

**INVITATION FOR BIDS (IFB) 2-2409
BOOK 1 OF 2**

**RESTROOM IMPROVEMENTS AT
FULLERTON PARK AND RIDE**



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

Key IFB Dates

Issue Date:	April 1, 2022
Pre-Bid Conference/Site Visit:	April 7, 2022
Questions/Approved Equal Submittal:	April 8, 2022
Bid Submittal Date:	May 3, 2022

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April 1, 2022

**SUBJECT: NOTICE INVITING SEALED BIDS
IFB 2-2409, "RESTROOM IMPROVEMENTS AT FULLERTON
PARK AND RIDE"**

TO: ALL BIDDERS

FROM: ORANGE COUNTY TRANSPORTATION AUTHORITY

The Orange County Transportation Authority (Authority) invites sealed bids for **RESTROOM IMPROVEMENTS AT FULLERTON PARK AND RIDE.**

The description of this project is selective demolition, modifications, and renovations of the existing men's, women's and driver's restroom in each of the two buildings at the Fullerton Park and Ride for a period of 180 calendar days.

The estimated cost for this project is \$480,000.00. Bidders will be required to hold a valid State of California **Class B General Building** contractor license.

Bids must be submitted at or before 11:00 a.m., May 3, 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: Megan Bornman, 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: Megan Bornman, 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:

Construction (General)

General Contractor

Plumbing

Concrete

A pre-bid conference will be held via teleconference on April 7, 2022, at 1:00 p.m. Prospective bidders may join or call-in using the following credentials:

- [Microsoft Teams Meeting Link](#)
- OR Call-in Number: 916-550-9867
- Conference ID: 872 286 597#

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. Immediately following the pre-bid conference, a job walk will be conducted. All prospective bidders are encouraged to attend the pre-bid conference and to attend the job walk.

The job walk will be held at the Fullerton Park and Ride located at 3000 West Orangethorpe Avenue, Fullerton, CA 92833.

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 April 7, 2022, at 1:00 p.m.. Prospective bidders may join or call-in using the following credentials:

- [Microsoft Teams Meeting Link](#)
- OR Call-in Number: 916-550-9867
- Conference ID: 872 286 597#

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

Immediately following the pre-bid conference a job walk will be conducted at Fullerton Park and Ride located at 3000 West Orangethorpe Avenue, Fullerton, CA 92833.

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

B. EXAMINATION OF DOCUMENTS

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

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

C. ADDENDA

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

D. AUTHORITY CONTACT

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

Megan Bornman, Contract Administrator
 Contracts Administration and Materials Management Department
 600 South Main Street
 P.O. Box 14184
 Orange, CA 92863-1584
 Phone: 714.560. 5064, Fax: 714.560.5792
 Email: mbornman@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 April 8, 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: mbornman@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 Megan Bornman, 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:
Construction (General)
General Contractor
Plumbing
Concrete

Inquiries received after 5:00 p.m. on April 8, 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., May 3, 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: Megan Bornman, 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: Megan Bornman, 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 2-2409, "RESTROOM IMPROVEMENTS AT FULLERTON PARK AND RIDE"

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

G. PRE-CONTRACTUAL EXPENSES

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

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

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

H. JOINT BIDS

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

I. TAXES

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

J. BID SECURITY FORMS

Bids shall be accompanied by a certified or cashier's check, or an acceptable bid bond for an amount not less than ten percent (10%) of the bid, made payable to the order of the Orange County Transportation Authority. A corporate surety (not

an individual surety), registered in the state of California and registered to do business in the county of Orange must issue bid bonds. Said check or bond shall be given as a guarantee that the bidder will enter into a contract if awarded the work and in case of refusal or failure to enter into said contract, the check or bond, as the case may be, shall be forfeited to the Authority.

K. WITHDRAWAL OF BIDS

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

L. PREVAILING WAGES

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

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

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

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

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

contractor is registered to perform public work pursuant to Section 1725.5 at the time the contract is awarded.

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

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

M. SUBCONTRACTORS AND ASSIGNMENTS

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

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

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

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

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

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

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

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

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

N. BIDDER'S LICENSING REQUIREMENTS

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

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

O. PERMITS AND INSPECTION COSTS

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

under the jurisdiction of such agency.

