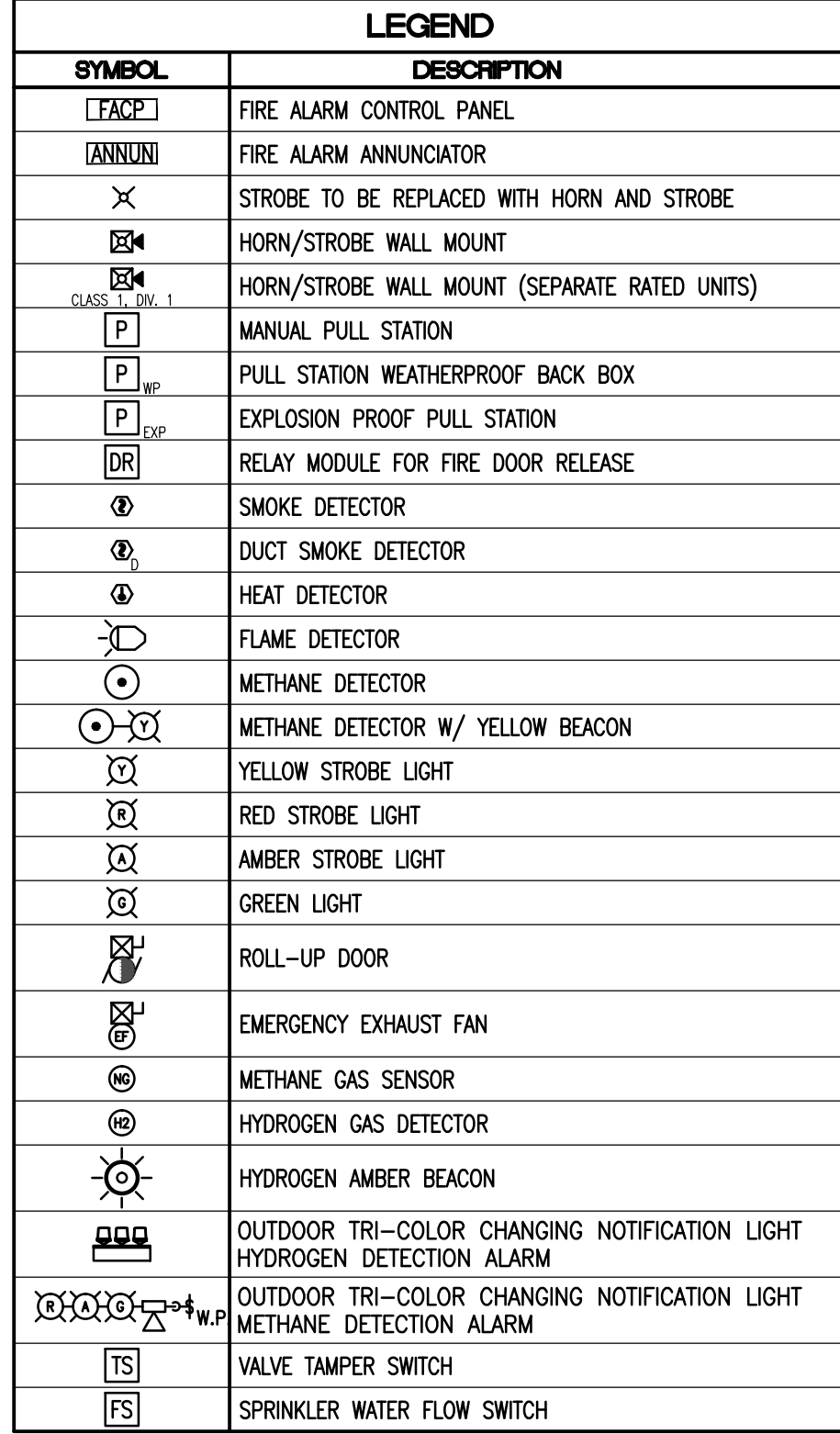
550 South Main Street
Orange, CA 92668
714/560/OCTA



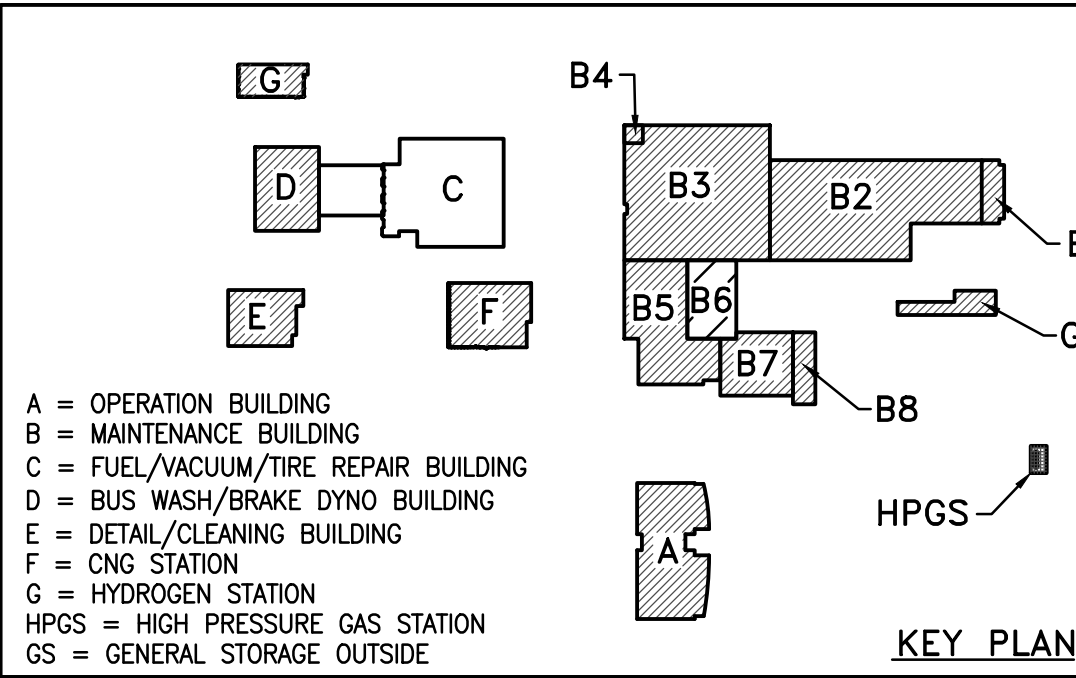
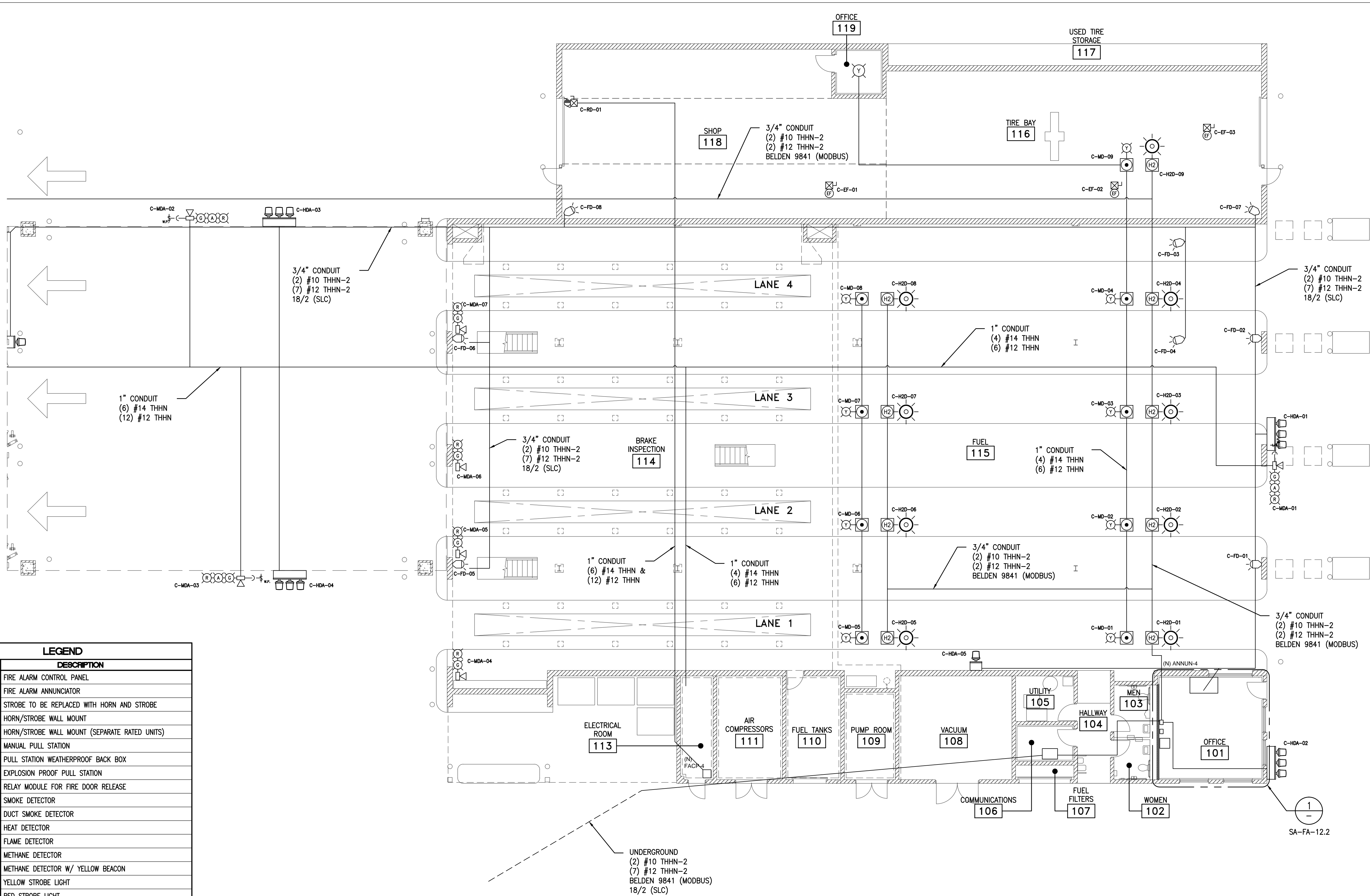


Sheet Title	FUEL / VACUUM / TIRE REPAIR BUILDING "C" FLOOR PLAN HYDROGEN AND METHANE GAS DETECTION SYSTEMS
Project	FIRE ALARM CONTROL PANELS REPLACEMENT AT SANTA ANA BUS BASE

550 South Main Street
Orange, CA 92668
714/560/OCTA

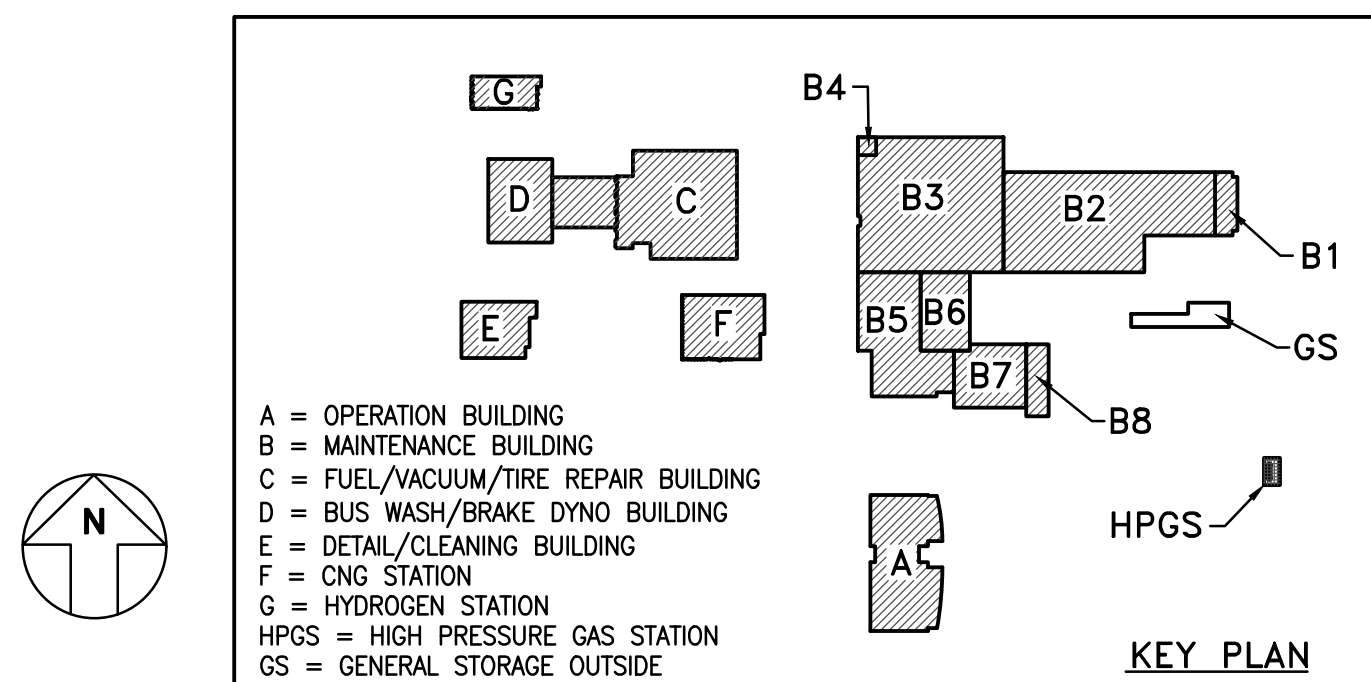


DR = RELAY MODULE FOR FIRE DOOR RELEASE
EF = EMERGENCY EXHAUST FAN
FD = FLAME DETECTOR
FS = SPRINKLER WATER FLOW SWITCH
H2D = HYDROGEN DETECTOR
HDA = HYDROGEN DETECTION ALARM
HS = HORN/STROBE
MD = METHANE DETECTOR
MNA = METHANE DETECTION ALARM
(N) = DESIGNATED NEW DEVICE. OTHERS WITHOUT (N) ARE EXISTING DEVICES.
PS = PULL STATION
RD = ROLL-UP DOOR
S = STROBE TO BE REPLACED WITH HORN AND STROBE
SD = SMOKE DETECTOR
TS = VALVE TAMPER SWITCH



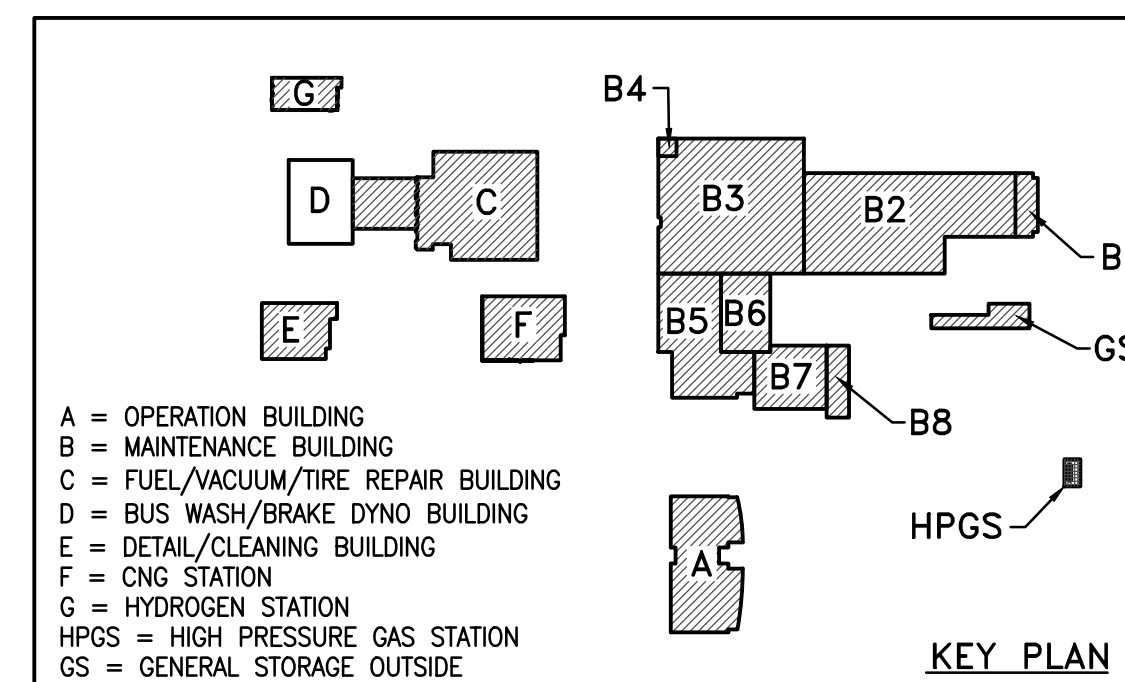
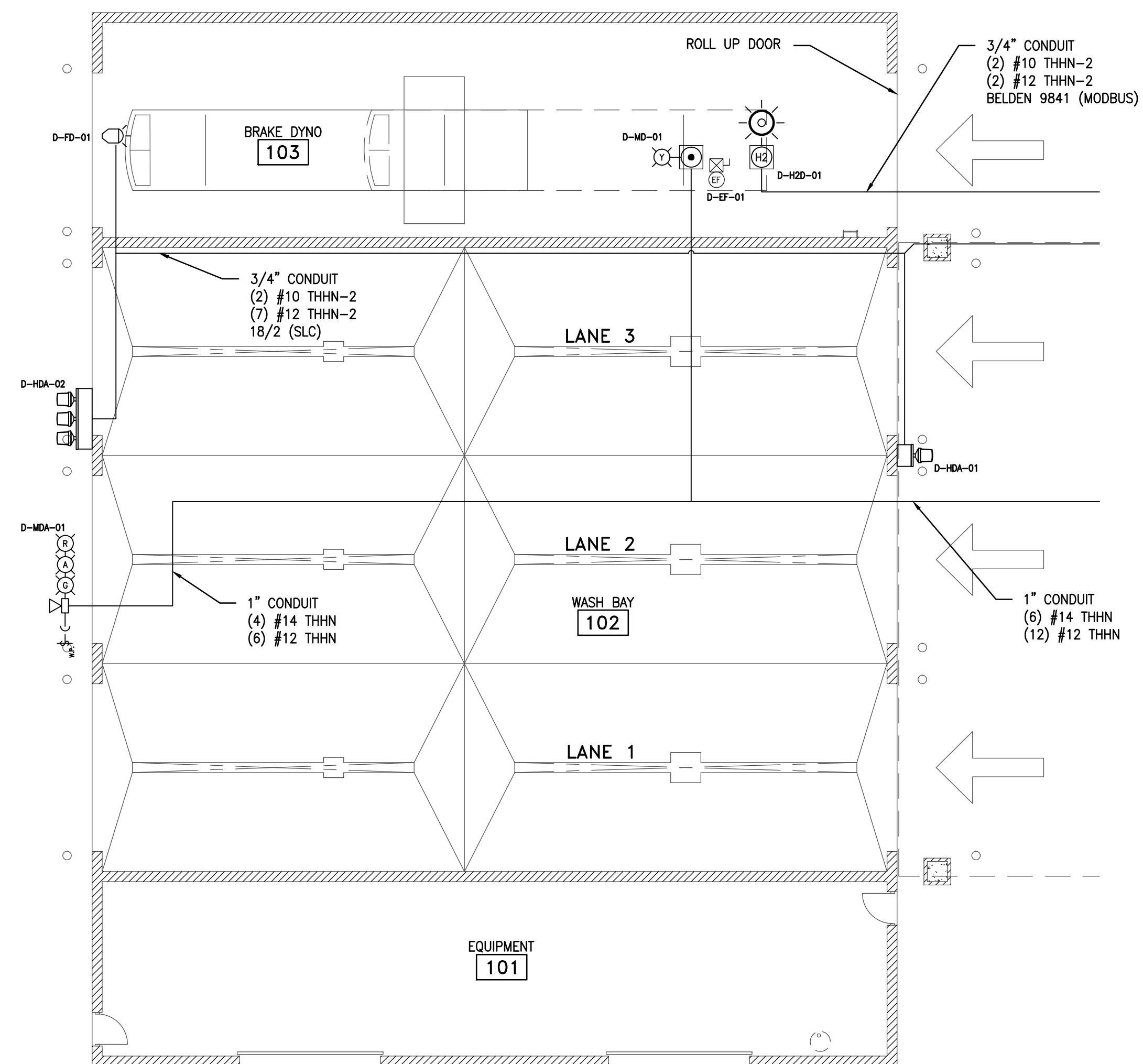
FUEL / VACUUM / TIRE REPAIR BUILDING "C" FLOOR PLAN - HYDROGEN (H2) AND METHANE GAS (CNG) DETECTION SYSTEMS

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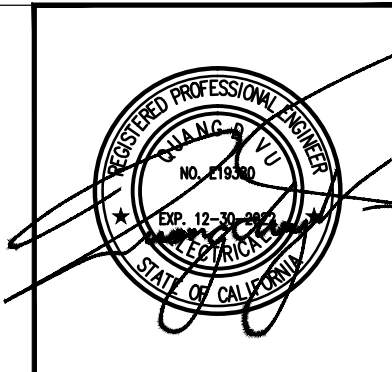


SCALE	2
1"=10'-0"	

DR	=	RELAY MODULE FOR FIRE DOOR RELEASE
EF	=	EMERGENCY EXHAUST FAN
FD	=	FLAME DETECTOR
FS	=	SPRINKLER WATER FLOW SWITCH
H2D	=	HYDROGEN DETECTOR
HDA	=	HYDROGEN DETECTION ALARM
HS	=	HORN/STROBE
MD	=	METHANE DETECTOR
MDA	=	METHANE DETECTION ALARM
PS	=	PULL STATION
RD	=	ROLL-UP DOOR
S	=	STROBE TO BE REPLACED WITH HORN AND STROBE
SD	=	SMOKE DETECTOR
TS	=	VALVE TAMPER SWITCH



SCALE	1
1"=10'-0"	



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FAX: # (949) 502-0777

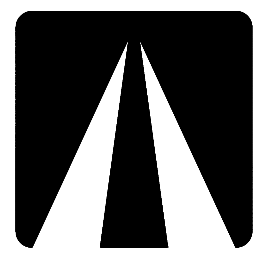
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Sheet Title	OUTSIDE STORAGE STRUCTURE "GS" AND BUS WASH / BRAKE DYNO BUILDING "D" HYDROGEN AND METHANE GAS DETECTION SYSTEMS
Project	FIRE ALARM CONTROL PANELS REPLACEMENT AT SANTA ANA BUS BASE