P. LIQUIDATED DAMAGES

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

Q. PROTEST PROCEDURES

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

R. CONTRACT AWARD

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

S. EXECUTION OF CONTRACT

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

T. AUTHORITY'S RIGHTS

1. The Authority reserves the right to accept or reject any and all bids, or any item or part thereof, or to waive any informalities or irregularities in bids.
2. The Authority reserves the right to withdraw or cancel this IFB at any time without prior notice. The Authority makes no representations that any contract will be awarded to any bidder responding to this IFB.
3. The Authority reserves the right to issue a new IFB for the project.
4. The Authority reserves the right to postpone the bid opening for its own convenience.
5. Each bid will be received with the understanding that acceptance by the Authority of the bid to provide the goods and services described herein shall

constitute a contract between the bidder and Authority which shall bind the bidder on its part to furnish and deliver at the prices given and in accordance with conditions of said accepted bid and specifications.

6. The Authority reserves the right to investigate the qualifications of any bidder, and/or require additional evidence of qualifications to perform the work.
7. Submitted IFBs are not to be copyrighted.

U. PUBLIC RECORDS AND INFORMATION

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

V. CONFLICT OF INTEREST

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

W. CODE OF CONDUCT

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

X. SAFETY

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

SECTION II: INSTRUCTIONS TO BIDDING FORMS

SECTION II. INSTRUCTIONS TO BIDDING FORMS

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

A. BID FORM

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

B. BID SECURITY FORM - BID BOND

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

C. INFORMATION REQUIRED OF BIDDER

Bidder must provide all the information requested in this form.

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

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

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

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

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

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

G. LIST OF SUBCONTRACTORS FORM

Bidder shall complete Exhibit D, which lists all subcontractors performing work in excess of one-half of one percent ($\frac{1}{2}$ 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 2-2409, "RESTROOM IMPROVEMENTS AT FULLERTON PARK AND RIDE"**, 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:

<u>Description</u>	<u>Total Lump Sum Bid Amount</u>
---------------------------	---

	\$	
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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 2-2409, "RESTROOM IMPROVEMENTS AT FULLERTON PARK AND RIDE"**, 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 2-2409, "RESTROOM IMPROVEMENTS AT FULLERTON PARK AND RIDE"**, 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 2-2409, "RESTROOM IMPROVEMENTS AT FULLERTON PARK AND RIDE"**. 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 2-2409,**
"RESTROOM IMPROVEMENTS AT FULLERTON PARK AND RIDE," 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 _____, 202__.

(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 2-2409, "RESTROOM IMPROVEMENTS AT FULLERTON PARK AND RIDE,"** as specified in said Agreement, which is incorporated herein to this bond by reference, and is required under the terms of said Agreement to give this bond in connection with the execution thereof;

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

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

PAYMENT BOND, PAGE 2

WITNESS our hands this _____ day of _____, 202__.

(SEAL)

(Contractor)

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-2-2409, "RESTROOM IMPROVEMENTS AT FULLERTON PARK AND RIDE"**.

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

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

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

GUARANTY, PAGE 2

Subscribed and sworn to before me	_____
	Name
this ____ day of _____, 202__	_____
	Title
Seal of Notary	_____
	Signature
_____	_____
Notary Public	Date



CONTRACT CHANGE ORDER

IFB NO. 2-2409
EXHIBIT I

DATE:

PROJECT	OCTA NO	CONTRACT NO.	SUPPL NO.	CHANGE REQUESTED BY:
			N/A	☐ OWNER ☐ CONTRACTOR
TO:		ACCOUNT CODE		OTHER ID
TITLE:				

You are hereby directed to make the herein described changes from the plans and specifications or do the following work not included in the plans and specifications on this contract. NOTE: This change order is not effective until approved by the Orange County Transportation Authority's Manager of Contracts Administration and Materials Management or in the case of change orders in excess of \$210,000.00 the Orange County Transportation Authority's Chief Executive Officer. Describe work to be performed, estimate of quantities, and prices to be paid. Segregate between additional work at contract price, agreed price, and force account. Unless otherwise stated, rates for rental equipment cover only such time as equipment is actually used and no allowance will be made for idle time.

Change Work Description:

MODIFICATIONS DUE TO THIS CHANGE ORDER:

TIME: 0 CALENDER DAYS

PRICE: \$0.00

☐ INCREASE ☐ DECREASE

APPROVAL RECOMMENDED BY:	RESIDENT ENGINEER	DATE
APPROVAL RECOMMENDED BY:	PROJECT MANAGER	DATE
APPROVAL RECOMMENDED BY:	DIRECTOR OF RAIL PROGRAMS	DATE
APPROVAL RECOMMENDED BY:	EXECUTIVE DIRECTOR OF CAPITAL PROGRAMS	DATE
APPROVAL RECOMMENDED BY:	GENERAL COUNSEL	DATE
APPROVED BY:	CONTRACTS ADMINISTRATION AND MATERIALS MANAGEMENT	DATE
APPROVED BY:	CHIEF EXECUTIVE OFFICER	DATE

We, the Undersigned Contractor, have given careful consideration to the change and hereby agree that we will provide all equipment, furnish all materials, except as may otherwise be noted above, and perform all services necessary for the work above specified, and will therefore accept as full payment the prices shown above. Additionally, we agreed that the compensation (time and cost) set forth in this Change Order comprises the total compensation due the Contractor, and all the Subcontractors and all Suppliers, for the work or change defined in this Change Order, including all impact on any unchanged work. By signing this Change Order, the Contractor acknowledges and agrees, on behalf of themselves, all Subcontractors and all Suppliers, that the stipulated compensation includes payment for all work contained in this Change Order, plus all payments for interruption of schedules, extended overhead costs, delay, and all impact, ripple effect or cumulative impact on all other work under the Contract. The signing of this Change Order shall indicate that the Change Order constitutes the total equitable adjustment owed to the Contractor, all Subcontractors and all Suppliers, and the Contractor agrees to waive all rights, without exception or reservation of any kind whatsoever, to file any further claim or request for equitable adjustment of any type, for any reasonably foreseeable cause that shall arise out of or as a result of this Change Order or the impact of this Change Order on the remainder of the work under this Contract.

ACCEPTED BY:	CONTRACTOR	DATE
	NAME	TITLE

If the Contractor does not sign acceptance of this order, their attention is directed to the requirements of the specifications as to proceeding with the ordered work and filing a written protest within the time therein specified.

SECTION IV: AGREEMENT

1 **AGREEMENT NO. C-2-2409**

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 restroom improvements at Fullerton
12 Park and Ride; 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 B. AUTHORITY's failure to insist in any one or more instances upon the performance of any

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

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

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

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

16 **ARTICLE 2. AUTHORITY DESIGNEE**

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

19 **ARTICLE 3. SCOPE OF WORK**

20 CONTRACTOR shall provide all labor, equipment, materials and facilities necessary for all work
21 related to at the AUTHORITY's in strict compliance with all the requirements specified herein and in:

22 Exhibit A, entitled "General Provisions";

23 Addendum No's ;

24 Exhibit B, entitled "Specifications";

25 Exhibit C, entitled "List of Drawings";

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

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

Schedule and deliver it to AUTHORITY.

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

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

ARTICLE 5. START OF WORK

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

ARTICLE 6. PAYMENT

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

B. Progress payments and the final payment will be made by AUTHORITY to CONTRACTOR in accordance with the terms as set forth in Exhibit A, "General Provisions," under the "Progress Payments" and "Final Payment and Claims" sections therein. The acceptance by CONTRACTOR of AUTHORITY's final payment hereunder shall constitute a waiver of all claims against AUTHORITY under or arising out of this herein Agreement, as such may from time to time be amended.

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

ARTICLE 7. 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:

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To CONTRACTOR:		To AUTHORITY:	
		Orange County Transportation Authority	
		550 South Main Street	
		P.O. Box 14184	
		Orange, CA 92863-1584	
ATTENTION:		ATTENTION:	Megan Bornman
Title:		Title:	Contract Administrator
Phone:		Phone: (714) 560 - 5604	
Email:		Email: mbornman@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 \$1,000,000.

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

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.

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1 D. The Certificate of Insurance shall reference Agreement Number C-2-2409 and, the Contract
2 Administrator's Name, Megan Bornman.

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.