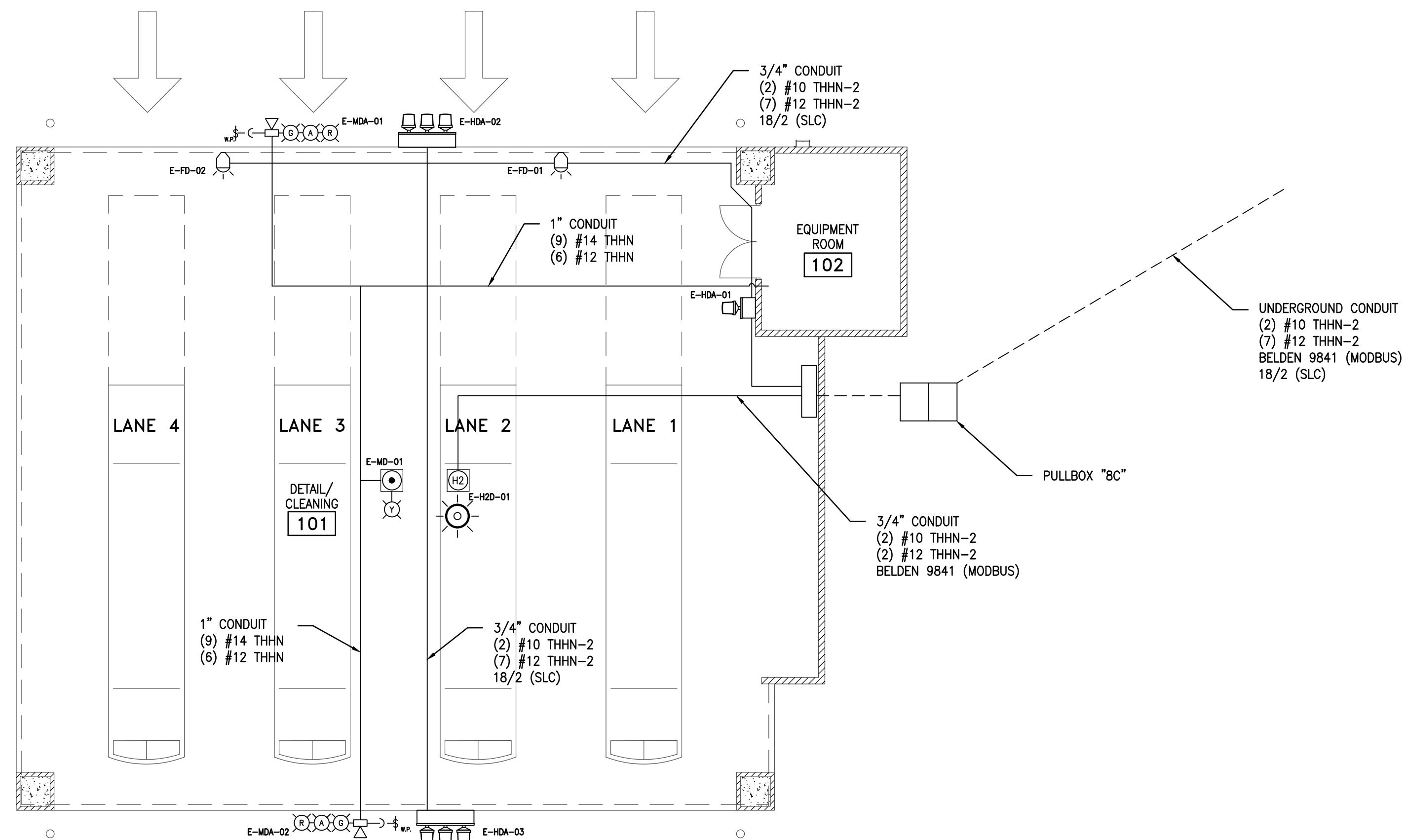
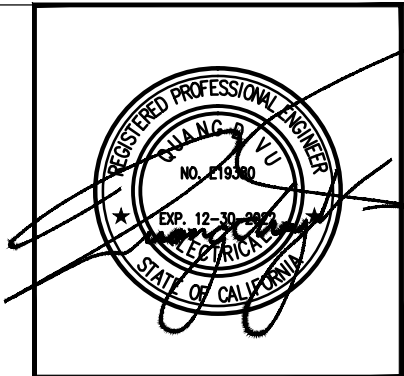
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DESIGN BY:	SDV
DRAWN BY:	TMP
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DATE	02-09-2022
SCALE	AS NOTED
SHEET	

SA-FA-18

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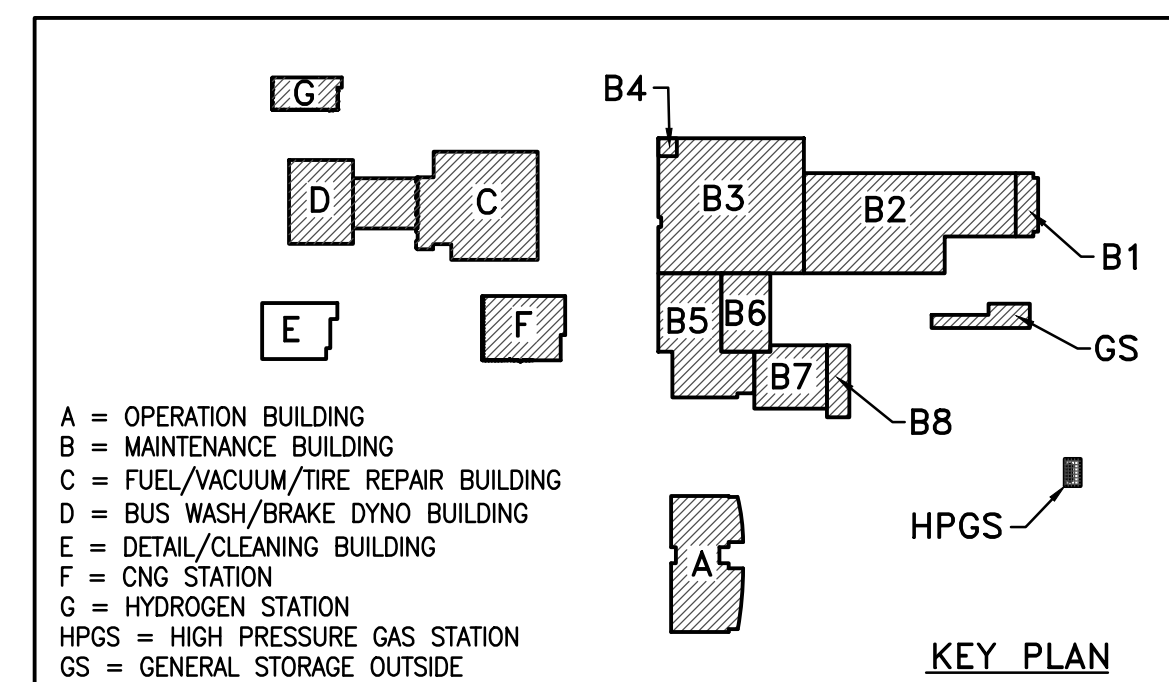
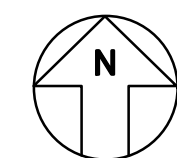


OCTA



LEGEND	
SYMBOL	DESCRIPTION
[FACP]	FIRE ALARM CONTROL PANEL
[ANNUN]	FIRE ALARM ANNUNCIATOR
X	STROBE TO BE REPLACED WITH HORN AND STROBE
[HSM]	HORN/STROBE WALL MOUNT
[HSM] (RW. 1)	HORN/STROBE WALL MOUNT (SEPARATE RATED UNITS)
[P]	MANUAL PULL STATION
[P] _{WP}	PULL STATION WEATHERPROOF BACK BOX
[P] _{EXP}	EXPLOSION PROOF PULL STATION
[DR]	RELAY MODULE FOR FIRE DOOR RELEASE
[S]	SMOKE DETECTOR
[S] _D	DUCT SMOKE DETECTOR
[H]	HEAT DETECTOR
[F]	FLAME DETECTOR
[M]	METHANE DETECTOR
[M] _{YB}	METHANE DETECTOR W/ YELLOW BEACON
[YSL]	YELLOW STROBE LIGHT
[RSL]	RED STROBE LIGHT
[ASL]	AMBER STROBE LIGHT
[GL]	GREEN LIGHT
[RD]	ROLL-UP DOOR
[EF]	EMERGENCY EXHAUST FAN
[MG]	METHANE GAS SENSOR
[HG]	HYDROGEN GAS DETECTOR
[HAB]	HYDROGEN AMBER BEACON
[TRC]	OUTDOOR TRI-COLOR CHANGING NOTIFICATION LIGHT
[TRC] _{W.P.}	OUTDOOR TRI-COLOR CHANGING NOTIFICATION LIGHT (WEATHERPROOF)
[MTHA]	METHANE DETECTION ALARM
[TS]	VALVE TAMPER SWITCH
[FS]	SPRINKLER WATER FLOW SWITCH

- DR = RELAY MODULE FOR FIRE DOOR RELEASE
EF = EMERGENCY EXHAUST FAN
FD = FLAME DETECTOR
FS = SPRINKLER WATER FLOW SWITCH
H2D = HYDROGEN DETECTOR
HDA = HYDROGEN DETECTION ALARM
HS = HORN/STROBE
MD = METHANE DETECTOR
MDA = METHANE DETECTION ALARM
PS = PULL STATION
RD = ROLL-UP DOOR
S = STROBE TO BE REPLACED WITH HORN AND STROBE
SD = SMOKE DETECTOR
TS = VALVE TAMPER SWITCH



DETAIL / CLEANING BUILDING FLOOR PLAN – HYDROGEN (H2) & METHANE (CNG) GAS DETECTION SYSTEMS

SCALE
1"=10'-0"

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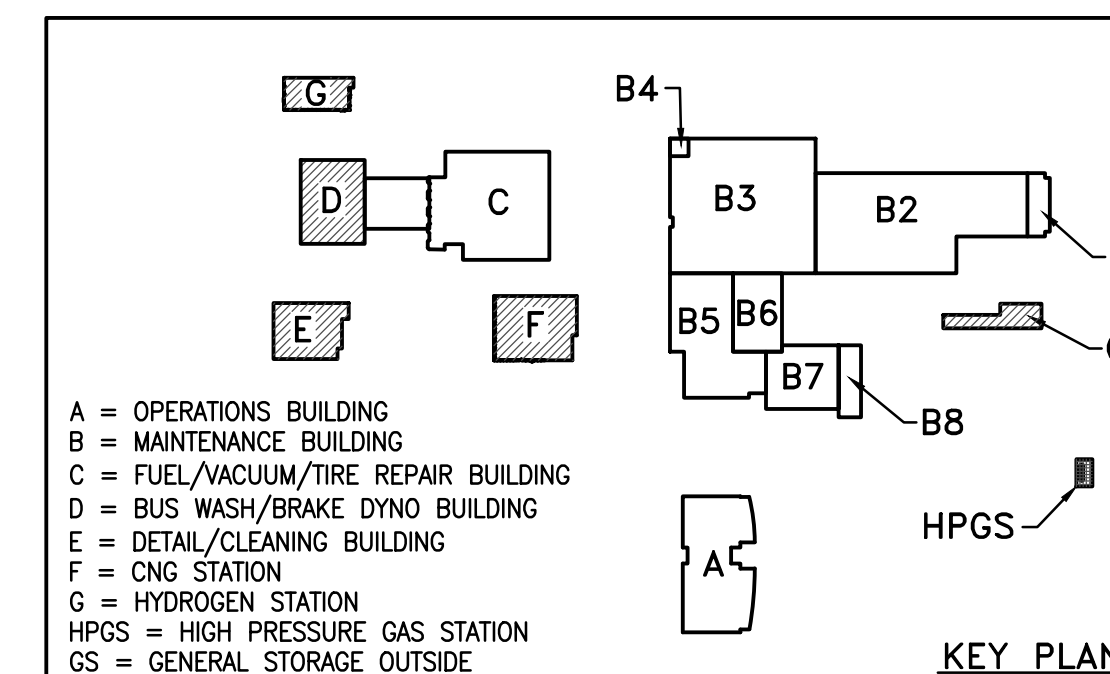
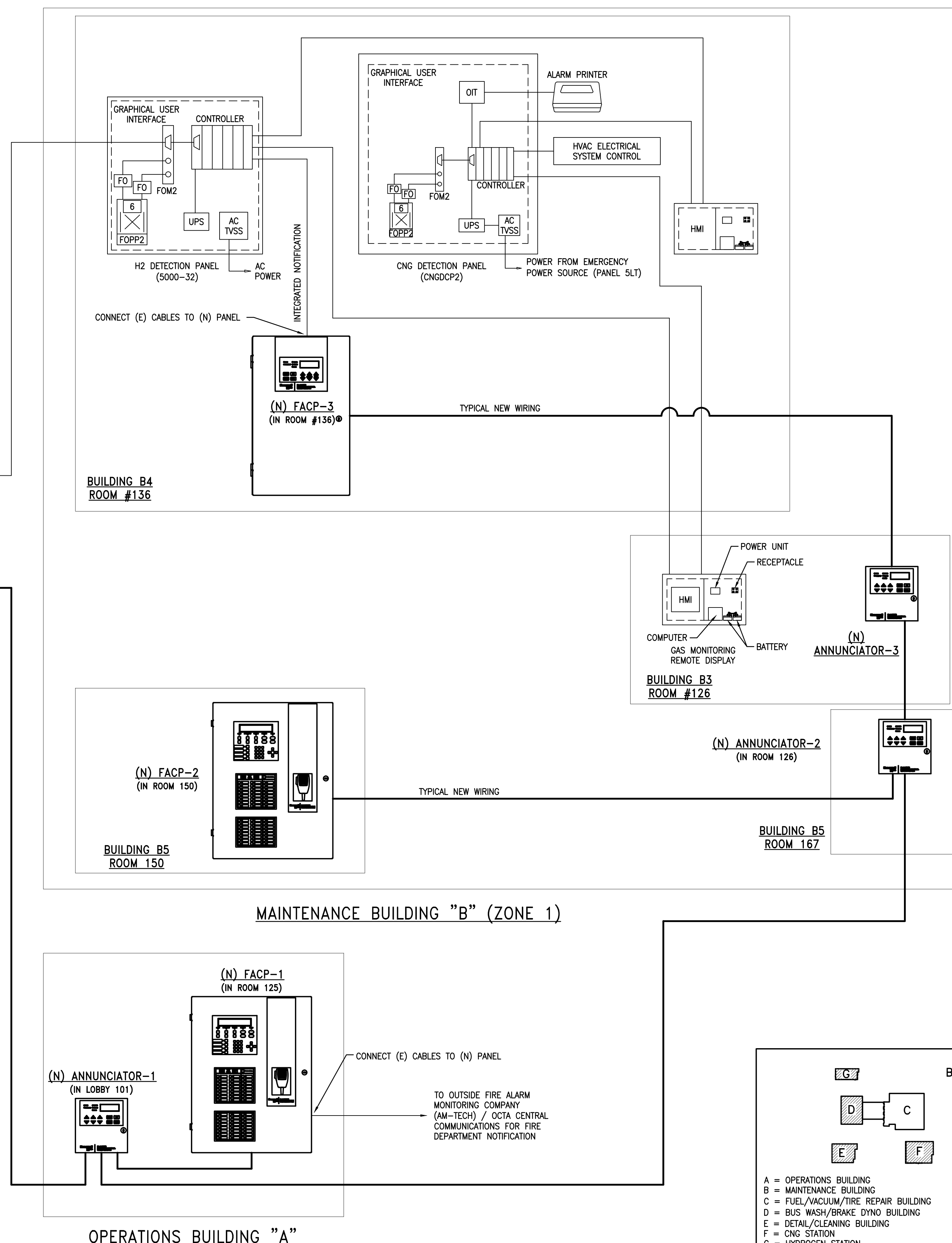
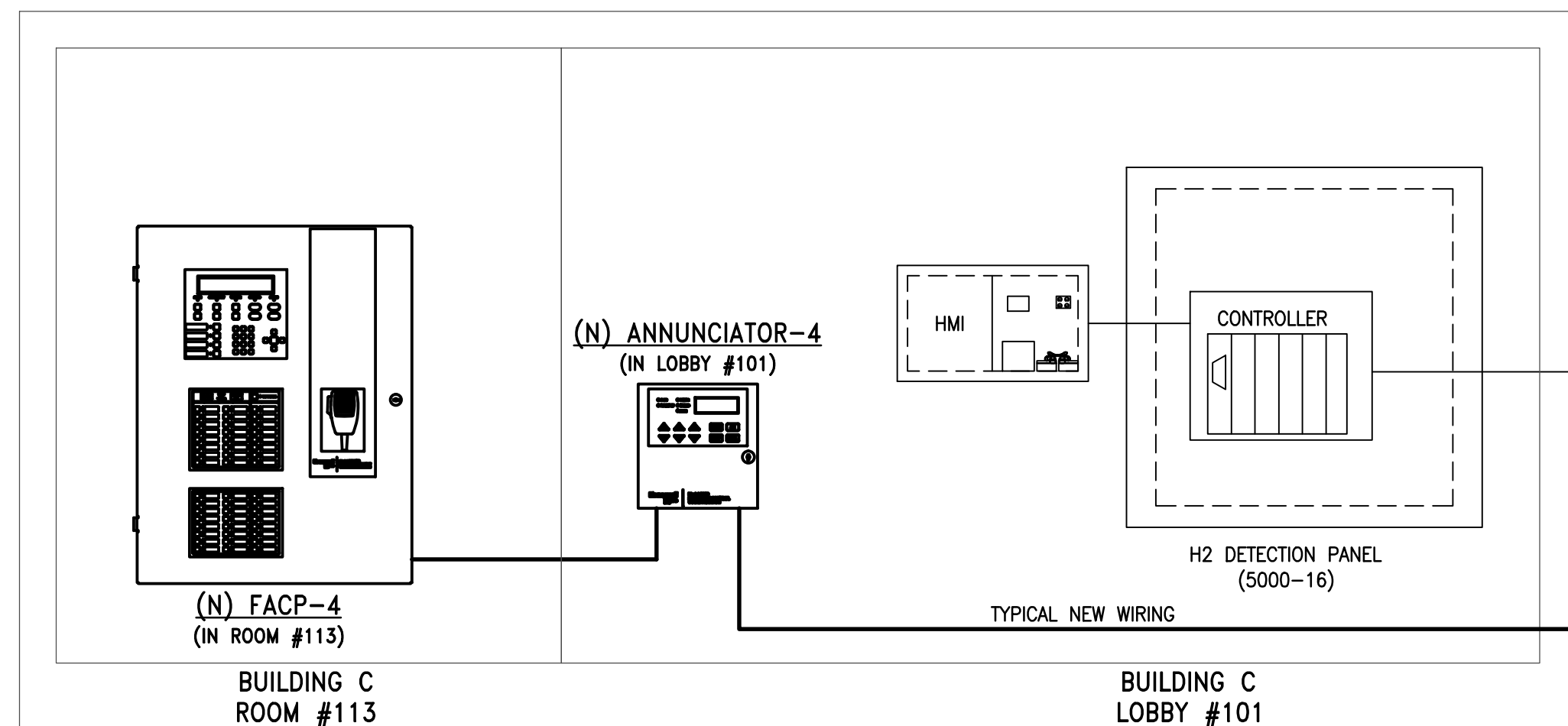
Sheet Title
DETAIL / CLEANING BUILDING "E"
HYDROGEN AND METHANE GAS DETECTION SYSTEMS

Project
FIRE ALARM CONTROL PANELS REPLACEMENT
AT SANTA ANA BUS BASE

JOB # 1.21.4
DESIGN BY: SDV
DRAWN BY: TMP
CHECKED BY: QV
DATE 02-09-2022
SCALE AS NOTED
SHEET
SA-FA-19

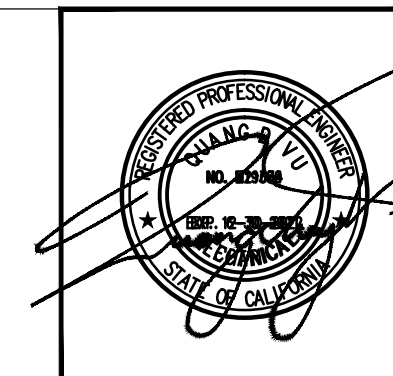
550 South Main Street
Orange, CA 92668
714/560/OCTA





LEGEND	
SYMBOL	DESCRIPTION
	FIRE ALARM CONTROL PANEL
	FIRE ALARM ANNUNCIATOR
	STROBE TO BE REPLACED WITH HORN AND STROBE
	HORN/STROBE WALL MOUNT
 CLASS 1, DIV. 1	HORN/STROBE WALL MOUNT (SEPARATE RATED UNITS)
	MANUAL PULL STATION
	PULL STATION WEATHERPROOF BACK BOX
	EXPLOSION PROOF PULL STATION
	RELAY MODULE FOR FIRE DOOR RELEASE
	SMOKE DETECTOR
	DUCT SMOKE DETECTOR
	HEAT DETECTOR
	FLAME DETECTOR
	METHANE DETECTOR
	METHANE DETECTOR W/ YELLOW BEACON
	YELLOW STROBE LIGHT
	RED STROBE LIGHT
	AMBER STROBE LIGHT
	GREEN LIGHT
	ROLL-UP DOOR
	EMERGENCY EXHAUST FAN
	METHANE GAS SENSOR
	HYDROGEN GAS DETECTOR
	HYDROGEN AMBER BEACON
	OUTDOOR TRI-COLOR CHANGING NOTIFICATION LIGHT HYDROGEN DETECTION ALARM
	OUTDOOR TRI-COLOR CHANGING NOTIFICATION LIGHT METHANE DETECTION ALARM
	VALVE TAMPER SWITCH
	SPRINKLER WATER FLOW SWITCH

DR = RELAY MODULE FOR FIRE DOOR RELEASE
EF = EMERGENCY EXHAUST FAN
FD = FLAME DETECTOR
FS = SPRINKLER WATER FLOW SWITCH
H2D = HYDROGEN DETECTOR
HDA = HYDROGEN DETECTION ALARM
HS = HORN/STROBE
MD = METHANE DETECTOR
MDA = METHANE DETECTION ALARM
(N) = DESIGNATED NEW DEVICE. OTHERS WITHOUT (N) ARE EXISTING DEVICES.
PS = PULL STATION
RD = ROLL-UP DOOR
S = STROBE TO BE REPLACED WITH HORN AND STROBE
SD = SMOKE DETECTOR
TS = VALVE TAMPER SWITCH



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SANTA ANA, CALIFORNIA 92705
TEL: # (949) 756-8654
FAX: # (949) 502-0777

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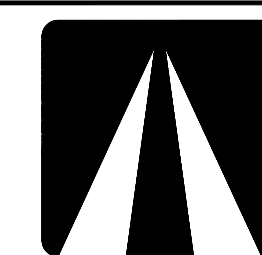
ALARM AND DETECTION SYSTEM ARCHITECTURE DIAGRAM

Project
FIRE ALARM CONTROL PANELS REPLACEMENT
AT SANTA ANA BUS BASE

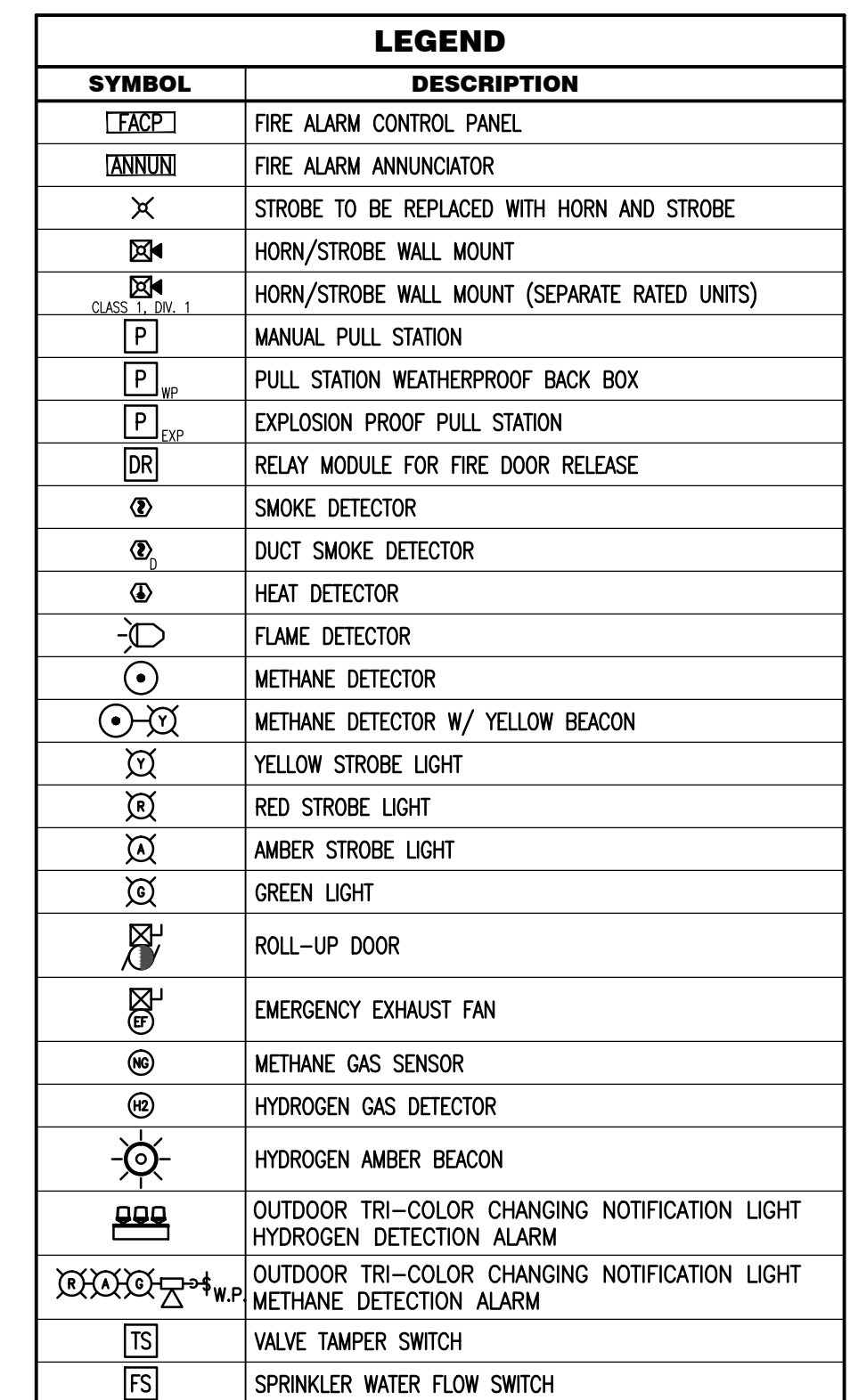
JOB #	1.21.4
DESIGN BY:	SDV
DRAWN BY:	TMP
CHECKED BY:	QV
DATE	02-09-2022
SCALE	AS NOTED
SHEET	

SA-FA-20.2

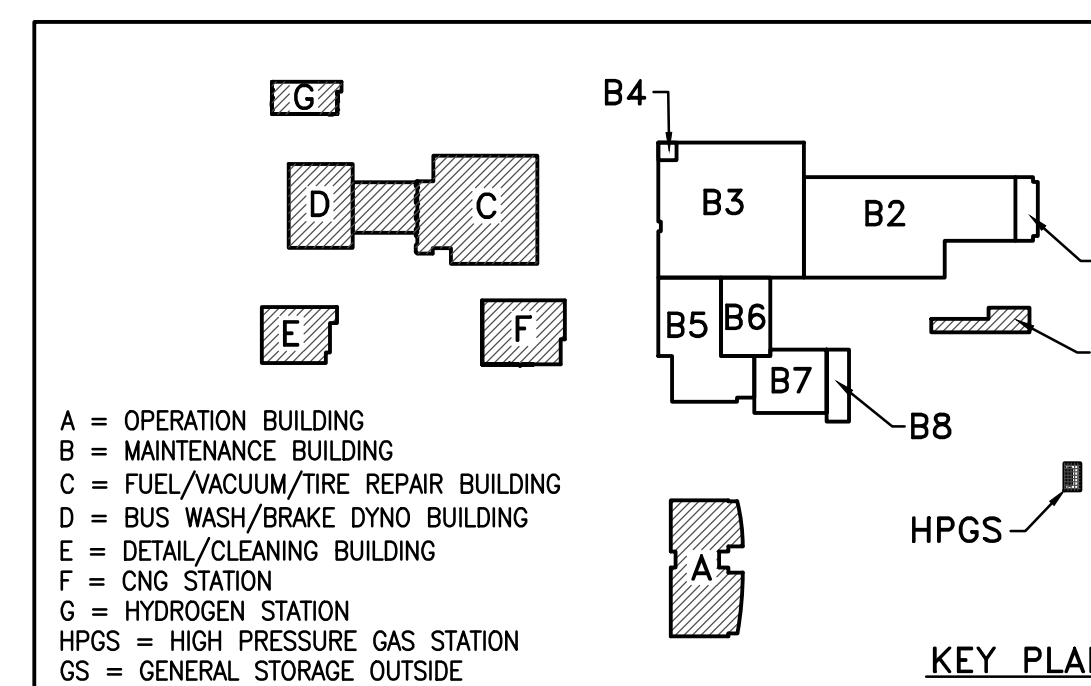
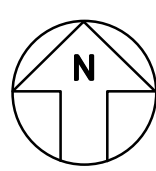
550 South Main Street
Orange, CA 92668
714/560/OCTA



OCTA



DR	=	RELAY MODULE FOR FIRE DOOR RELEASE
EF	=	EMERGENCY EXHAUST FAN
FD	=	FLAME DETECTOR
FS	=	SPRINKLER WATER FLOW SWITCH
H2D	=	HYDROGEN DETECTOR
HDA	=	HYDROGEN DETECTION ALARM
HS	=	HORN/STROBE
MD	=	METHANE DETECTOR
MDA	=	METHANE DETECTION ALARM
(N)	=	DESIGNATED NEW DEVICE. OTHERS WITHOUT (N) ARE EXISTING DEVICES.
PS	=	PULL STATION
RD	=	ROLL-UP DOOR
S	=	STROBE TO BE REPLACED WITH HORN AND STROBE
SD	=	SMOKE DETECTOR
TS	=	VALVE TAMPER SWITCH



KEY PLAN

SCALE	1
NONE	

NEW FIRE ALARM INITIATING RISER DIAGRAM – FACP-2, FACP-3, ANNUNCIATOR-2 AND ANNUNCIATOR-3

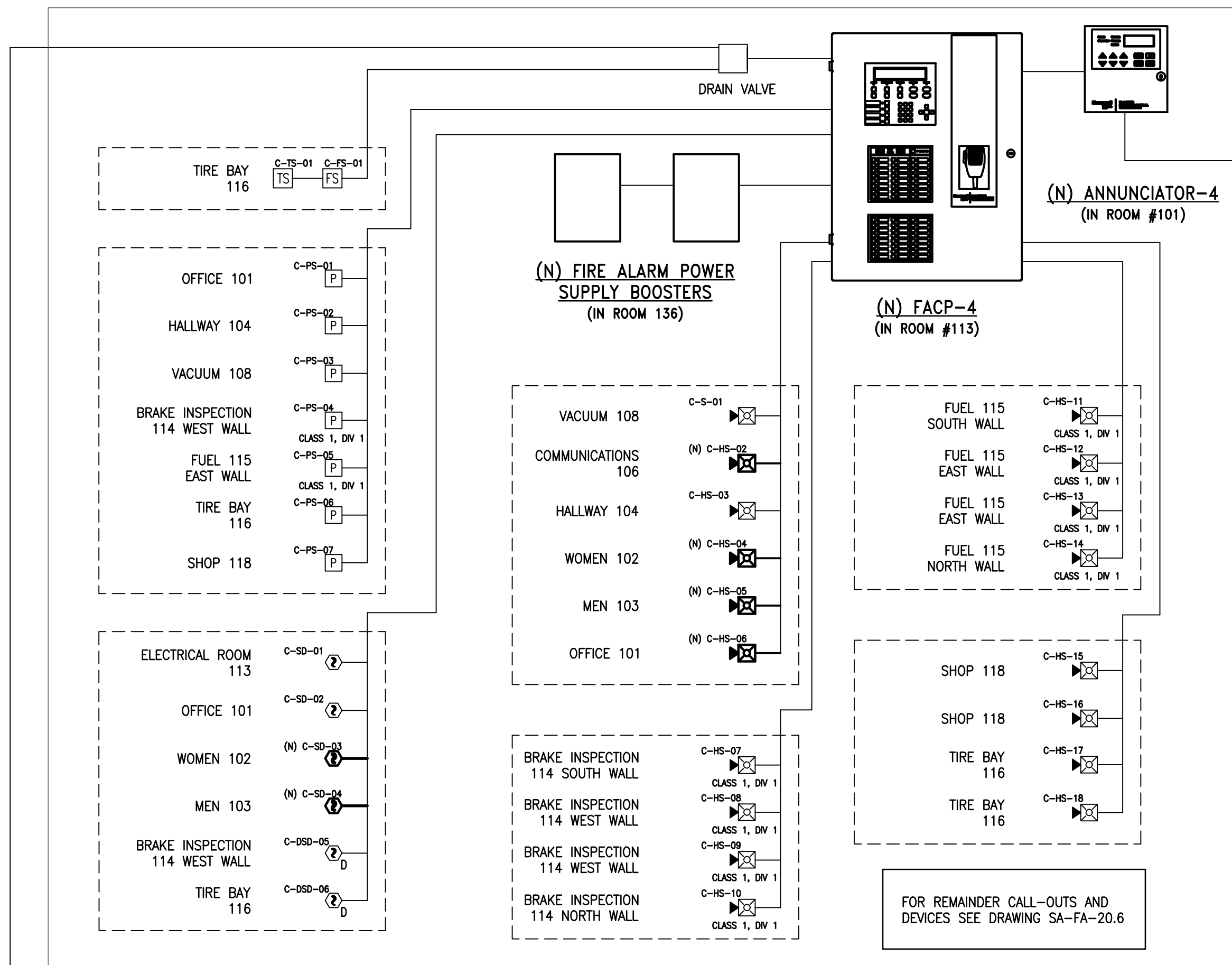
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ject
FIRE ALARM CONTROL PANELS REPLACEMENT
AT SANTA ANA BUS BASE

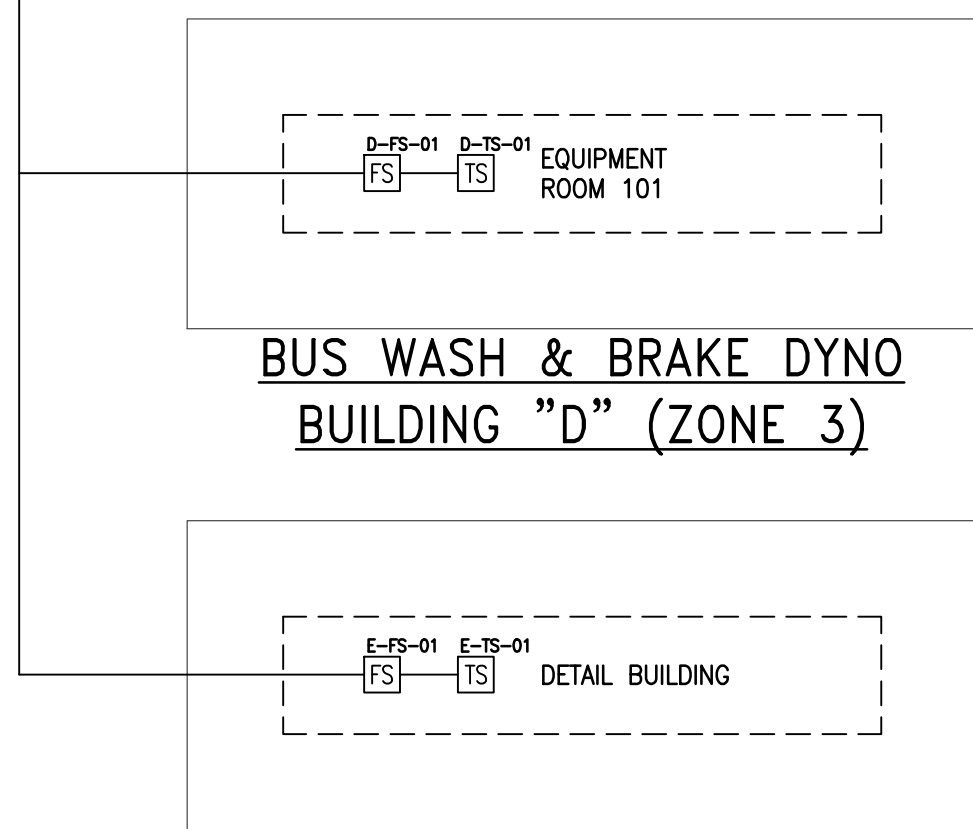
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DESIGN BY:	SDV
DRAWN BY:	TMP
CHECKED BY:	QV
DATE	02-09-2022
SCALE	AS NOTED
SHEET	SA-FA-20.4

550 South Main Street
Orange, CA 92668
714/560/OCTA

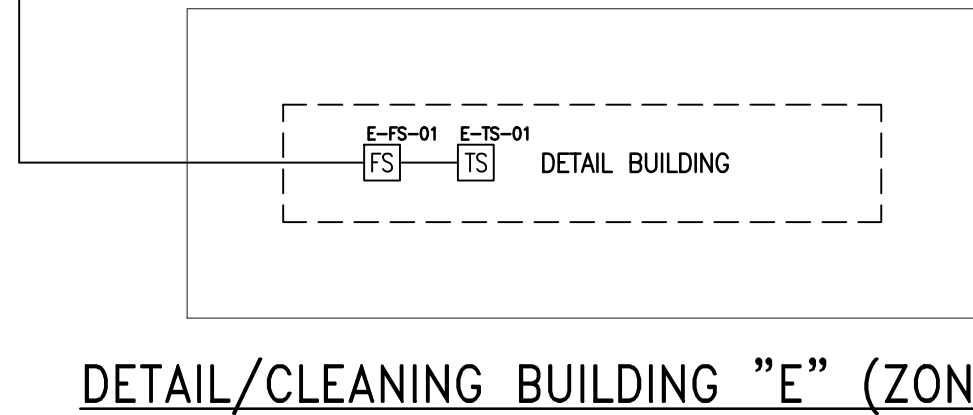




FUEL/VACUUM/TIRE REPAIR BUILDING "C" (ZONE 2)



BUS WASH & BRAKE DYNO BUILDING "D" (ZONE 3)



DETAIL/CLEANING BUILDING "E" (ZONE 4)

LEGEND	
SYMBOL	DESCRIPTION
[FACP]	FIRE ALARM CONTROL PANEL
[ANNUNCIATOR]	FIRE ALARM ANNUNCIATOR
[X]	STROBE TO BE REPLACED WITH HORN AND STROBE
[HORN]	HORN/STROBE WALL MOUNT
[HORN]	HORN/STROBE WALL MOUNT (SEPARATE RATED UNITS)
[P]	MANUAL PULL STATION
[P]	PULL STATION WEATHERPROOF BACK BOX
[P]	EXPLOSION PROOF PULL STATION
[DR]	RELAY MODULE FOR FIRE DOOR RELEASE
[SD]	SMOKE DETECTOR
[SD]	DUCT SMOKE DETECTOR
[SD]	HEAT DETECTOR
[SD]	FLAME DETECTOR
[SD]	METHANE DETECTOR
[SD]	METHANE DETECTOR W/ YELLOW BEACON
[SD]	YELLOW STROBE LIGHT
[SD]	RED STROBE LIGHT
[SD]	AMBER STROBE LIGHT
[SD]	GREEN LIGHT
[SD]	ROLL-UP DOOR
[SD]	EMERGENCY EXHAUST FAN
[SD]	METHANE GAS SENSOR
[SD]	HYDROGEN GAS DETECTOR
[SD]	HYDROGEN AMBER BEACON
[SD]	OUTDOOR TRI-COLOR CHANGING NOTIFICATION LIGHT
[SD]	OUTDOOR TRI-COLOR CHANGING NOTIFICATION LIGHT
[SD]	METHANE DETECTION ALARM
[SD]	VALVE TAMPER SWITCH
[SD]	SPRINKLER WATER FLOW SWITCH

- DR = RELAY MODULE FOR FIRE DOOR RELEASE
EF = EMERGENCY EXHAUST FAN
FD = FLAME DETECTOR
FS = SPRINKLER WATER FLOW SWITCH
H2D = HYDROGEN DETECTOR
HDA = HYDROGEN DETECTION ALARM
HS = HORN/STROBE
MD = METHANE DETECTOR
MDA = METHANE DETECTION ALARM
(N) = DESIGNATED NEW DEVICE. OTHERS WITHOUT (N) ARE EXISTING DEVICES.
PS = PULL STATION
RD = ROLL-UP DOOR
S = STROBE TO BE REPLACED WITH HORN AND STROBE
SD = SMOKE DETECTOR
TS = VALVE TAMPER SWITCH

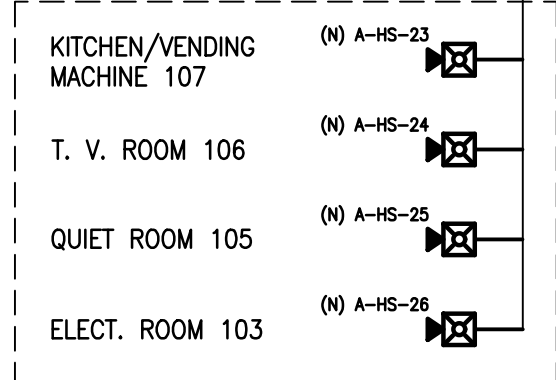
TO BUILDING B

(N) ANNUNCIATOR-1
(IN LOBBY #101)

(N) FACP-1
(IN DISPATCH ROOM #125)

(N) FIRE ALARM POWER
SUPPLY BOOSTER
(IN ROOM 136)