24 **ARTICLE 12. ORDER OF PRECEDENCE**

25 Conflicting provisions hereof, if any, shall prevail in the following descending order of precedence:
26 (1) the provisions of this Agreement, including its exhibits; (2) the provisions of IFB 2-2409 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.

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 (CAMP), who shall reduce the decision to writing and mail or otherwise furnish a copy thereof to CONTRACTOR. The decision of the Director, CAMP, 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, CAMP. Nothing in this Agreement, however, shall be construed as making final the decision of any AUTHORITY official or representative on a question of law, which questions shall be settled in accordance with the laws of the State of California.

ARTICLE 16. TERMINATION FOR CONVENIENCE

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

herein. Upon receipt of said notification, CONTRACTOR shall immediately proceed with all obligations, regardless of any delay in determining or adjusting any amounts due under this Article, and agrees to comply with all applicable provisions of the FAR pertaining to termination for convenience.

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

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

B. If AUTHORITY so terminates CONTRACTOR's right to proceed, the resulting damage will consist of such liquidated damages as set forth in the Article 31 in this Agreement entitled "Liquidated Damages," until such reasonable time as may be required for final completion of the work together with any increased costs occasioned AUTHORITY in completing the work. If AUTHORITY does not so terminate CONTRACTOR's right to proceed, the resulting damage will consist of such liquidated damages until the work is completed or accepted.

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

1. The delay in completing the work arises from unforeseeable causes beyond the control and without the fault or negligence of CONTRACTOR, including but not restricted to, acts of God, acts of the public enemy, acts or omissions of AUTHORITY, acts of another CONTRACTOR in the performance of an Agreement with AUTHORITY, fires, floods, epidemics, quarantine restrictions, freight

1 embargoes, unusually severe weather, or delays of subcontractors or suppliers arising from
2 unforeseeable causes beyond the control and without the fault or negligence of both CONTRACTOR and
3 such subcontractors or suppliers; and

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

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

18 D. If, after notice of termination of CONTRACTOR's right to proceed under the provisions of this
19 clause, it is determined for any reason that CONTRACTOR was not in default under the provisions of this
20 clause, or that the delay was excusable under the provisions of this clause, the rights and obligations of
21 the parties shall be the same as if the notice of termination had been issued pursuant to Article 16, entitled
22 "Termination for Convenience."

23 E. The rights and remedies of AUTHORITY provided in this clause are in addition to any other
24 rights and remedies provided by law or under this Agreement.

25 F. As used in paragraph C.1 of this Article, the term "subcontractors or suppliers," means
26 subcontractors or suppliers at any tier.

ARTICLE 18. INDEMNIFICATION

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

ARTICLE 19. ASSIGNMENTS AND SUBCONTRACTS

A. Neither this Agreement nor any interest herein nor claim hereunder may be assigned by CONTRACTOR either voluntarily or by operation of law. CONTRACTOR shall not have the right to make any substitutions of any subcontractor listed in Exhibit D, entitled "List of Subcontractors," except in accordance with the provisions of the Subletting and Subcontractors Fair Practices Act, Public Contract Code section 4100 et. seq. AUTHORITY's consent shall not be deemed to relieve CONTRACTOR of its obligation to fully comply with the requirements of this Agreement.

B. CONTRACTOR shall be fully responsible to AUTHORITY for all acts and omissions of its own employees, and of subcontractors and their employees. CONTRACTOR shall coordinate the work performed by subcontractor.

C. AUTHORITY shall have the right, but not the obligation, to review the form of subcontract used by CONTRACTOR for the project and to require modifications thereto to conform to the requirements set forth herein.

ARTICLE 20. AUDIT AND INSPECTION OF RECORDS

CONTRACTOR shall provide AUTHORITY, or other agents of the AUTHORITY, such access to CONTRACTOR's accounting books, records, payroll documents and facilities of the CONTRACTOR which are directly pertinent to this Agreement for the purposes of examining, auditing and inspecting all

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

ARTICLE 21. CONFLICT OF INTEREST

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

ARTICLE 22. CODE OF CONDUCT

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

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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.