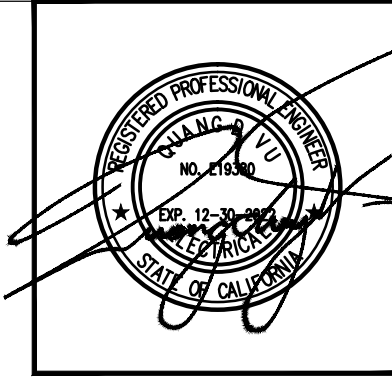
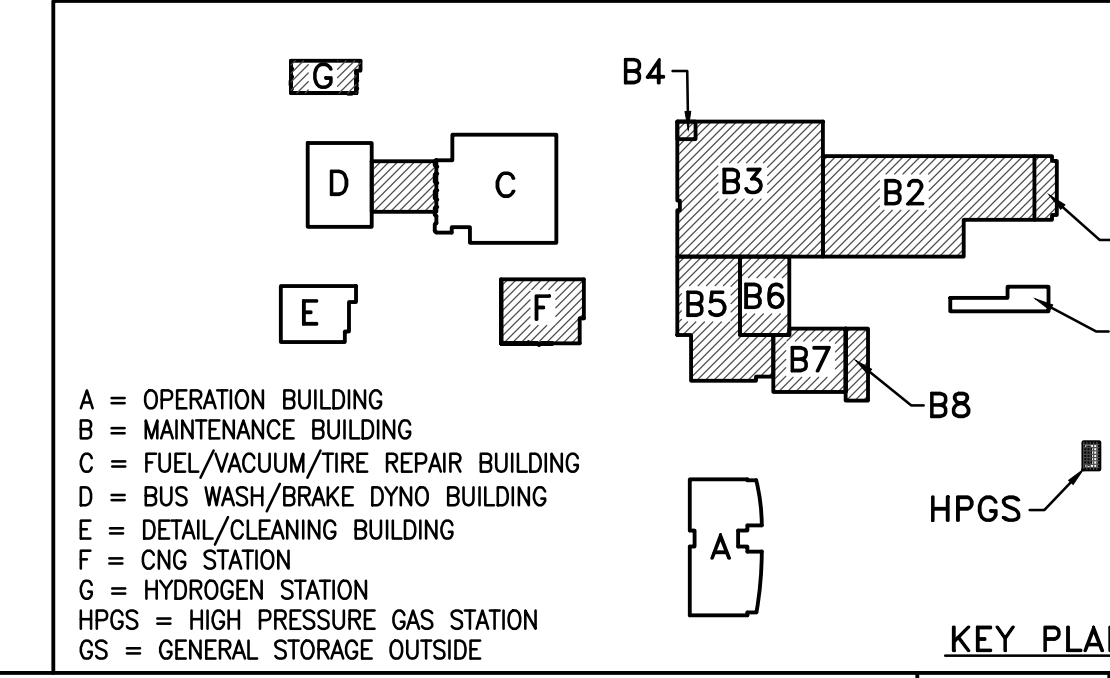
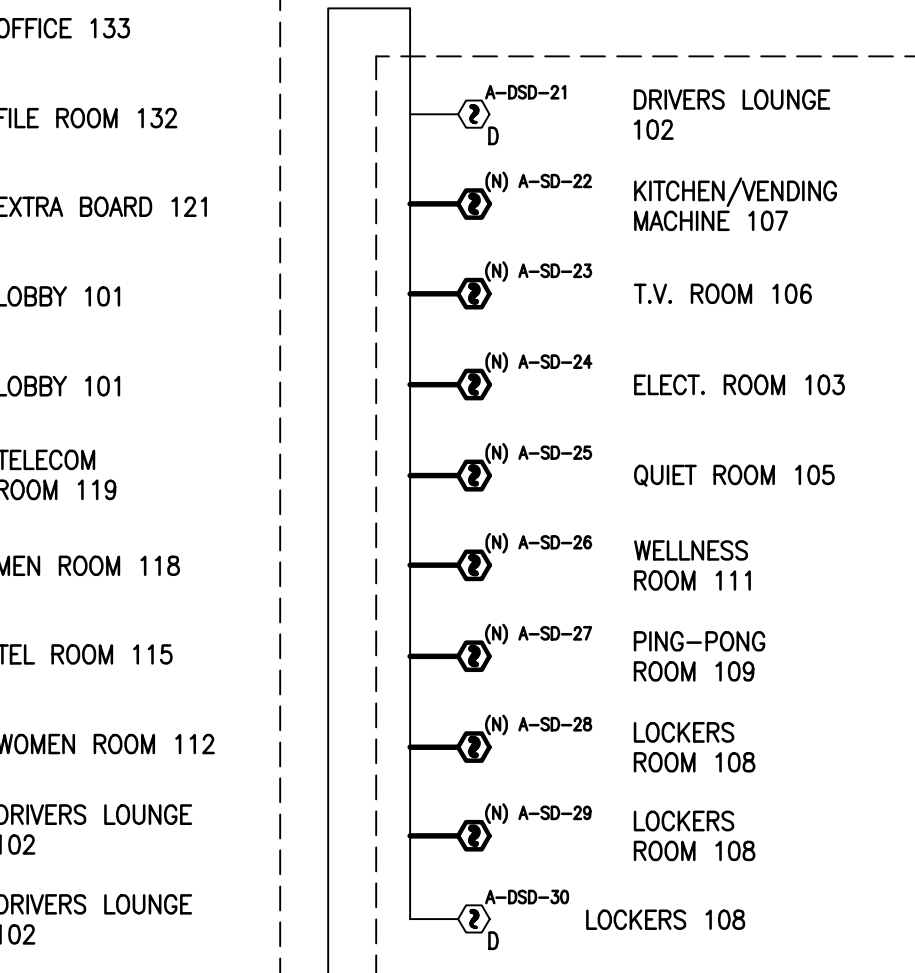
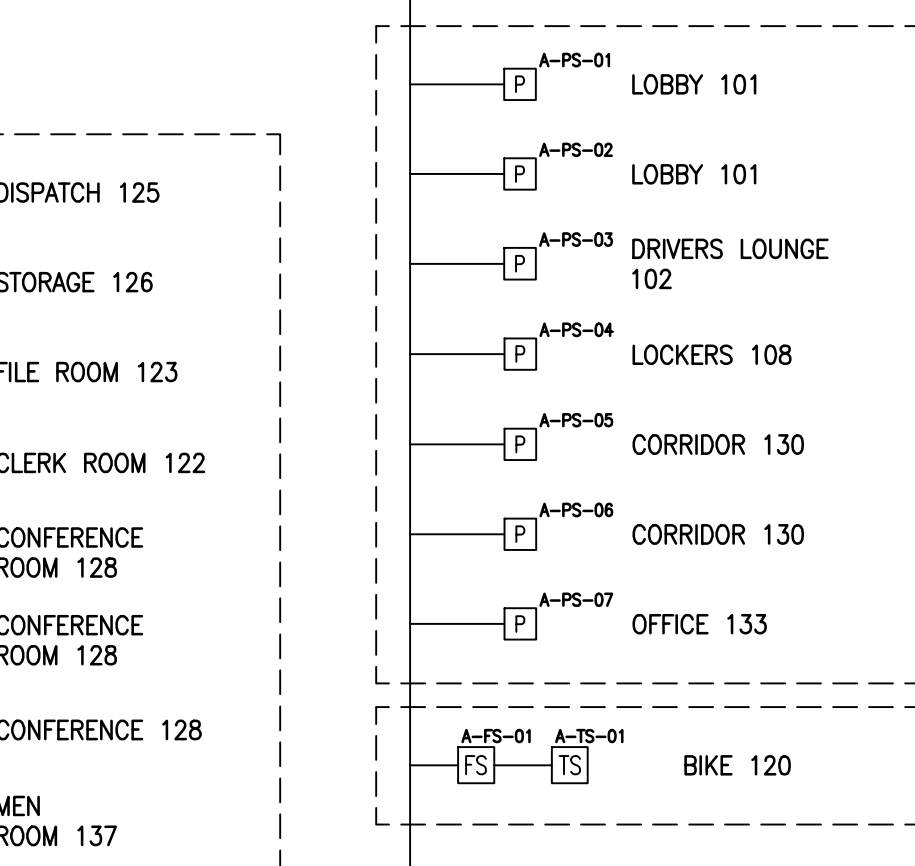
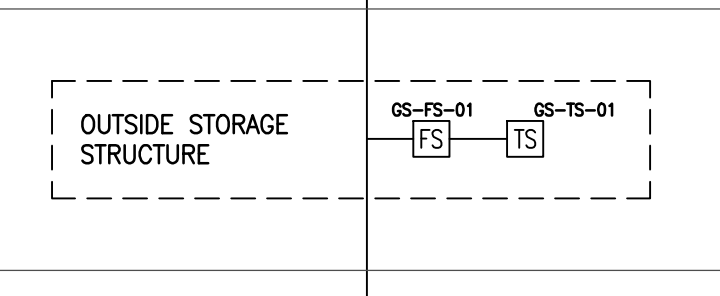
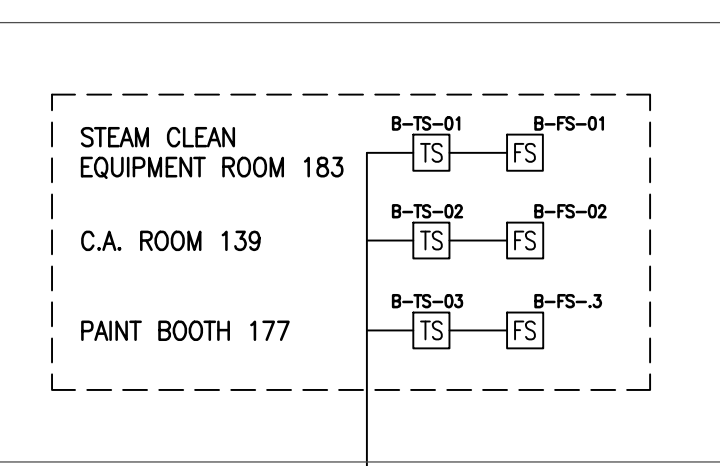
(N) FIRE ALARM POWER
SUPPLY BOOSTER
(IN ROOM 136)



OPERATIONS BUILDING "A"

MAINTENANCE BUILDING "B"
(ZONE 1)

GS



DAHL, TAYLOR & ASSOCIATES
CONSULTING ENGINEERS
2860 DAMLER STREET
SANTA ANA, CALIFORNIA 92705
TEL: # (949) 756-8654
FAX: # (949) 502-0777

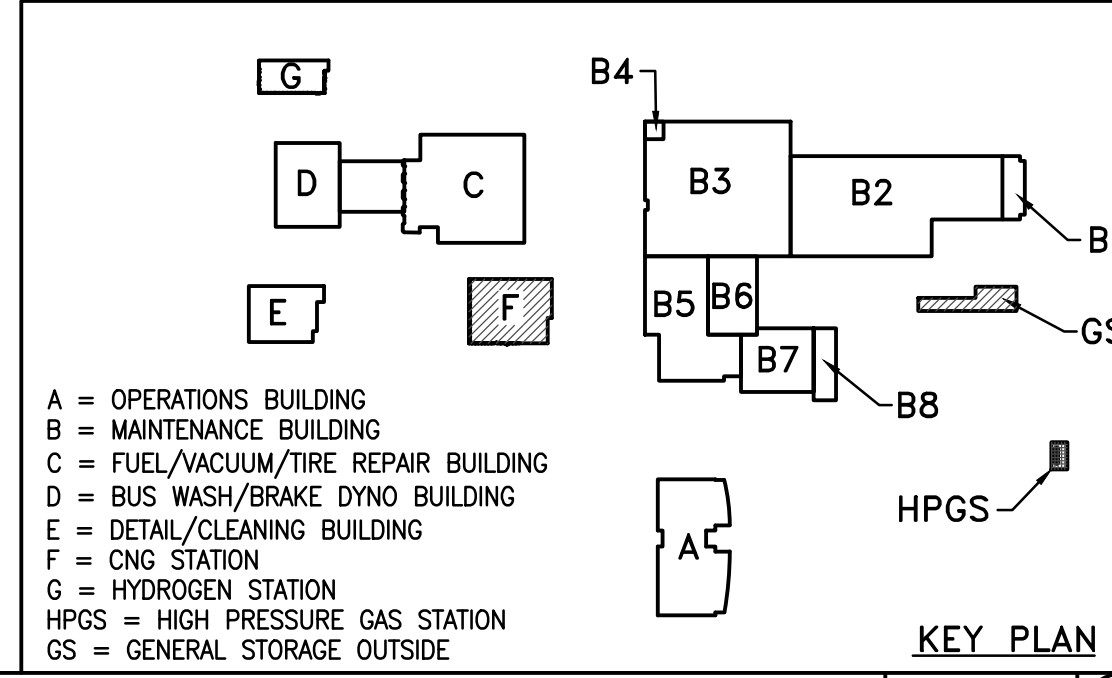
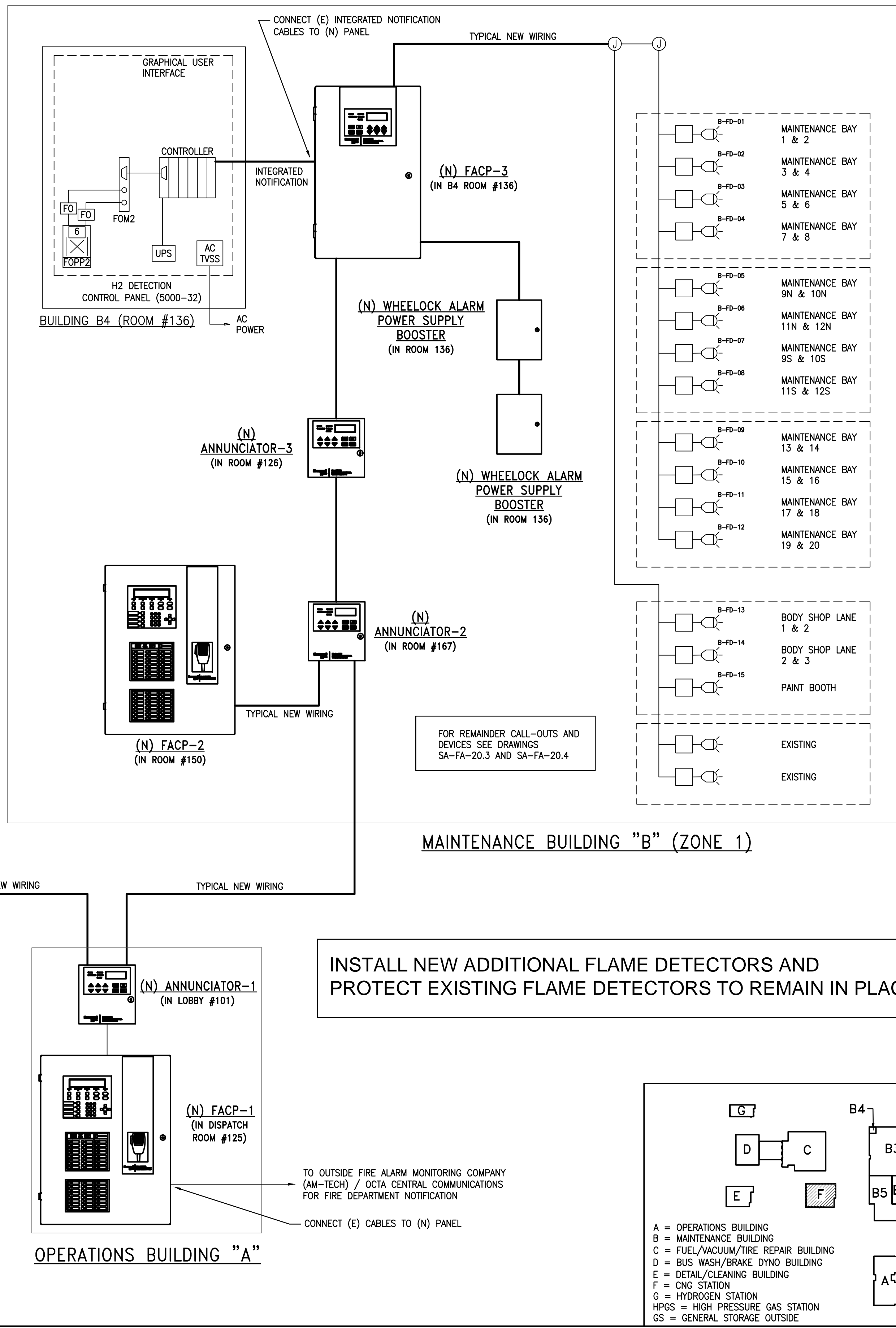
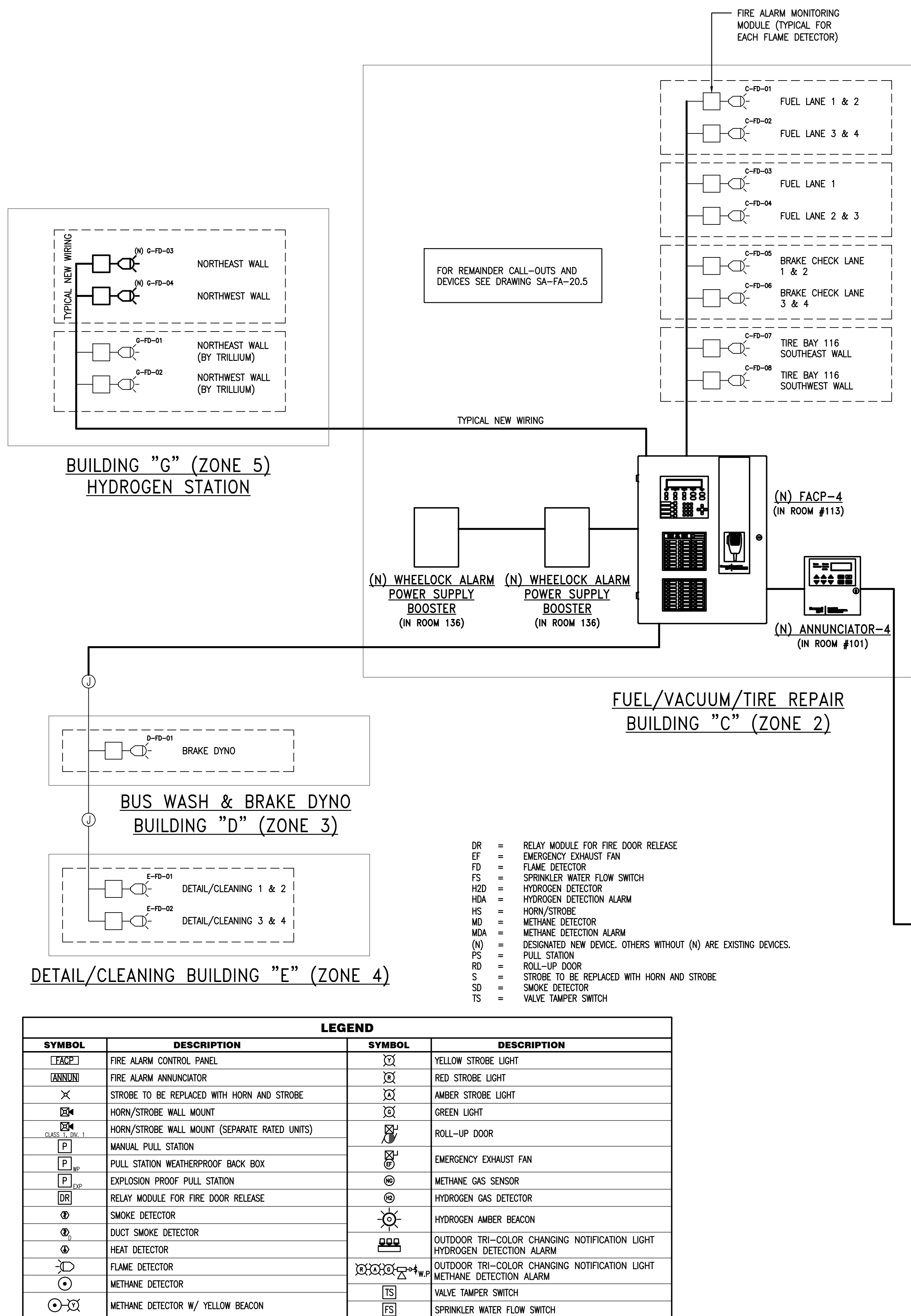
NO.	DATE	BY	REVISIONS
1	02-09-2022	QV	AS NOTED

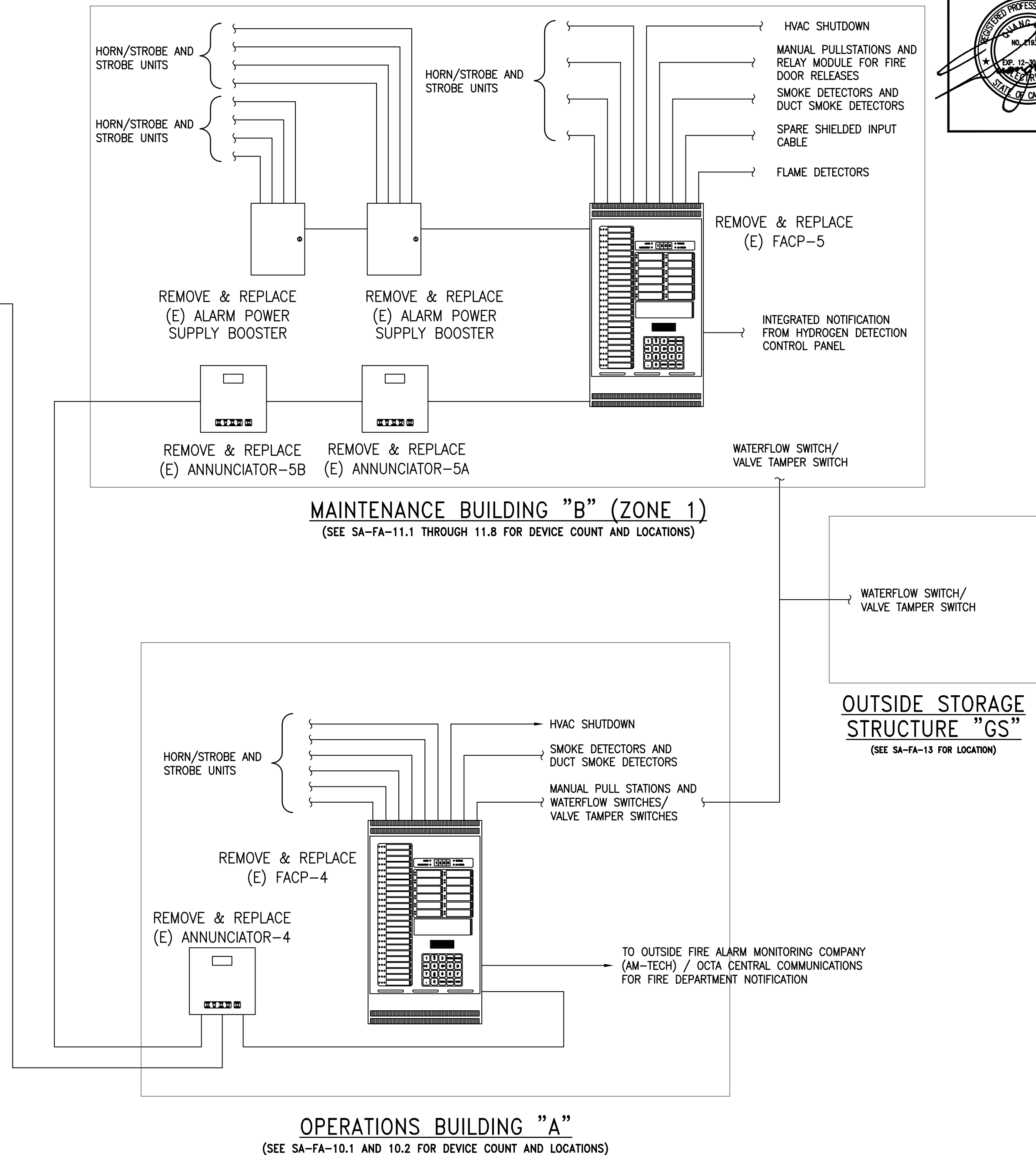
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NEW FIRE INITIATING AND NOTIFICATION RISER DIAGRAM
FACP-1, ANNUNCIATOR-1, FACP-4, AND ANNUNCIATOR-4
Project
FIRE ALARM CONTROL PANELS REPLACEMENT
AT SANTA ANA BUS BASE

JOB # 1.21.4
DESIGN BY: SDV
DRAWN BY: TMP
CHECKED BY: QV
DATE 02-09-2022
SCALE AS NOTED
SHEET SA-FA-20.5

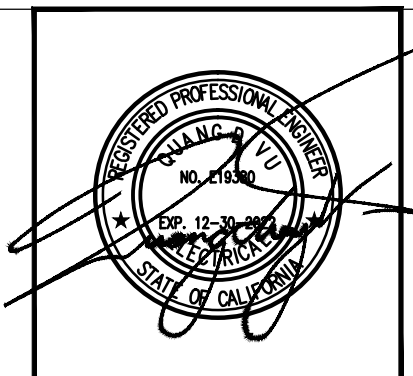
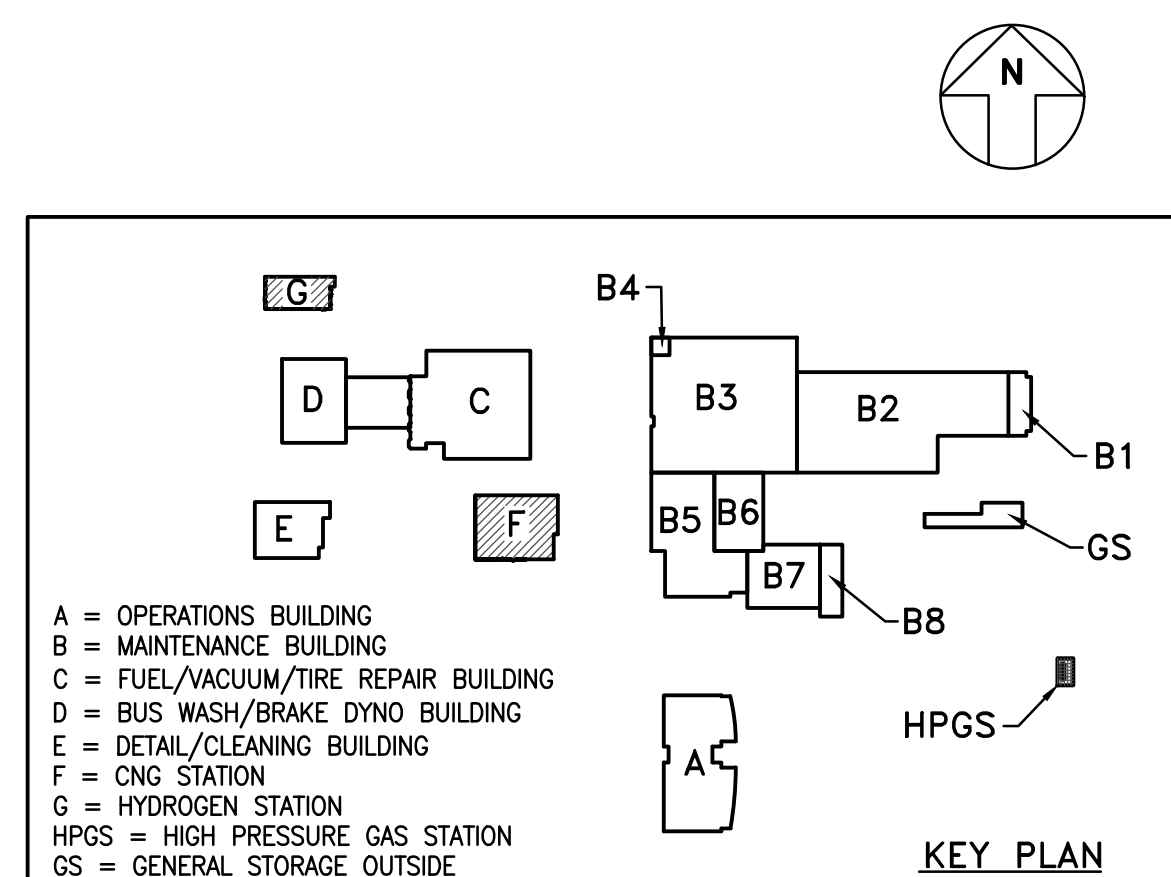
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FACP-6 (FUEL / VACUUM / BRAKE INSPECTION / TIRE SHOP)						
	ACTIVE AUDIBLE / VISUAL ALARM	INDICATE ALARM CONDITION AT FACP-6, ANNUN-4, 5A, 5B & 6	INDICATE SUPERVISORY CONDITION AT FACP-6, ANNUN-4, 5A, 5B & 6	INDICATE TROUBLE CONDITION AT FACP-5, ANNUN-4, 5A, 5B & 6	SHUT DOWN ASSOCIATED AIR HANDLER	TRANSMIT SIGNAL TO OFFSITE MONITORING LOCATION
WATERFLOW SWITCH	●	●				●
SMOKE DETECTOR	●					●
DUCT SMOKE DETECTOR	●				●	●
VALVE TAMPER SWITCH			●			
FACP TROUBLE				●		
WATERFLOR SWITCH - BUS WASH		●				●
WATERFLOW SWITCH - DETAIL/CLEANING		●				●
FLAME DETECTOR	●	●				●



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 2960 DAIMLER STREET
 SANTA ANA, CALIFORNIA 92705
 TEL: # (949) 756-8654
 FAX: # (949) 502-0777

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Sheet Title
EXISTING FIRE ALARM SYSTEM ARCHITECTURE DIAGRAM AND OPERATIONAL MATRIX

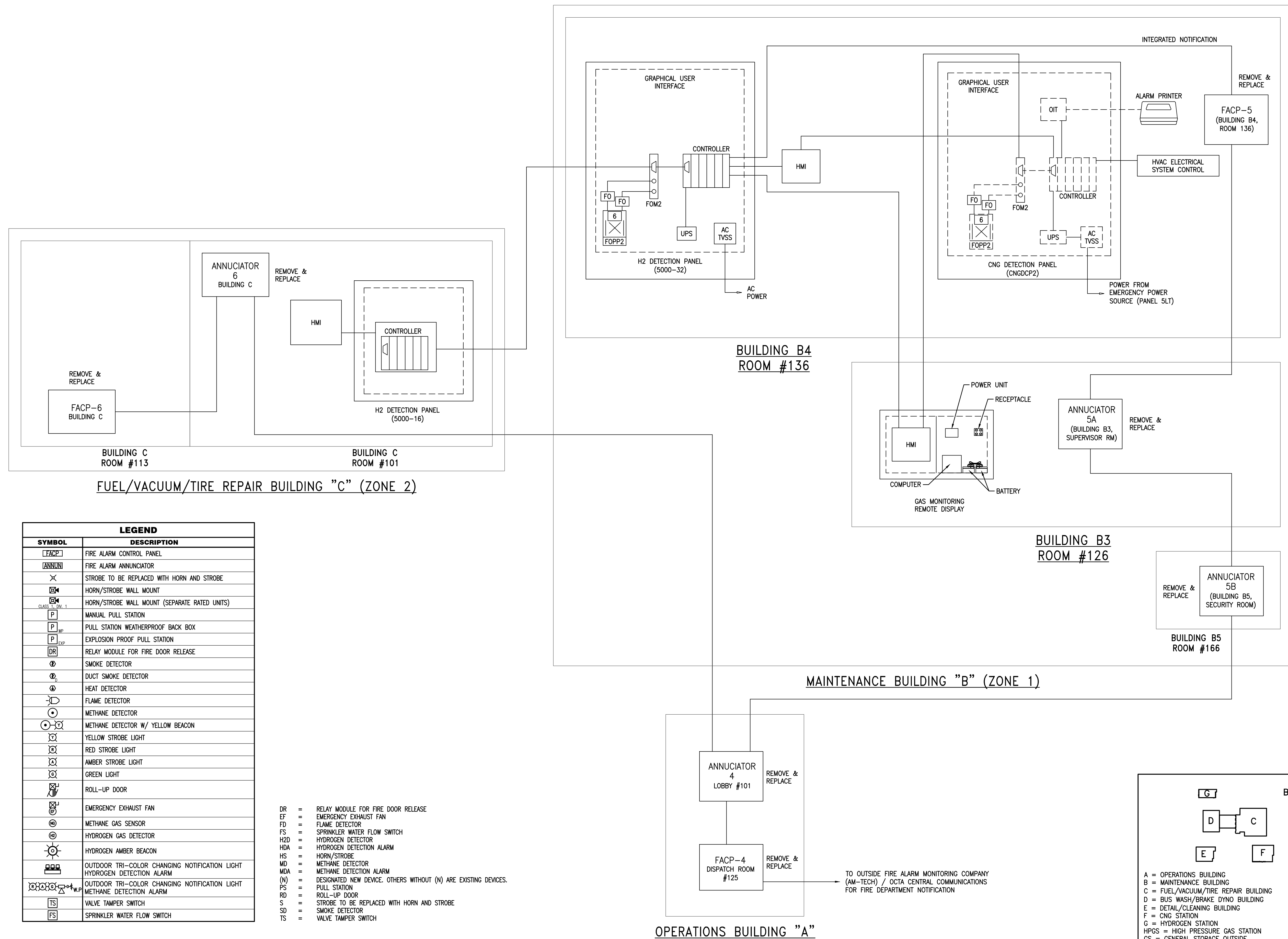
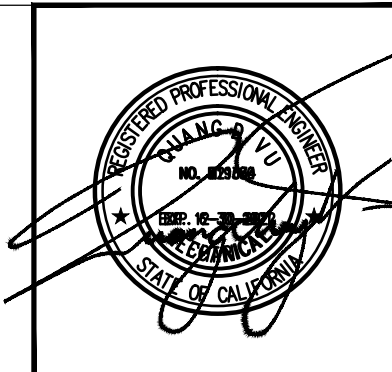
Project
FIRE ALARM CONTROL PANELS REPLACEMENT
AT SANTA ANA BUS BASE

JOB #	1.21.4
DESIGN BY:	SDV
DRAWN BY:	TMP
CHECKED BY:	QV
DATE	02-09-2022
SCALE	AS NOTED
SHEET	

SA-FA-21.1

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714/560/OCTA





Sheet Title	EXISTING ALARM AND DETECTION SYSTEM ARCHITECTURE DIAGRAM - FIRE ALARM, HYDROGEN & METHANE GAS DETECTION SYSTEMS
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JOB #	1.21.4
DESIGN BY:	SDV
DRAWN BY:	TMP
CHECKED BY:	QV
DATE	02-09-2022
SCALE	AS NOTED
SHEET	

SA-FA-21.2

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714/560/OCTA



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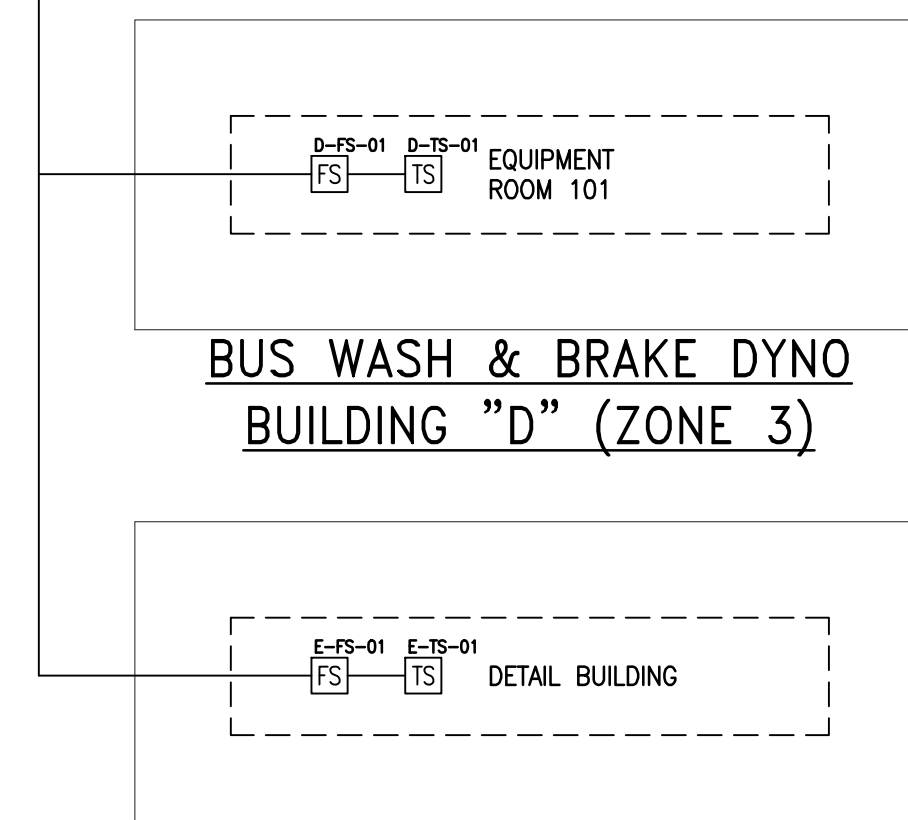
Sheet Title
EXISTING FIRE ALARM INITIATING AND NOTIFICATION RISER DIAGRAM
FACP-4, FACP-6, ANNUNCIATOR-4 AND ANNUNCIATOR-6

Project
FIRE ALARM CONTROL PANELS REPLACEMENT
AT SANTA ANA BUS BASE

JOB #	1.21.4
DESIGN BY:	SDV
DRAWN BY:	TMP
CHECKED BY:	QV
DATE	02-09-2022
SCALE	AS NOTED
SHEET	

SA-FA-21.3

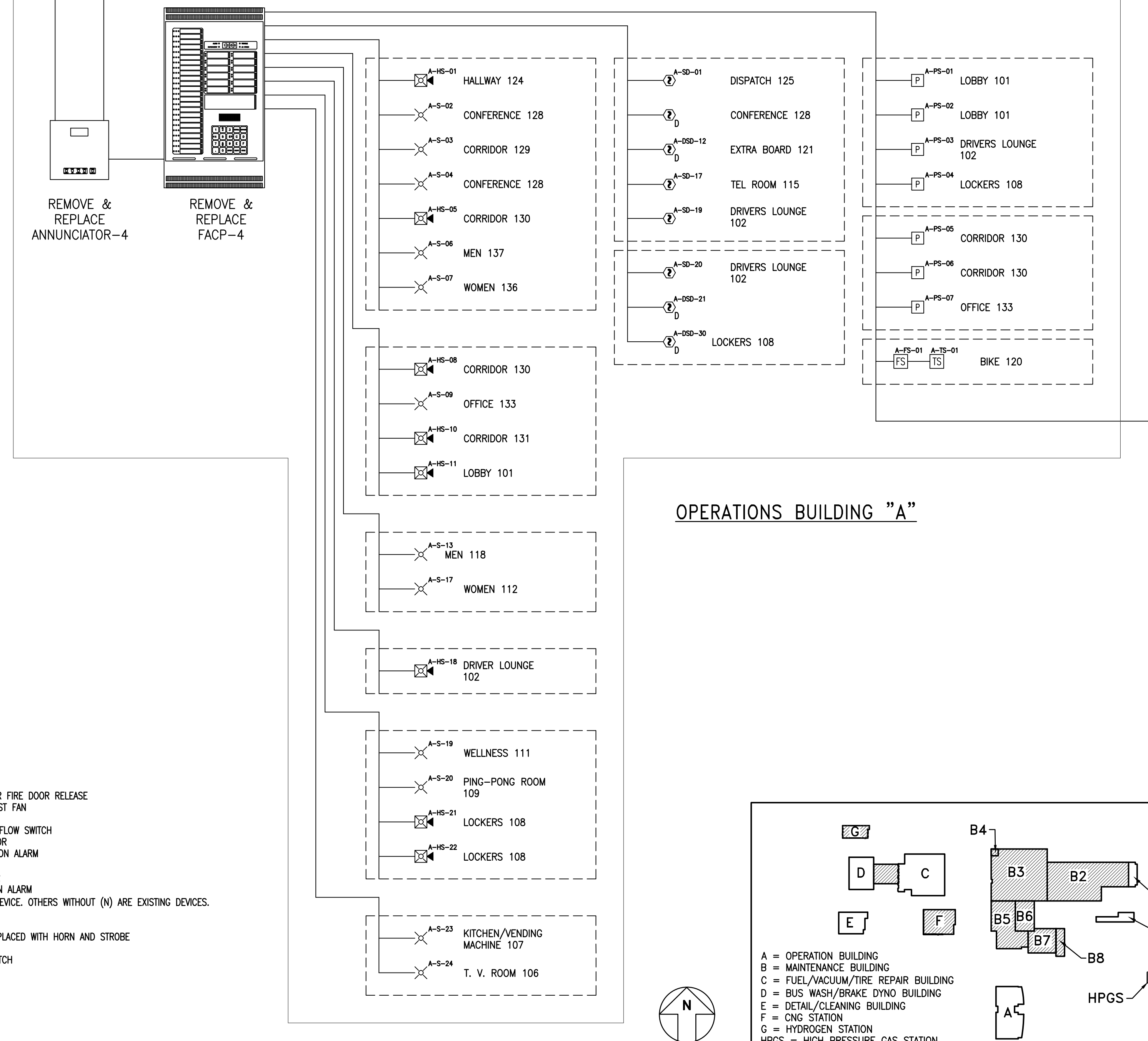
550 South Main Street
Orange, CA 92668
714/560/OCTA



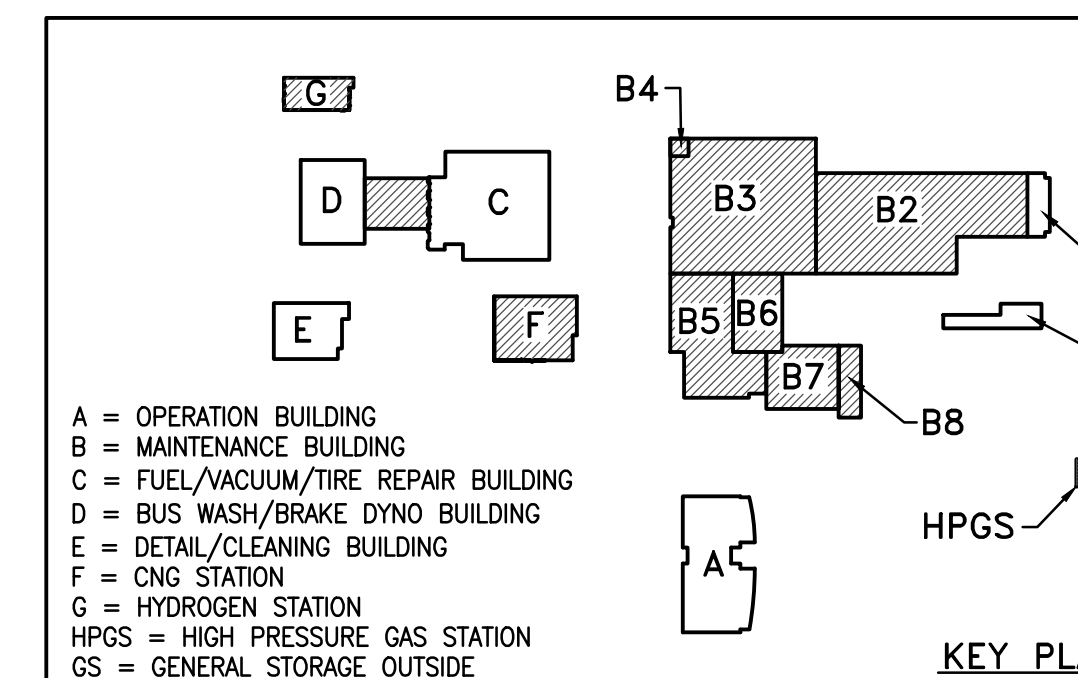
DETAIL/CLEANING BUILDING "E" (ZONE 4)

LEGEND	
SYMBOL	DESCRIPTION
	FIRE ALARM CONTROL PANEL
	FIRE ALARM ANNUNCIATOR
	STROBE TO BE REPLACED WITH HORN AND STROBE
	HORN/STROBE WALL MOUNT
	HORN/STROBE WALL MOUNT (SEPARATE RATED UNITS)
	MANUAL PULL STATION
	PULL STATION WEATHERPROOF BACK BOX
	EXPLOSION PROOF PULL STATION
	RELAY MODULE FOR FIRE DOOR RELEASE
	SMOKE DETECTOR
	DUCT SMOKE DETECTOR
	HEAT DETECTOR
	FLAME DETECTOR
	METHANE DETECTOR
	METHANE DETECTOR W/ YELLOW BEACON
	YELLOW STROBE LIGHT
	RED STROBE LIGHT
	AMBER STROBE LIGHT
	GREEN LIGHT
	ROLL-UP DOOR
	EMERGENCY EXHAUST FAN
	METHANE GAS SENSOR
	HYDROGEN GAS DETECTOR
	HYDROGEN AMBER BEACON
	OUTDOOR TRI-COLOR CHANGING NOTIFICATION LIGHT
	HYDROGEN DETECTION ALARM
	OUTDOOR TRI-COLOR CHANGING NOTIFICATION LIGHT
	METHANE DETECTION ALARM
	VALVE TAMPER SWITCH
	SPRINKLER WATER FLOW SWITCH

DR = RELAY MODULE FOR FIRE DOOR RELEASE
EF = EMERGENCY EXHAUST FAN
FD = FLAME DETECTOR
FS = SPRINKLER WATER FLOW SWITCH
H2D = HYDROGEN DETECTOR
HDA = HYDROGEN DETECTION ALARM
HS = HORN/STROBE
MD = METHANE DETECTOR
MDA = METHANE DETECTION ALARM
(N) = DESIGNATED NEW DEVICE. OTHERS WITHOUT (N) ARE EXISTING DEVICES.
PS = PULL STATION
RD = ROLL-UP DOOR
S = STROBE TO BE REPLACED WITH HORN AND STROBE
SD = SMOKE DETECTOR
TS = VALVE TAMPER SWITCH



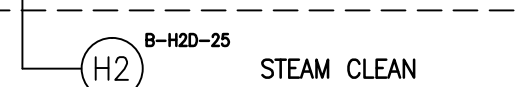
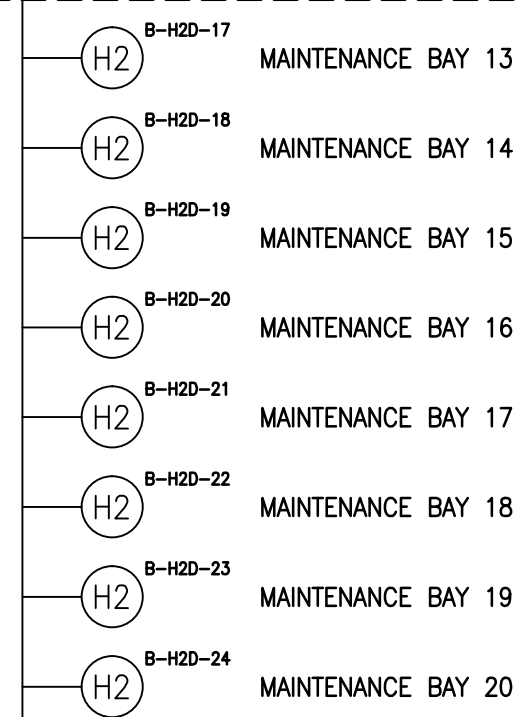
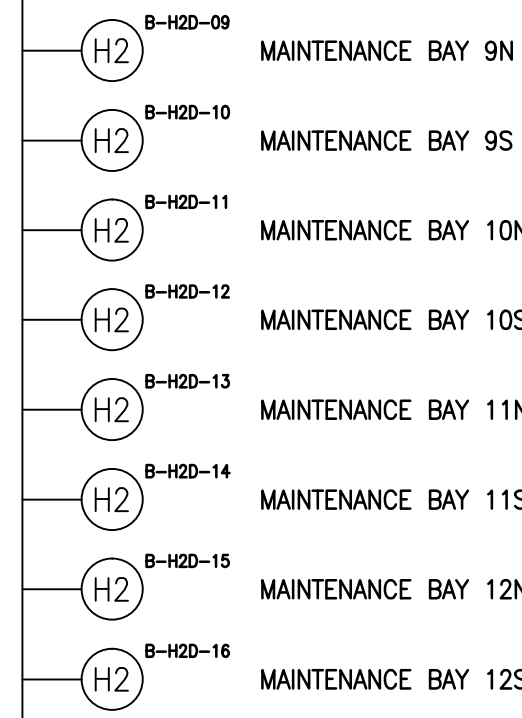
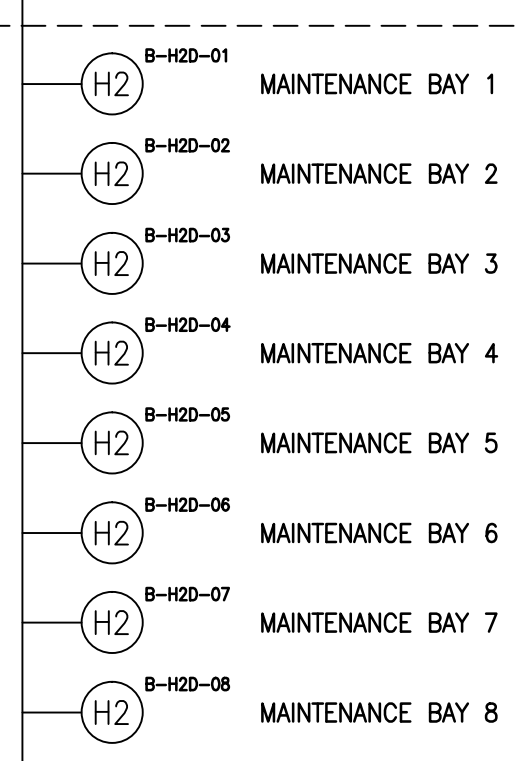
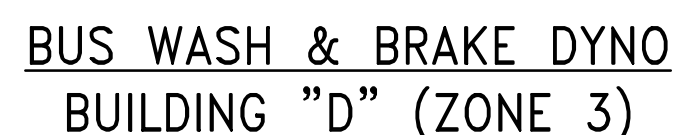
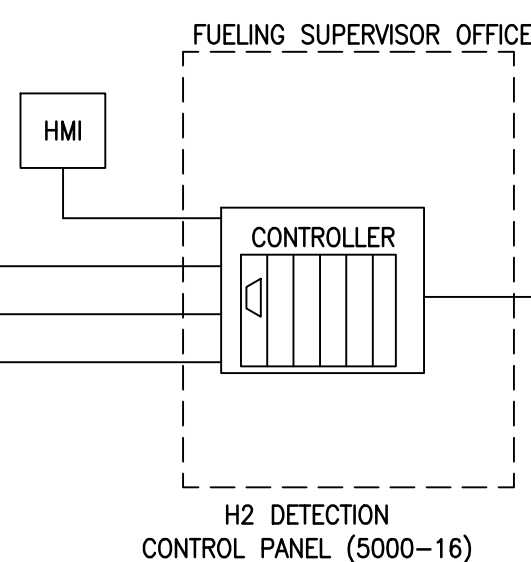
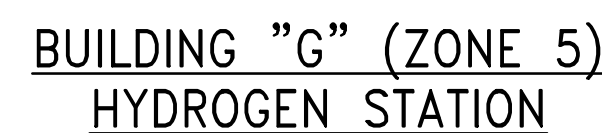
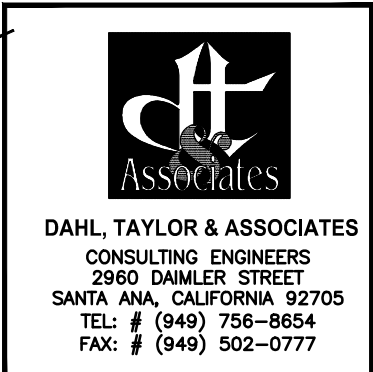
OPERATIONS BUILDING "A"