1 B. It is expressly understood that any title to preliminary technical data is not passed to
2 AUTHORITY but is retained by CONTRACTOR. Preliminary data includes roughs, visualizations,
3 software design documents, layouts and comprehensives prepared by CONTRACTOR solely for the
4 purpose of demonstrating an idea or message for AUTHORITY's acceptance before approval is given
5 for preparation of finished artwork. Preliminary data title and right thereto shall be made available to
6 AUTHORITY if CONTRACTOR causes AUTHORITY to exercise Article 17, and a price shall be
7 negotiated for all preliminary data.

8 **ARTICLE 27. PRIVACY ACT**

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

16 **ARTICLE 28. OWNERSHIP OF REPORTS AND DOCUMENTS**

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

22 B. All ideas, memoranda, specifications, plans, manufacturing, procedures, drawings,
23 descriptions, and all other written information submitted to CONTRACTOR in connection with the
24 performance of this Agreement shall not, without prior written approval of AUTHORITY, be used for any
25 purposes other than the performance under this Agreement, nor be disclosed to an entity not connected
26 with the performance of the project. CONTRACTOR shall comply with AUTHORITY's policies regarding

1 such material. Nothing furnished to CONTRACTOR, which is otherwise known to CONTRACTOR or is
2 or becomes generally known to the related industry shall be deemed confidential. CONTRACTOR shall
3 not use AUTHORITY's name, photographs of the project, or any other publicity pertaining to the project
4 in any professional publication, magazine, trade paper, newspaper, seminar or other medium without the
5 express written consent of AUTHORITY.

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

11 **ARTICLE 29. CONVICT LABOR**

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

15 **ARTICLE 30. NOTICE OF LABOR DISPUTE**

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

21 **ARTICLE 31. LIQUIDATED DAMAGES**

22 If CONTRACTOR fails to complete the work within the time specified in Article 4 of this
23 Agreement, or any AUTHORITY authorized extension thereof, the actual damage to AUTHORITY for the
24 delay will be difficult or impossible to determine. Therefore, in lieu of actual damages, CONTRACTOR
25 shall pay to AUTHORITY as fixed, agreed-to liquidated damages for each calendar day of delay the sum
26 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 terms of this clause. CONTRACTOR's warranty with respect to work repaired or replaced hereunder will run for one year from the date of such repair or replacement.

B. AUTHORITY shall notify CONTRACTOR in writing within a reasonable time after the discovery of any failure, defect or damage. CONTRACTOR has seven days from receipt of notice from AUTHORITY to respond to AUTHORITY's notification and indicate how CONTRACTOR will remedy the failure, defect, or damage. If AUTHORITY is not satisfied with the remedy proposed by CONTRACTOR,

1 CONTRACTOR and AUTHORITY shall meet and mutually agree when and how CONTRACTOR shall
2 remedy such violation. In the case of an emergency requiring immediate corrective action,
3 CONTRACTOR shall implement such action, as it deems necessary and shall notify AUTHORITY in
4 writing of the urgency of a decision and action taken. CONTRACTOR and AUTHORITY shall, then
5 promptly meet in order to agree on a remedy. If CONTRACTOR and AUTHORITY fail to agree on the
6 remedy within a five-day period, AUTHORITY, after notice to CONTRACTOR, shall have the right to
7 perform or have performed by third parties the necessary remedy, and the costs thereof shall be borne
8 by CONTRACTOR.

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

15 D. In addition to the other rights and remedies provided by this clause, all subcontractors,
16 manufacturers, and suppliers' warranties, expressed or implied, respecting any work and materials
17 furnished hereunder, shall, at the direction of AUTHORITY, be enforced by CONTRACTOR for the benefit
18 of AUTHORITY. In such case if CONTRACTOR's warranty under paragraph A above has expired, any
19 suit directed by AUTHORITY shall be at the expense of AUTHORITY. CONTRACTOR shall obtain any
20 warranties, which the subcontractors, manufacturers or suppliers would give in normal commercial
21 practice and shall cause all subcontractor or supplier warranties to be extend to AUTHORITY.

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

24 F. Notwithstanding any other provision of this clause, unless such a defect is caused by the
25 negligence of CONTRACTOR or its subcontractors or suppliers at any tier, CONTRACTOR shall not be
26 liable for the repair of any defects of material or design furnished by AUTHORITY nor for the repair of any

1 damage which results from any such defect in AUTHORITY furnished material or design.

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

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

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

9 **ARTICLE 33. GENERAL WAGE RATES**

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

24 B. In addition to the foregoing, CONTRACTOR agrees to comply with all other provisions of the
25 Labor Code of the State of California, which are incorporated herein by reference, pertaining to workers
26 performing work hereunder including, but not limited to, those provisions for work hours, payroll records

and apprenticeship employment and regulation program. CONTRACTOR agrees to insert or cause to be inserted the preceding clause in all subcontracts, which provide for workers to perform work hereunder regardless of the subcontractor tier.

ARTICLE 34. INSPECTION AND ACCEPTANCE

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

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

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

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

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

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

ARTICLE 35. MATERIAL AND WORKMANSHIP

A. Unless otherwise specifically provided in this Agreement, all equipment, material, and articles incorporated in the work covered by this Agreement are to be new and of the most suitable grade for the purpose intended. Unless otherwise specifically provided in this Agreement, reference to any equipment, material, article or patented process, by trade name, make or catalog number, shall be regarded as establishing a standard of quality and shall not be construed as limiting competition, and CONTRACTOR may, at its option, use any equipment, material, article or process which, in the judgment of AUTHORITY, is equal to that named. CONTRACTOR shall furnish to AUTHORITY for its approval the name of the

1 manufacturer, the model number and other identifying data and information respecting the performance,
2 capacity, nature and rating of the machinery and mechanical and other equipment, which CONTRACTOR
3 contemplates incorporating in the work. When required by this Agreement or when called for by
4 AUTHORITY, CONTRACTOR shall furnish AUTHORITY, for approval, full information concerning the
5 material or articles, which it contemplates incorporating in the work. When so directed, samples shall be
6 submitted for approval at CONTRACTOR's expense, with all shipping charges prepaid. Machinery,
7 equipment, material and articles installed or used without required approval shall be at the risk of
8 subsequent rejection.

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

13 **ARTICLE 36. NON-CONFORMING WORK**

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

1 B. If AUTHORITY agrees to accept any Nonconforming Work without requiring it to be fully
2 corrected, AUTHORITY shall be entitled to reimbursement of a portion of the Contract Price in an amount
3 equal to the greater of the amount deemed appropriate by AUTHORITY to provide compensation for
4 future maintenance and/or other costs relating to the Nonconforming Work, or 100% of CONTRACTOR's
5 cost savings associated with its failure to perform the Work in accordance with Contract requirements.
6 Such reimbursement shall be payable to AUTHORITY within ten days after CONTRACTOR's receipt of
7 an invoice thereof. CONTRACTOR acknowledges and agrees that AUTHORITY shall have sole
8 discretion regarding acceptance or rejection of Nonconforming Work and that AUTHORITY shall have
9 sole discretion with regard to the amount payable in connection therewith.

10 **ARTICLE 37. CONTRACTOR INSPECTION SYSTEM**

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

14 **ARTICLE 38. SUPERINTENDENCE BY CONTRACTOR**

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

18 **ARTICLE 39. OTHER CONTRACTS**

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

24 **ARTICLE 40. INSPECTION OF SITE**

25 CONTRACTOR acknowledges that it has investigated and satisfied itself as to the conditions
26 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.

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ARTICLE 42. OPERATIONS AND STORAGE AREAS

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

B. Temporary building (storage sheds, shops, offices, etc.) may be erected by CONTRACTOR with the written consent of AUTHORITY, and shall be built with labor and materials furnished by CONTRACTOR without expense to AUTHORITY. Such temporary buildings and utilities shall remain the property of CONTRACTOR and shall be removed by CONTRACTOR at its expense upon the completion of the work. With the written consent of AUTHORITY, such buildings and utilities may be abandoned and need not be removed.