A = OPERATION BUILDING
B = MAINTENANCE BUILDING
C = FUEL/VACUUM/TIRE REPAIR BUILDING
D = BUS WASH/BRAKE DYNO BUILDING
E = DETAIL/CLEANING BUILDING
F = CNG STATION
G = HYDROGEN STATION
HPGS = HIGH PRESSURE GAS STATION
GS = GENERAL STORAGE OUTSIDE































KEY PLAN

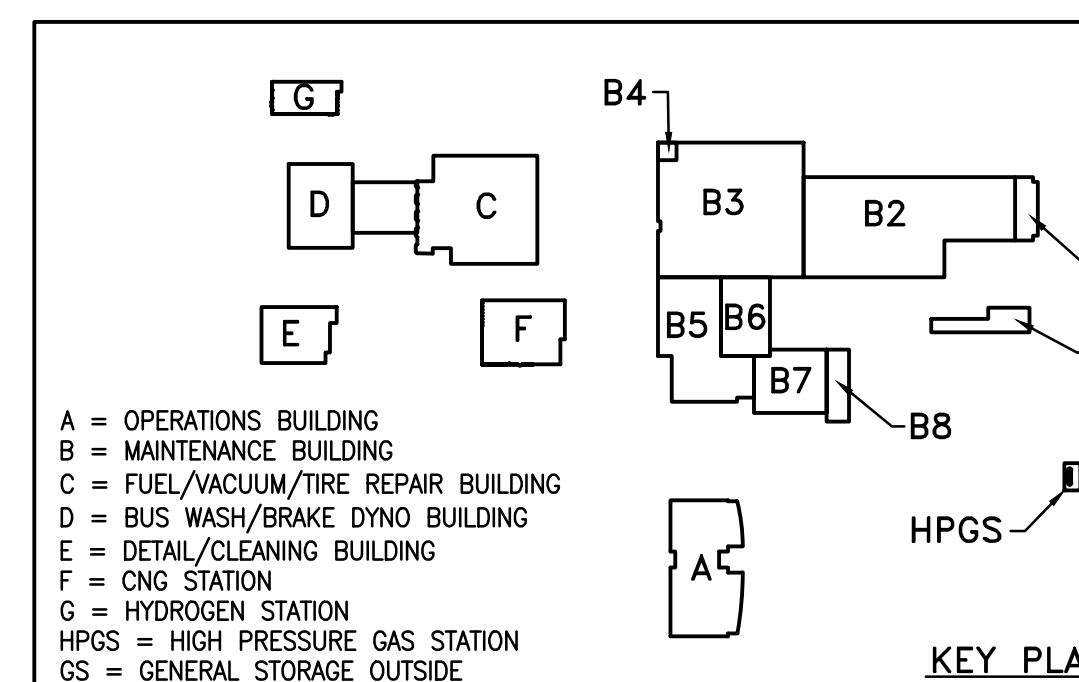
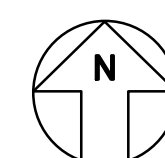
SCALE	C
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MAINTENANCE BUILDING "B" (ZONE 1)

- | | | |
|-----|---|--------------------------------------------|
| DR | = | RELAY MODULE FOR FIRE DOOR RELEASE |
| EF | = | EXHAUST FAN |
| FD | = | FLAME DETECTOR |
| F | = | SPRINKLER WATER FLOW SWITCH |
| H2D | = | HYDROGEN DETECTOR |
| HDA | = | HYDROGEN DETECTION ALARM |
| HS | = | HORN/STROBE |
| MD | = | METHANE DETECTOR |
| MDA | = | METHANE DETECTION ALARM |
| PS | = | PULL STATION |
| RD | = | ROB UP DOOR |
| S | = | STROBE TO BE REPLACED WITH HORN AND STROBE |
| SD | = | SMOKE DETECTOR |
| TS | = | VALVE TAMPER SWITCH |

LEGEND	
SYMBOL	DESCRIPTION
	FIRE ALARM CONTROL PANEL
	FIRE ALARM ANNUNCIATOR
	STROBE TO BE REPLACED WITH HORN AND STROBE
	HORN/STROBE WALL MOUNT
	HORN/STROBE WALL MOUNT (SEPARATE RATED UNITS)
	MANUAL PULL STATION
	PULL STATION WEATHERPROOF BACK BOX
	EXPLOSION PROOF PULL STATION
	RELAY MODULE FOR FIRE DOOR RELEASE
	SMOKE DETECTOR
	DUCT SMOKE DETECTOR
	HEAT DETECTOR
	FLAME DETECTOR
	METHANE DETECTOR
	METHANE DETECTOR W/ YELLOW BEACON
	YELLOW STROBE LIGHT
	RED STROBE LIGHT
	AMBER STROBE LIGHT
	GREEN LIGHT
	ROLL-UP DOOR
	EMERGENCY EXHAUST FAN
	METHANE GAS SENSOR
	HYDROGEN GAS DETECTOR
	HYDROGEN AMBER BEACON
	OUTDOOR TRI-COLOR CHANGING NOTIFICATION LIGHT
	HYDROGEN DETECTION ALARM
	OUTDOOR TRI-COLOR CHANGING NOTIFICATION LIGHT
	METHANE DETECTION ALARM
	VALVE TAMPER SWITCH
	SPRINKLER WATER FLOW SWITCH



KEY PLAN

EXISTING HYDROGEN (H2) GAS DETECTION SYSTEM RISER DIAGRAM FOR REFERENCE

SCALE	1
NONE	

EXISTING HYDROGEN GAS DETECTION SYSTEM
RISER DIAGRAM

Sheet Title

Project FIRE ALARM CONTROL PANELS REPLACEMENT AT SANTA ANA BUS BASE

JOB # 1.21.4

DESIGN BY: SDV

DRAWN BY: TMF

CHECKED BY:	QV
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DATE 02-09-

SCALE	AS	NC
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SHEET

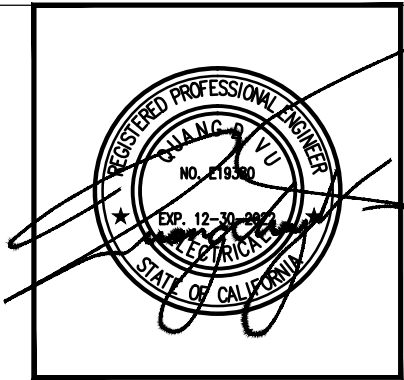
SA-FA-2

550 South Main Street

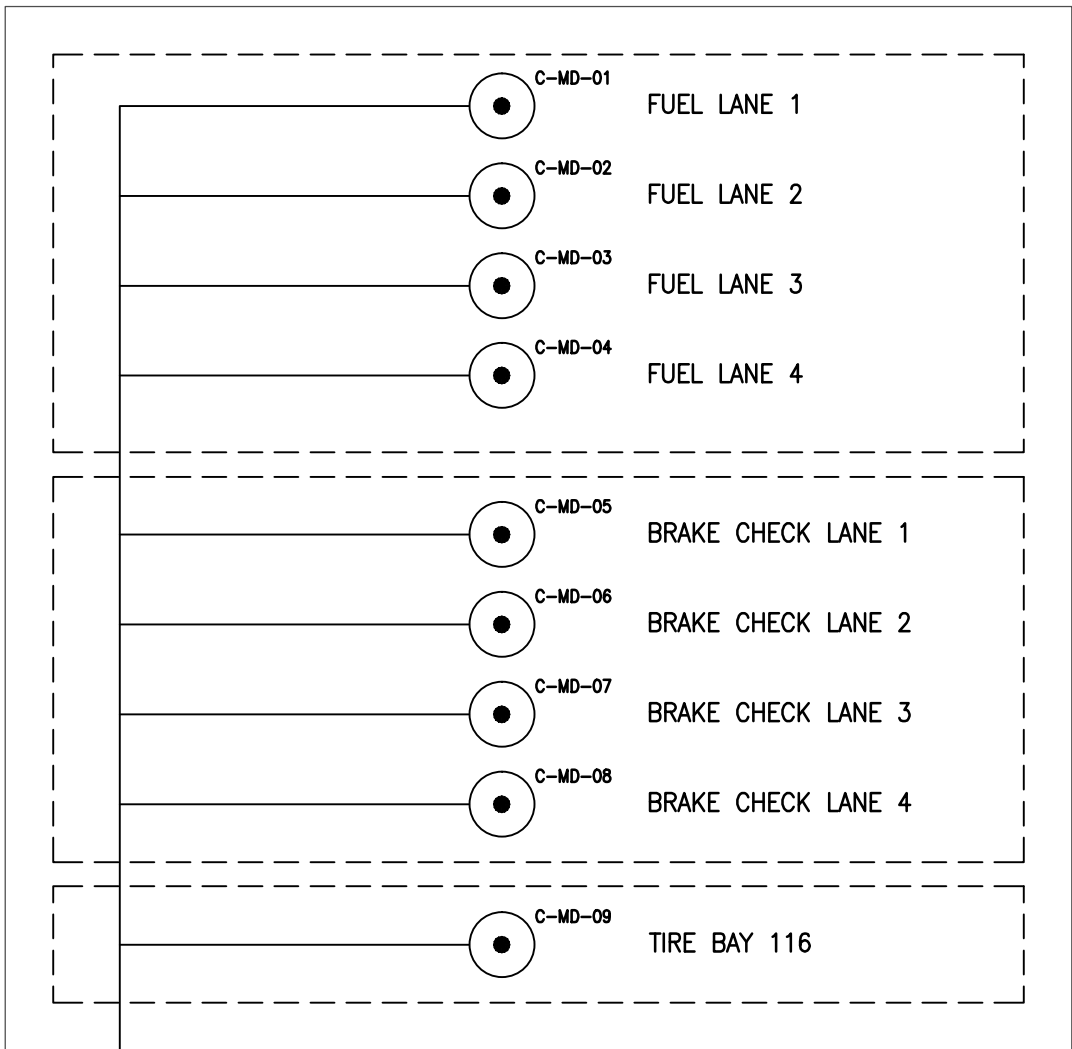
Orange, CA 92668

Orange, CA 92668

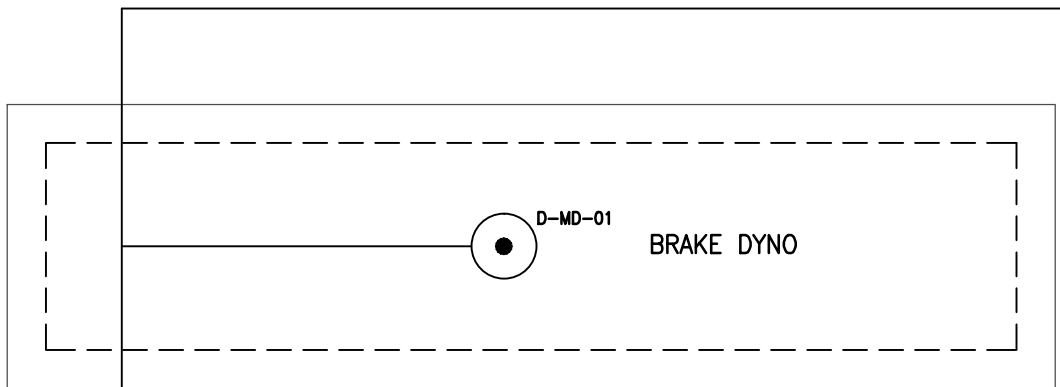




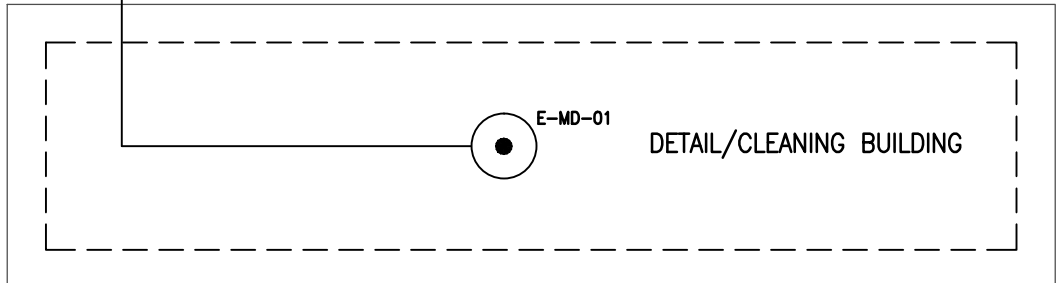
FUEL/VACUUM/TIRE REPAIR BUILDING "C" (ZONE 2)



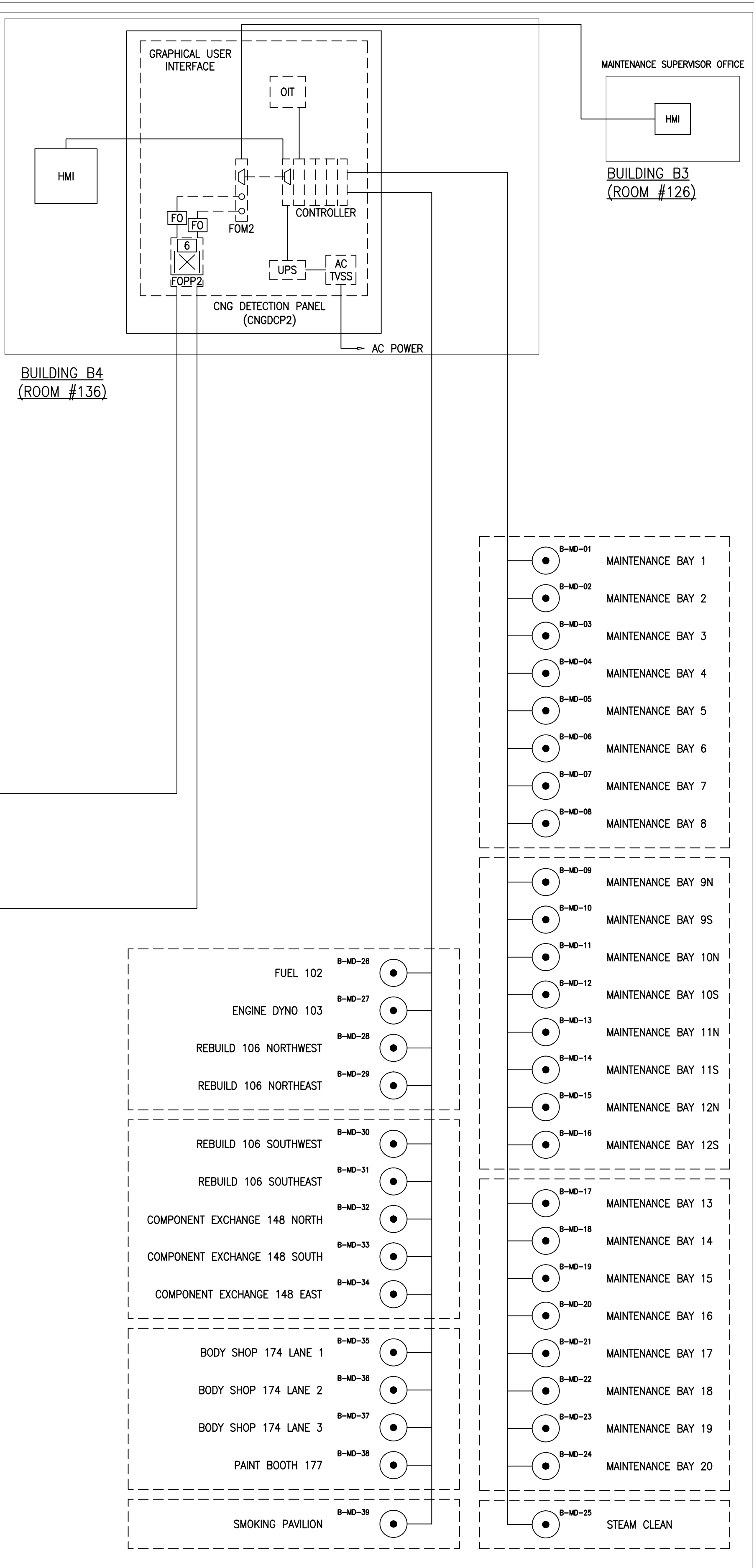
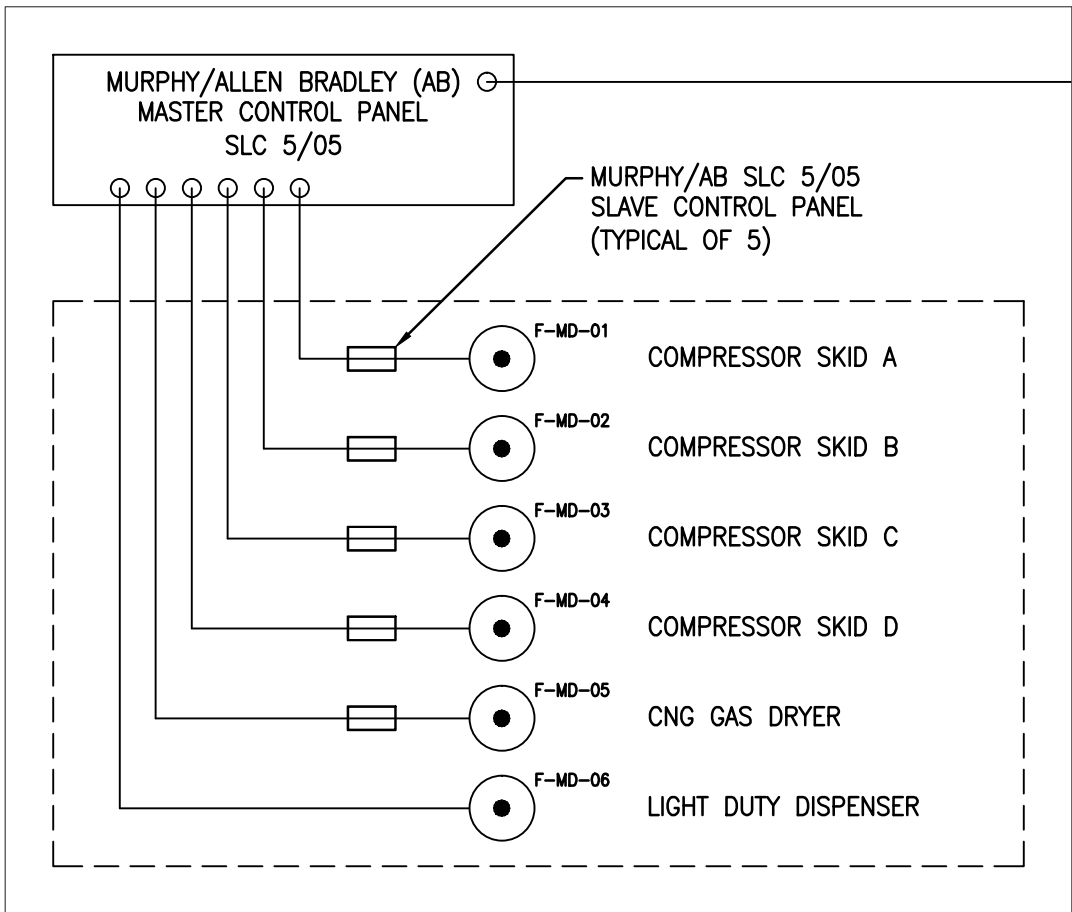
BUS WASH & BRAKE DYNO
BUILDING "D" (ZONE 3)



DETAIL/CLEANING BUILDING "E" (ZONE 4)

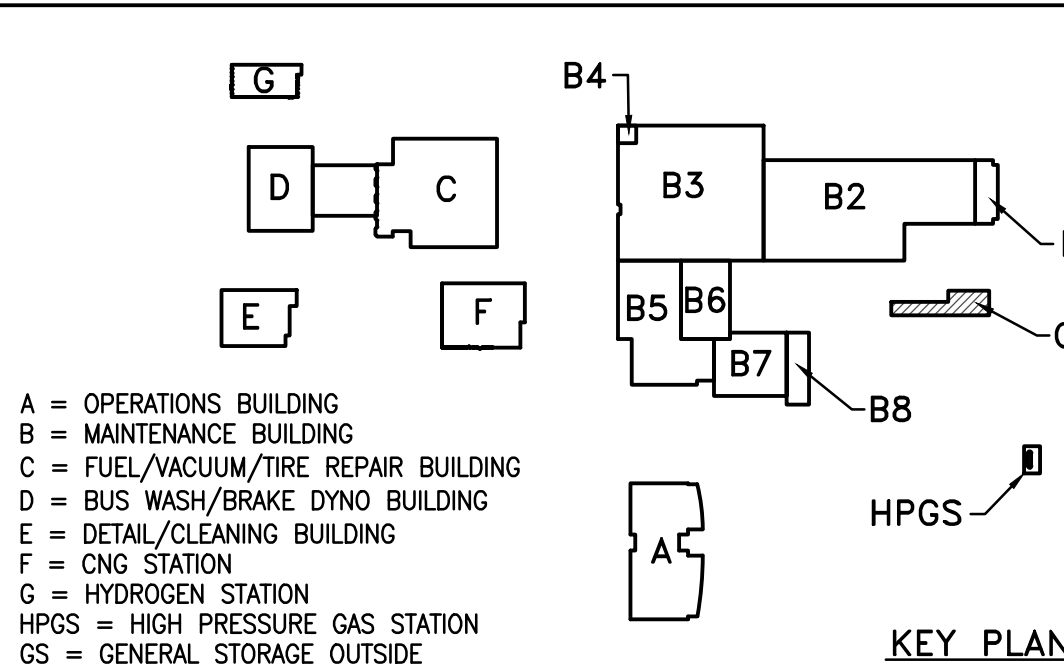


BUILDING "F" (ZONE 6)
CNG STATION



LEGEND	
SYMBOL	DESCRIPTION
[FACP]	FIRE ALARM CONTROL PANEL
[ANNUN]	FIRE ALARM ANNUNCIATOR
X	STROBE TO BE REPLACED WITH HORN AND STROBE
[HSM]	HORN/STROBE WALL MOUNT
[HSM] CLASS 1 DIV. 1	HORN/STROBE WALL MOUNT (SEPARATE RATED UNITS)
[P]	MANUAL PULL STATION
[P] _{WP}	PULL STATION WEATHERPROOF BACK BOX
[P] _{EXP}	EXPLOSION PROOF PULL STATION
[DR]	RELAY MODULE FOR FIRE DOOR RELEASE
⊙	SMOKE DETECTOR
⊙ _D	DUCT SMOKE DETECTOR
⊙ _H	HEAT DETECTOR
⊙ _F	FLAME DETECTOR
⊙ _M	METHANE DETECTOR
⊙ _M ⊗	METHANE DETECTOR W/ YELLOW BEACON
⊗	YELLOW STROBE LIGHT
⊗ _R	RED STROBE LIGHT
⊗ _A	AMBER STROBE LIGHT
⊗ _G	GREEN LIGHT
[RUD]	ROLL-UP DOOR
[EJF]	EMERGENCY EXHAUST FAN
⊙ _M	METHANE GAS SENSOR
⊙ _H	HYDROGEN GAS DETECTOR
⊙ _A	HYDROGEN AMBER BEACON
[OCCN]	OUTDOOR TRI-COLOR CHANGING NOTIFICATION LIGHT
[OCCN] ⊗	OUTDOOR TRI-COLOR CHANGING NOTIFICATION LIGHT
[OCCN] ⊗ _M	OUTDOOR TRI-COLOR CHANGING NOTIFICATION LIGHT
[TS]	VALVE TAMPER SWITCH
[FS]	SPRINKLER WATER FLOW SWITCH

- DR = RELAY MODULE FOR FIRE DOOR RELEASE
EF = EMERGENCY EXHAUST FAN
FD = FLAME DETECTOR
FS = SPRINKLER WATER FLOW SWITCH
H2D = HYDROGEN DETECTOR
HDA = HYDROGEN DETECTION ALARM
HS = HORN/STROBE
MD = METHANE DETECTOR
MDA = METHANE DETECTION ALARM
PS = PULL STATION
RD = ROLL-UP DOOR
S = STROBE TO BE REPLACED WITH HORN AND STROBE
SD = SMOKE DETECTOR
TS = VALVE TAMPER SWITCH



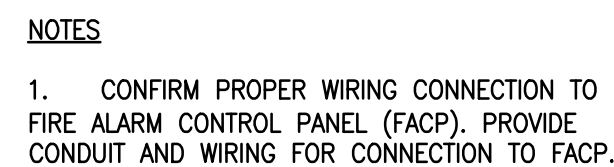
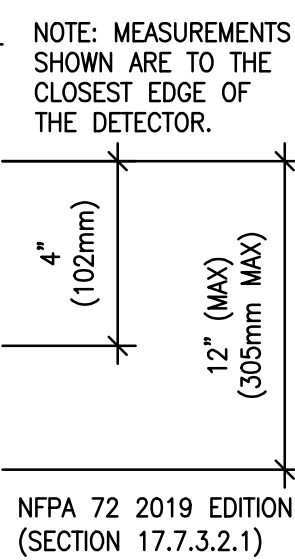


Sheet Title	EXISTING METHANE GAS DETECTION, CONTROL AND NOTIFICATION SYSTEM RISER DIAGRAM
Project	FIRE ALARM CONTROL PANELS REPLACEMENT AT SANTA ANA BUS BASE

550 South Main Street
Orange, CA 92668
714/560/OCTA



1. MINIMUM DISTANCE IN SLEEPING ROOMS IS 24" (610mm) TO TOP OF LENS FOR 110CD STROBES WITHIN 16' OF THE PILLOW.
2. 177CD STROBES, USED IN SLEEPING ROOMS, CAN BE WITHIN THE 24" (610mm) MINIMUM DISTANCE FROM THE CEILING. THE HIGHER INTENSITY IS TO COMPENSATE FOR A POSSIBLE SMOKE LAYER.



DAHL, TAYLOR & ASSOCIATES
CONSULTING ENGINEERS
2960 DAIMLER STREET
SANTA ANA, CALIFORNIA 92705
TEL: # (949) 756-8654
FAX: # (949) 502-0777

[illegible]

SCALE	3
NONE	

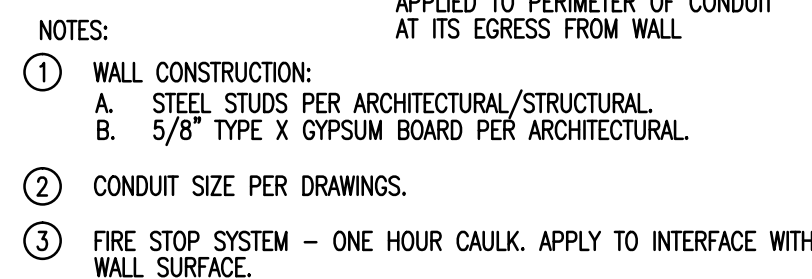
SCALE	1
NONE	



2 WALL MOUNTED APPLIANCES SHALL BE MOUNTED SUCH THAT THE ENTIRE LENS IS NOT LESS THAN 80" AND NOT GREATER THAN 96" ABOVE FINISHED FLOOR OR 6" BELOW CEILING WHICHEVER IS LOWER. PER NFPA 72 7.4.6.1

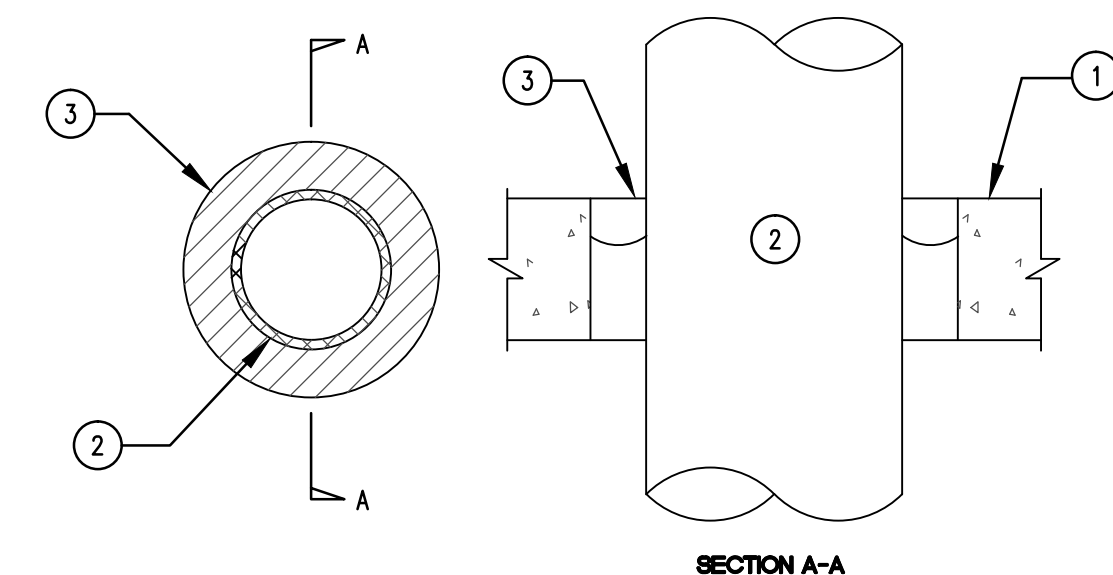
THE OPERABLE PART OF EACH MANUAL FIRE ALARM BOX SHALL BE NOT LESS THAN 42IN. (1.07M) AND NOT MORE THAN 48IN. (1.22M) ABOVE FLOOR LEVEL.

FIRE ALARM CONTROL PANEL



NOTE: MAX. DIA. OF OPENING IS 13 1/2" ANNULAR SPACE OF MIN. 1/4" DIA. BEAD IS REQUIRED

U.L. SYSTEM NO. WL 1001



- ① CONCRETE FLOOR OR WALL PER ARCHITECTURAL/STRUCTURAL DRAWINGS.
MAX. DIA. OF THROUGH OPENING IS 12 1/4".
- ② CONDUIT SIZE PER DRAWINGS.
- ③ FIRE STOP SYSTEM-TWO HOUR MOLDABLE PUTTY MATERIAL KNEADED BY HAND AND PACKED TIGHTLY INTO ANNULAR SPACE, FLUSH WITH FLOOR. IN WALL ASSEMBLIES, REQUIRED PUTTY THICKNESS TO BE INSTALLED SYMMETRICALLY ON BOTH SIDES OF WALL.

NOTE: MAX. DIA. OF OPENING IS 12 1/4" MINIMUM FILL MATERIAL THICKNESS OF 1/2" IS REQUIRED.

U.L. SYSTEM NO. CAJ1027

SCALE	4
NONE	

SCALE	2
NONE	

Sheet Title

Project
FIRE ALARM CONTROL PANELS REPLACEMENT
AT SANTA ANA BUS BASE

DESIGN BY: SDV

DRAWN BY: TMP

CHECKED BY: QV

DATE 02-09-202

AS NOTED

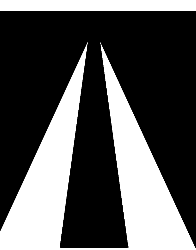
SA-EA-30

SA-1 A-30

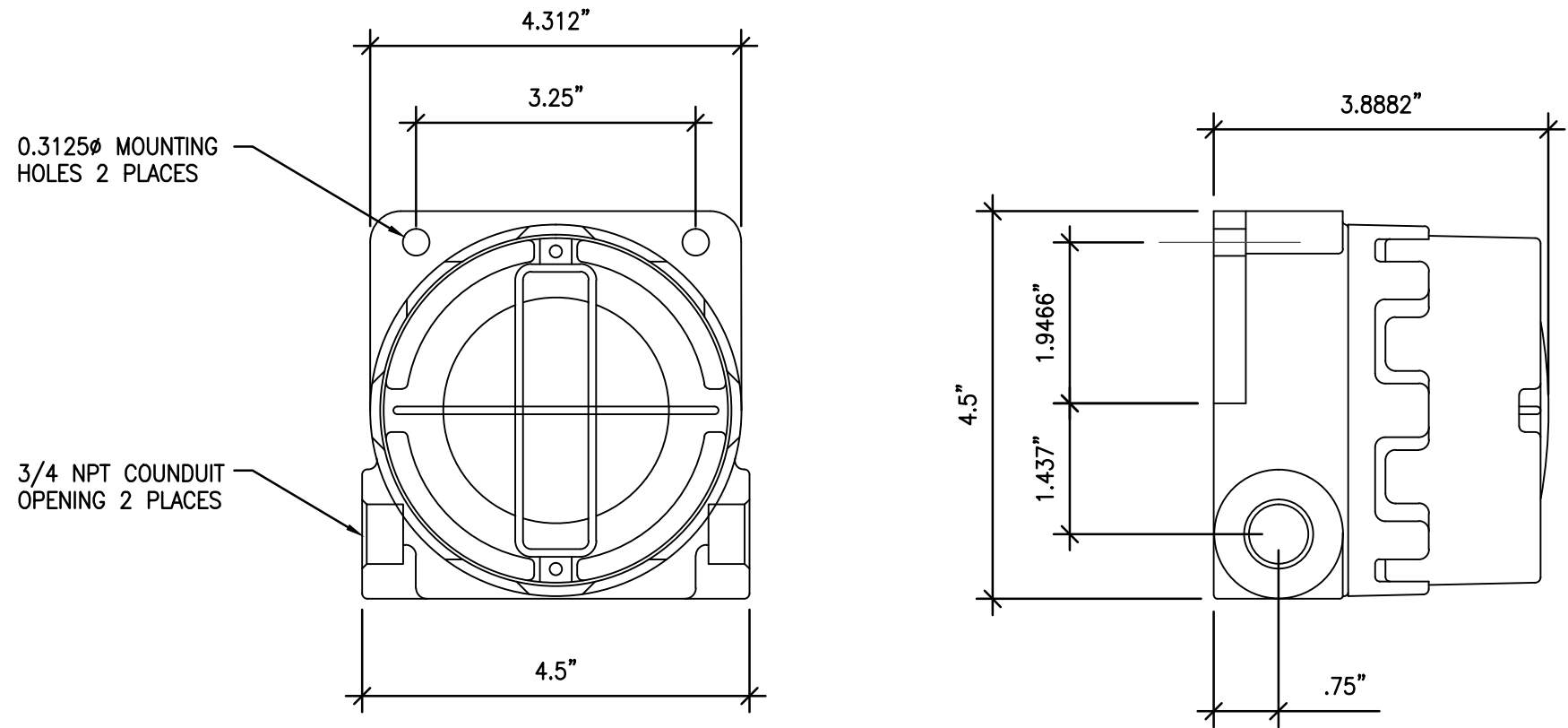
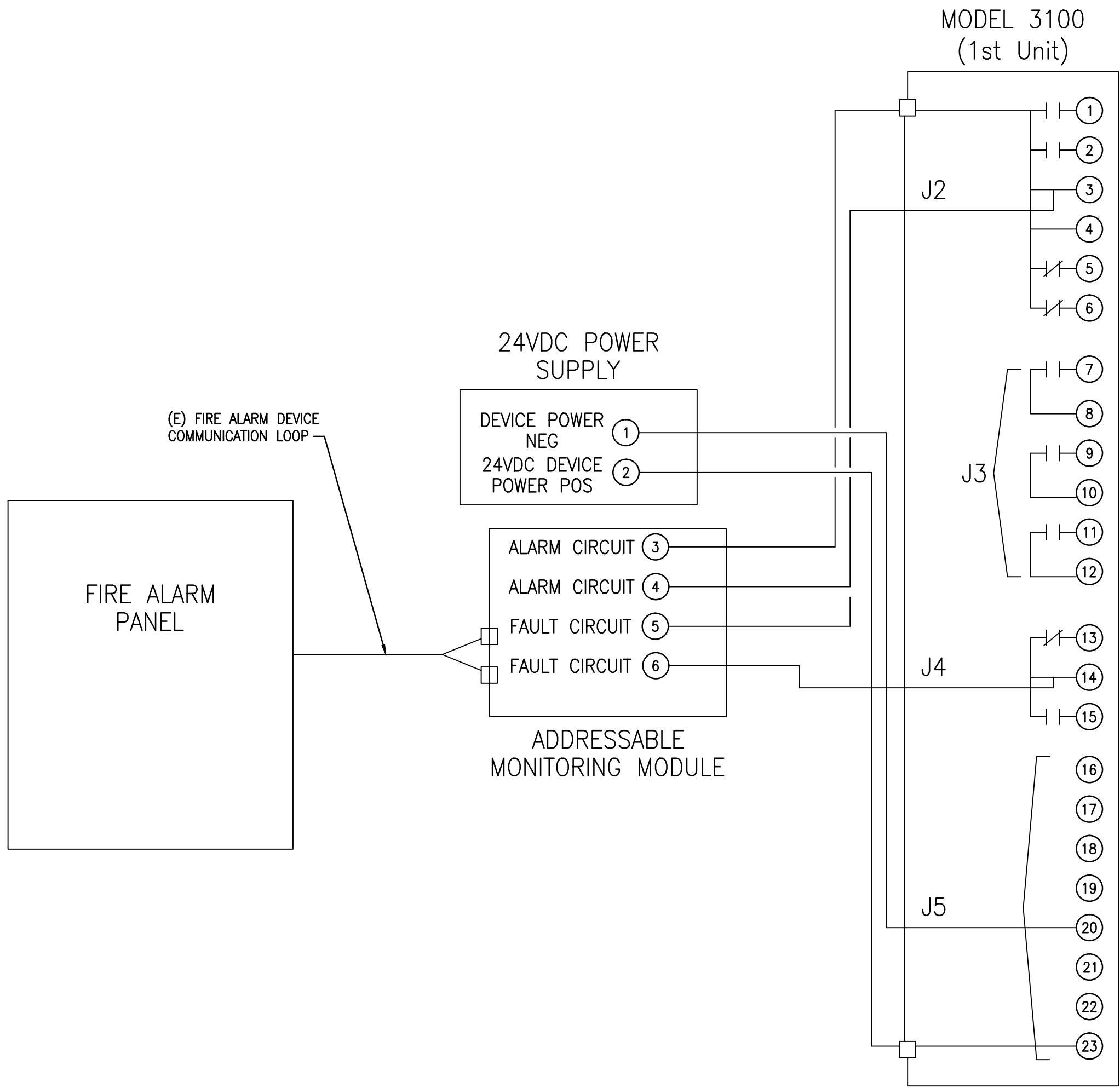
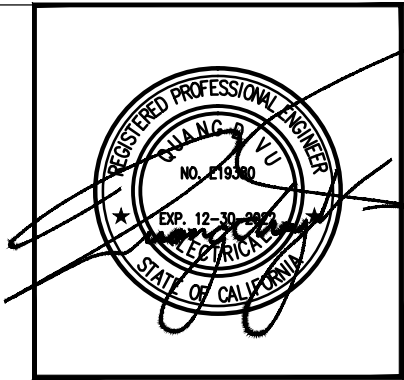
550 South Main Street

Orange, CA 92668

714/560/OCTA



OCTA



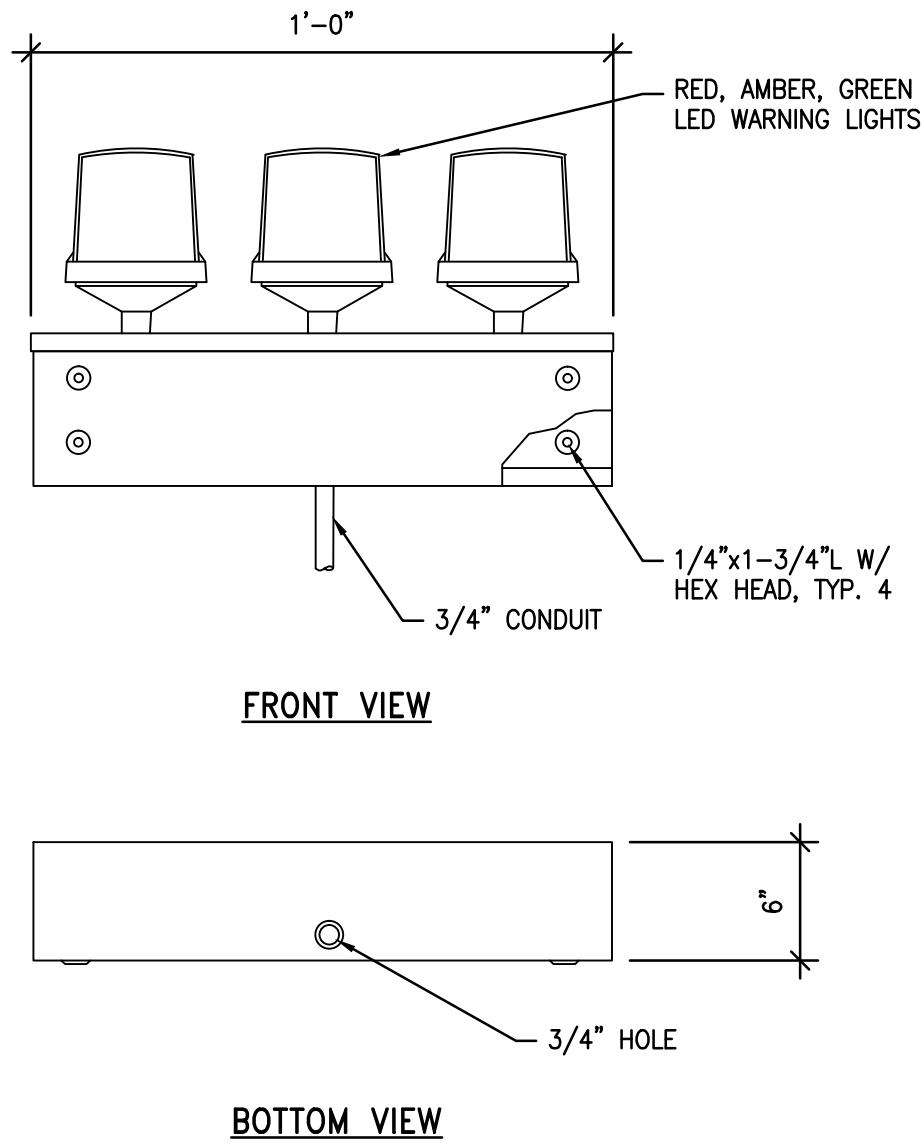
FLAME DETECTOR MOUNTING AND UNIT DIMENSIONS

FLAME DETECTOR MODULE INTEGRATION WITH FIRE ALARM CONTROL PANEL

SCALE
NONE

1

BASIS OF DESIGN
OR APPROVED EQUAL



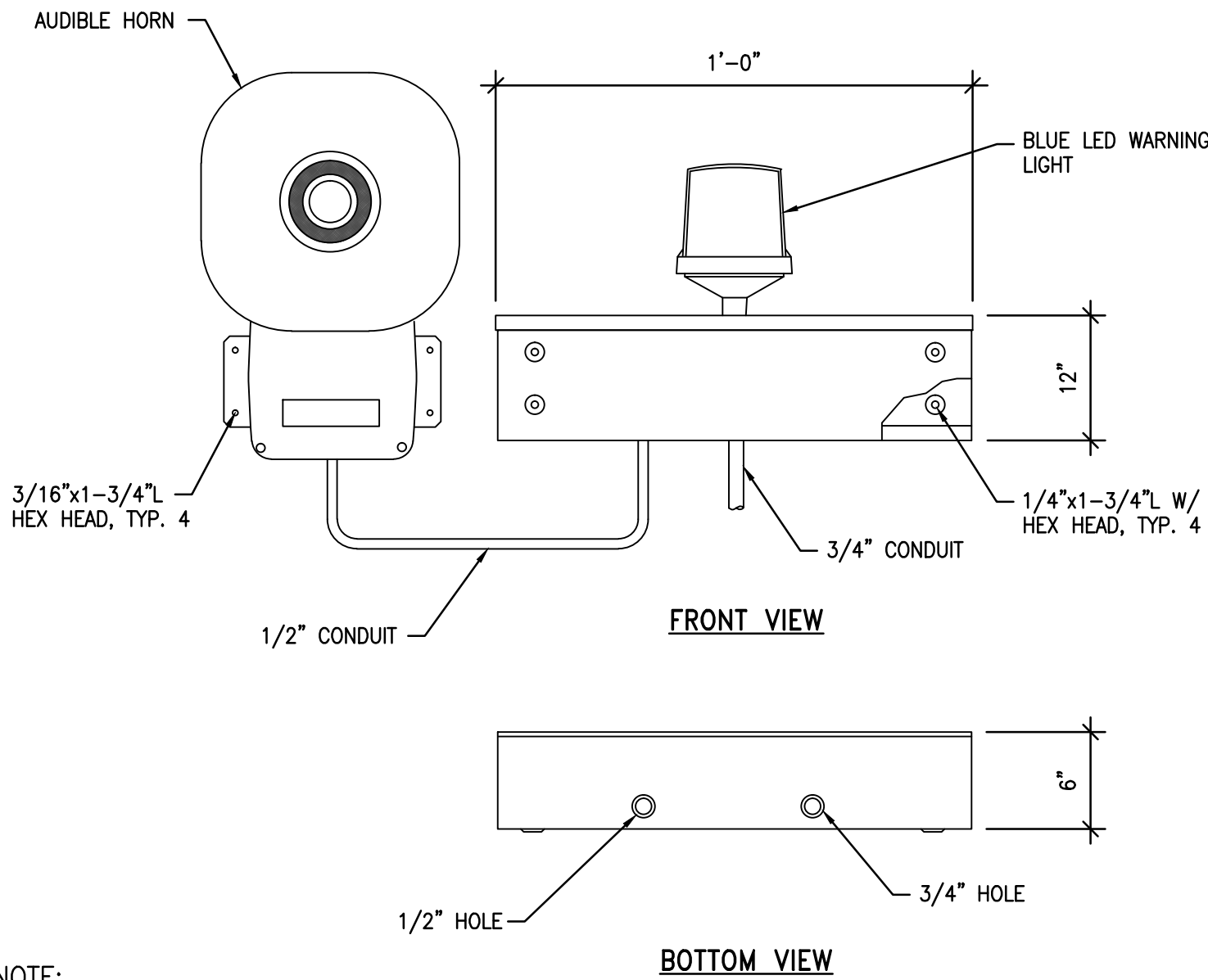
NOTE:
1. STROBE ASSEMBLY IS TO BE WALL MOUNTED VIA (4) 1/4"x1-3/4"L HEX HEAD BOLTS. INSTALLED OUTSIDE OF THE CLASSIFIED AREA.

MULTI COLOR LIGHT ASSEMBLY DETAIL

SCALE
NONE

4

BASIS OF DESIGN
OR APPROVED EQUAL

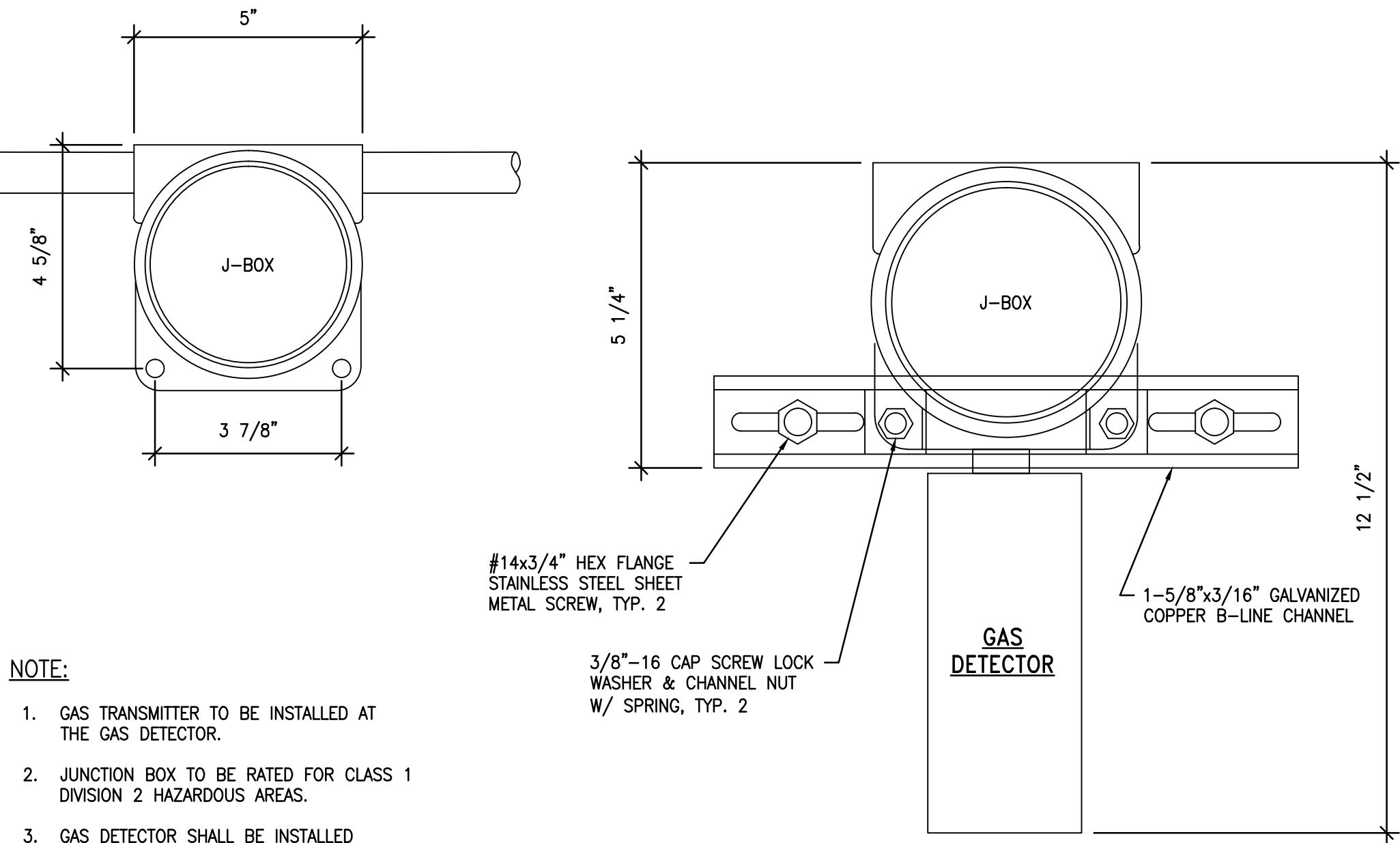


NOTE:
1. STROBE ASSEMBLY IS TO BE WALL MOUNTED VIA (4) 1/4"x1-3/4"L HEX HEAD BOLTS

AUDIBLE/VISUAL STROBE ASSEMBLY DETAIL

SCALE
NONE

3



NOTE:
1. GAS TRANSMITTER TO BE INSTALLED AT THE GAS DETECTOR.
2. JUNCTION BOX TO BE RATED FOR CLASS 1 DIVISION 2 HAZARDOUS AREAS.
3. GAS DETECTOR SHALL BE INSTALLED HORIZONTALLY.

GAS DETECTION DETECTOR DETAIL

SCALE
NONE

2

Sheet Title
AUDIOVISUAL UNIT DETAILS & DETECTOR WIRING DIAGRAMS
Project
FIRE ALARM CONTROL PANELS REPLACEMENT
AT SANTA ANA BUS BASE

JOB # 1.21.4
DESIGN BY: SDV
DRAWN BY: TMP
CHECKED BY: QV
DATE 02-09-2022
SCALE AS NOTED
SHEET
SA-FA-30.3
550 South Main Street
Orange, CA 92668
714/560/OCTA



LIST OF DRAWINGS

By this reference, the following drawings are incorporated in this Invitation For Bids.

SHEET NO.	SHEET NAME	%
SA-T-1	TITLE SHEET, DRAWING INDEX, SCOPE OF WORK, PROJECT LOCATION AND VICINITY MAP	
SA-T-2	DRAWING INDEX	
SA-GN-1	GENERAL NOTES	
SA-FA-1	ELECTRICAL ABBREVIATIONS, SYMBOLS AND NOTES	
SA-FA-2	FIRE ALARM SYMBOLS, LEGEND, NOTES AND SCHEDULES	
SA-FA-3.1	FIRE ALARM, CNG AND HYDROGEN GAS DETECTION SYSTEMS SITE PLAN – REMOVAL & REPLACEMENT OF FIRE ALARM SYSTEMS	
SA-FA-3.2	FIRE ALARM, CNG AND HYDROGEN GAS DETECTION SYSTEMS SITE PLAN W/ REMOVAL OF FIRE ALARM SYSTEMS	
SA-FA-3.3	EXISTING FIRE PROTECTION WATER SYSTEM SITE PLAN	
SA-FA-10.1	OPERATIONS BUILDING “A” UPGRADED FIRE ALARM SYSTEM	
SA-FA-10.2	OPERATIONS BUILDING “A” ENLARGED PLAN – LOBBY 101 & ROOM 125	
SA-FA-11.1	MAINTENANCE BUILDING “B1” FIRE ALARM SYSTEM FLOOR PLAN	
SA-FA-11.2	MAINTENANCE BUILDING “B2” FIRE ALARM SYSTEM FLOOR PLAN	
SA-FA-11.3	MAINTENANCE BUILDING “B3” & “B4” FIRE ALARM SYSTEM FLOOR PLAN	
SA-FA-11.4	MAINTENANCE BUILDING “B4” – ROOM #136 ENLARGED FLOOR PLAN	
SA-FA-11.5	MAINTENANCE BUILDING “B5”, “B6”, “B7” & “B8” FIRE ALARM SYSTEM FLOOR PLAN	
SA-FA-11.6	MAINTENANCE BUILDING – ROOMS #149 AND #150 ENLARGED FLOOR PLAN	
SA-FA-11.7	MAINTENANCE BUILDING – ROOMS #126 AND #167 ENLARGED FLOOR PLANS	
SA-FA-11.8	MAINTENANCE BUILDING “B3” SECOND FLOOR UPGRADED FIRE ALARM SYSTEM FLOOR PLAN	
SA-FA-12.1	FUEL / VACUUM / TIRE REPAIR BUILDING FIRE ALARM SYSTEM FLOOR PLAN	
SA-FA-12.2	FUEL / VACUUM / TIRE REPAIR BUILDING ENLARGED FLOOR PLANS – ROOMS #101 AND #113	
SA-FA-13	OUTSIDE STORAGE STRUCTURE “GS” AND BUS WASH / BRAKE DYNO BUILDING “D” FIRE ALARM SYSTEM FLOOR PLANS	
SA-FA-14	DETAIL / CLEANING BUILDING “E” FIRE ALARM SYSTEM FLOOR PLAN	
SA-FA-15	CNG STATION “F” AND HYDROGEN STATION “GS” PLANS – GAS AND FLAME DETECTION SYSTEMS	
SA-FA-16.1	MAINTENANCE BUILDING “B1” HYDROGEN AND METHANE GAS DETECTION SYSTEMS FLOOR PLAN FOR REFERENCE	
SA-FA-16.2	MAINTENANCE BUILDING “B2” HYDROGEN AND METHANE GAS DETECTION SYSTEMS FLOOR PLAN FOR REFERENCE	
SA-FA-16.3	MAINTENANCE BUILDING “B3” AND “B4” HYDROGEN AND METHANE GAS DETECTION SYSTEMS PLAN	
SA-FA-16.4	MAINTENANCE BUILDING “B5”, “B6”, “B7” & “B8” HYDROGEN AND METHANE GAS DETECTION SYSTEMS FLOOR PLAN	
SA-FA-17	FUEL / VACUUM / TIRE REPAIR BUILDING “C” HYDROGEN AND METHANE GAS DETECTION SYSTEMS FLOOR PLAN	
SA-FA-18	OUTSIDE STORAGE STRUCTURE “GS” AND BUS WASH / BRAKE DYNO BUILDING “D” HYDROGEN AND METHANE GAS DETECTION SYSTEMS	

SA-FA-19	DETAIL/CLEANING BUILDING "E" HYDROGEN AND METHANE GAS DETECTION SYSTEMS	
SA-FA-20.1	FIRE ALARM SYSTEM ARCHITECTURE DIAGRAM W/NEW FACPs + ANNUNCIATORS AND OPERATIONAL MATRIX	
SA-FA-20.2	ALARM AND DETECTION SYSTEM ARCHITECTURE DIAGRAM FIRE ALARM, HYDROGEN & METHANE GAS DETECTION SYSTEMS	
SA-FA-20.3	FIRE DETECTION AND NOTIFICATION RISER DIAGRAM NEW FACP-2, FACP-3, ANNUNCIATOR-2, AND ANNUNCIATOR-3	
SA-FA-20.4	FIRE DETECTION AND NOTIFICATION RISER DIAGRAM NEW FACP-2, FACP-3, ANNUNCIATOR-2, AND ANNUNCIATOR-3	
SA-FA-20.5	FIRE DETECTION AND NOTIFICATION RISER DIAGRAM NEW FACP-1, ANNUNCIATOR-1, FACP-4, AND ANNUNCIATOR-4	
SA-FA-20.6	FLAME DETECTION RISER DIAGRAM – NEW ADDITIONAL DETECTORS	
SA-FA-21.1	EXISTING FIRE ALARM SYSTEM ARCHITECTURE DIAGRAM AND OPERATIONAL MATRIX	
SA-FA-21.2	EXISTING ALARM AND DETECTION SYSTEM ARCHITECTURE DIAGRAM – FIRE ALARM, HYDROGEN & METHANE GAS DETECTION SYSTEMS	
SA-FA-21.3	EXISTING FIRE DETECTION AND NOTIFICATION RISER DIAGRAM FACP-4, FACP-6, ANNUNCIATOR-4, AND ANNUNCIATOR-6	
SA-FA-21.4	EXISTING FIRE DETECTION AND NOTIFICATION RISER DIAGRAM FACP-5, ANNUNCIATOR-5A AND ANNUNCIATOR-5B	
SA-FA-22.1	EXISTING HYDROGEN GAS DETECTION SYSTEM RISER DIAGRAM	
SA-FA-22.2	EXISTING METHANE GAS (CNG) DETECTION SYSTEM RISER DIAGRAM	
SA-FA-22.3	EXISTING METHANE GAS DETECTION SYSTEM CONTROL AND NOTIFICATION RISER DIAGRAM	
SA-FA-30.1	DETAILS AND MOUNTING DATA	
SA-FA-30.2	WIRING DIAGRAMS	
SA-FA-30.3	DETAILS & WIRING DIAGRAMS	

By this reference, the following drawings are incorporated in this Invitation For Bids.

SECTION VIII: LEVEL 3 HEALTH, SAFETY AND ENVIRONMENTAL – EXHIBIT H

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 MSDS Management Program in compliance with CCR Title 8, Section 5194, Hazard Communication Standard.
5. 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 sub-contractors 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 Material Safety Data Sheet (MSDS) 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.
 3. 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, copy of the Physician's first report of injury, updated OSHA 300 Log, 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.

1. Serious Injury: includes an injury or illness to one or more employees, occurring in a place of employment or in connection with any employment, which requires inpatient hospitalization for a period in excess of twenty-four hours for other than medical observation, or in which an employee suffers the loss of any member of the body, or suffers any serious degree of physical disfigurement.
2. Serious Incident: 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. Significant Near Miss Incident: includes incidents where no property was damaged and no personal injury sustained, but where, given a slight shift in time or position, damage and/or injury easily could have occurred.

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 ENVIRONMENTAL REQUIREMENTS

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

- B. The Contractor shall prevent pollution of storm drains, rivers, streams, irrigation ditches, and reservoirs with sediment or other harmful materials. Fuels, oils, bitumen, calcium chloride, cement, or other contaminants that would contribute to water pollution shall not be dumped into or placed where they will leach into storm drains, rivers, streams, irrigation ditches, or reservoirs. If operating equipment in streambeds or in and around open waters, protect the quality of ground water, wetlands, and surface waters.
- C. The Contractor shall protect adjacent properties and water resources from erosion and sediment damage throughout the duration of the contract. Contractor shall comply with applicable NPDES permits and Storm Water Pollution Prevention Plan (SWPPP) requirements.
- D. Contractor shall comply with all applicable EPA, Cal EPA, Cal Recycle, DTSC, SCAQMD, local, state, county and city standards, rules and regulations for hazardous and special waste handling, recycling and/ disposal. At a minimum, Contractor shall ensure compliance where applicable with SCAQMD Rule 1166, CCR Title 8, Section 5192, 29 CFR Subpart 1910.120, 49 CFR Part 172, Subpart H, 40 CFR Subpart 265.16 and CCR Title 22 Section 6625.16. Contractor shall provide OCTA a schedule of all hazardous waste and special or industrial waste disposal dates in advance of transport date. Only authorized OCTA personnel shall sign manifests for OCTA generated wastes. Contractor shall ensure that only current registered transporters are used for disposal of hazardous waste and industrial wastes. The Contractor shall obtain approval from OCTA for the disposal site locations in advance of scheduled transport date.
- 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 1, 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.
 4. Contractor shall provide the name and qualifications of each "Qualified Rigger" as defined by OSHA.
 5. Rigging scope activity shall comply with 29 CFR Subparts 1926.250, 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 lift 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.
3. Engineering data shall be provided on the hook assembly (manufacturer'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 Manager 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. **Electrical Certification of Training:** 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 includes 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 Manual (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) 2-2230
BOOK 2 OF 2**

**FIRE ALARM CONTROL PANELS
REPLACEMENT AT SANTA ANA BUS
BASE**



**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 16, 2022
Pre-Bid Conference/Site Visit:	February 24, 2022
Questions/Approved Equal Submittal:	March 2, 2022
Bids Submittal Date:	March 17, 2022

BID DOCUMENT SUBMISSION CHECKLIST

IFB NO. _____

PROJECT TITLE: _____

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. <i>All addenda must be acknowledged, signed, dated, corporate seal</i>
	Bid Security Form: <u>Bid Bond</u> or <u>Check</u> (circle one) <i>Correct bid number, signed, dated, notarized (bid bond)</i>
	Information Required of Bidder <i>Provide all information, signed</i>
	Bidders Certificate of Compliance Regarding Workers Compensation Insurance <i>Signed and dated</i>
	Bidders Certificate of Compliance Regarding State of California Business and Professions Code Section 7028.15 <i>Signed, dated, notarized</i>
	List of Subcontractors (Exhibit D) <i>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</i>
	Status of Past and Present Contracts Form <i>Signed, dated</i>
	Non-Collusion Declaration Form <i>Signed, dated</i>
	Iran Contracting Act Certification Applicable (Bids over \$1,000,000 only) <i>Signed, dated, (select one option only)</i>

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 2-2230, "FIRE ALARM CONTROL PANELS REPLACEMENT AT SANTA ANA BUS BASE"**, 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	\$
2	<u>Bid Allowance:</u> Orange County Fire Authority Plan Check and Permit Fees	\$ 10,000.00
3	<u>Bid Allowance:</u> Unforeseen Interferences	\$ 40,000
	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

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

7. Bidder hereby further certifies that each, and every 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) 2-2230, "FIRE ALARM CONTROL PANELS REPLACEMENT AT SANTA ANA BUS BASE"**, 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 _____, 2022 Bidder _____

The above bid includes Signature _____

Addenda Nos. _____ Name _____

Title _____

Bidder's Authorized Representative _____

Title _____

Telephone # _____

Fax # _____

Email Address _____

Bidders post office address _____

Corporation organized under the laws of the State of _____

Contractor's License No. _____

Expiration Date of License _____

Surety or sureties _____

(CORPORATE SEAL)

BID SECURITY FORM
BID BOND

KNOW ALL MEN BY THESE PRESENTS:

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

THE CONDITION OF THIS OBLIGATION IS SUCH, that if the certain bid of the above named _____ bounden _____ principal _____

for _____ at the Orange County Transportation Authority's _____ as specifically set forth in documents entitled **IFB 2-2230, "FIRE ALARM CONTROL PANELS REPLACEMENT AT SANTA ANA BUS BASE"**, shall not be withdrawn within a period of 120 calendar days after the date set for the opening of bids, (unless otherwise required by law, and notwithstanding the award of the contract to another Bidder), and that if said bid is accepted by the Authority through action of its legally constituted contracting _____ authorities _____ and _____ if _____ the _____ above bounden _____ its heirs, executors, administrators, successors and assigns, shall execute a contract for such construction and deliver the required Performance and Payment Bonds, "Guaranty," and proof of insurance coverage within ten (10) calendar days after notification of contract award from the Authority, then this obligation shall become null and void; otherwise it shall be and remain in full force and effect.

IN WITNESS WHEREOF, we hereunto set our hands and seals this _____ day of _____, 2022.

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 2-2230, "FIRE ALARM CONTROL PANELS REPLACEMENT AT SANTA ANA BUS BASE"**. The proceeds of this check shall become the property of Authority provided this bid shall be accepted by Authority through action of its legally constituted contracting authorities and the undersigned shall fail to execute a contract and furnish the required Guaranty Form, Performance and Payment Bonds and proof of insurance coverage within ten (10) calendar days after date of notification of contract award from the Authority. The proceeds of this check shall also become the property of the Authority if the undersigned bidder withdraws the bid within the period of 120 days after the date set for the opening thereof, unless otherwise required by law, and notwithstanding the award of the contract to another bidder. Otherwise, the check shall be returned to the undersigned.

Bidder: _____

Signature: _____

Date: _____

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

INFORMATION REQUIRED OF BIDDER

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

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

INFORMATION REQUIRED OF BIDDER, PAGE 2

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

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

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

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

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

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

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

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

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

Bidder hereby certifies that it:

_____ is a certified Disadvantaged Business Enterprise as defined herein.

_____ is not a Disadvantaged Business Enterprise as defined herein.

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

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

Signature

Name

Title

Company Name

Telephone Number

Fax Number

Email Address

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

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

Timetable Goals for Minority Participation for Each Trade (11.9)

Goals for Female Participation in Each Trade (6.9)

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

The Contractor's compliance with the Executive Order and the regulations in 41 C.F.R. Part 60-4 shall be based on its implementation of the Equal Opportunity Clause, specific affirmative action obligations required by the specifications set forth in 41 C.F.R. 60-4.3 (a), and its efforts to meet the goals established for the geographical area where the contract resulting from this solicitation is to be performed. The hours of minority and female employment and training must be 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 _____, 2022.

Notary Public

My commission expires on:

_____, 2022
(NOTARY SEAL)

LIST OF SUBCONTRACTORS (EXHIBIT D)

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

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

Bidder's Name _____

STATUS OF PAST AND PRESENT CONTRACTS FORM

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

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

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

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

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

Name

Signature

Title

Date

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: _____