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

ARTICLE 43. PROTECTION OF VEGETATION, UTILITIES, IMPROVEMENTS

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

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

7 **ARTICLE 44. CLEANING UP**

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

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

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

23 **ARTICLE 45. USE AND POSSESSION TO COMPLETION**

24 AUTHORITY shall have the right to take possession of or use any completed or partially
25 completed part of the work. Prior to such possession or use, AUTHORITY shall furnish CONTRACTOR
26 an itemized list of work remaining to be performed or corrected on such portions of the project as are to

be possessed or used by AUTHORITY, provided that failure to list any item of work shall not relieve CONTRACTOR of responsibility for compliance with the terms of this Agreement. Such possession or use shall not be deemed an acceptance of any work under this Agreement. While AUTHORITY has such possession or use, CONTRACTOR shall be relieved of the responsibility for the loss or damage to the work resulting from AUTHORITY's possession or use. If such prior possession or use by AUTHORITY delays the progress of the work or causes additional expense to CONTRACTOR, an equitable adjustment in the Agreement price or the time of completion will be made and the Agreement shall be modified in writing accordingly.

ARTICLE 46. PROHIBITED INTERESTS

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

ARTICLE 47. CONTRACTOR PURCHASED EQUIPMENT

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

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

C. At the expiration or termination of this Agreement, CONTRACTOR may keep the equipment and credit AUTHORITY in an amount equal to its fair market value. Fair market value shall be determined, at CONTRACTOR's expense, on the basis of an independent appraisal. CONTRACTOR may sell the

1 equipment at the best price obtainable and credit AUTHORITY in an amount equal to the sales price. If
2 the equipment is to be sold, then the terms and conditions of the sale must be approved in advance by
3 AUTHORITY's project manager.

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

6 **ARTICLE 48. FORCE MAJEURE**

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

14 **ARTICLE 49. HEALTH AND SAFETY SPECIFICATIONS**

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

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1 **IN WITNESS WHEREOF**, the parties hereto have caused this Agreement No. C-2-2409 to be
2 executed as of the date of the last signature below.

3 **CONTRACTOR**

4 **ORANGE COUNTY TRANSPORTATION AUTHORITY**

5 By: _____

6 By: _____

7 License No:

8 Darrell E. Johnson
9 Chief Executive Officer

10 **APPROVED AS TO FORM:**

11 By: _____

12 James M. Donich
13 General Counsel

14 **APPROVED:**

15 By: _____

16 James G. Beil
17 Executive Director, Capital Programs

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 (manufacture's certification or independent laboratory testing and load testing within the past 60 days), below-the hook rigging, and all specialized below-the-hook lifting devices.
4. Diagrams of the lift that provides geometrical conditions of the load, rigging, and all crane positions during the lift. The drawing shall provide the following:
 - A. Locations of all components to be lifted prior, during and after the lift is completed.
 - B. Radius points.
 - C. Swing patterns.
 - D. In the event that the lift must be aborted, positions where the load may be safely landed.
 - E. Areas where any personnel, public, and vehicles must be evacuated during the lift.
5. Potential ground loading for each point of contact by the crane in selected locations in which the crane will perform the critical lift.
6. Soil and subsurface data and information pertaining to the location on which the crane used for the critical lift will be positioned. This information shall be procured from an authoritative source such as a geotechnical engineer or a professional civil engineer registered in the state of California.

Note: *This information may be available from the Authority for selected locations on some projects.*
7. An engineer shall use the data provided in #5 and #6 above to verify and confirm the following:
 - A. That the soil and subsurface conditions are capable of supporting all loads imposed during the critical lift.
 - B. That the designs of cribbing and other supports used under the crane load points are appropriate to safely transfer such loads.
8. Signature and stamp on the plan by a California registered professional engineer, evidencing review of the plan as meeting the requirements that all loads and load information and calculations contained in the plan are approved, acceptable and safe to perform.

9. Operator qualifications.
10. Method by which communication will be provided to the crane operator. (Designated signal person, two-way radio, hard wire phone system, etc.).
11. A critical lift hazard analysis which identifies the particular hazards (including weather, wind, obstructions, etc.) associated with the lift and the means and methods to reduce, mitigate, or eliminate the hazards.
12. Emergency action plan.
13. Documentation of lift and pre-job meeting shall be conducted by Contractor's Project Manager.

The written plan shall be submitted 7 days prior to any critical lift for review by the Authority Project Manager and the Authority HSEC department. No critical lifts shall be conducted prior to such review.

E. OVERHEAD CRANES

Before using the Authority overhead cranes, each Contractor shall designate a limited number of employees to attend a training session on the use and limitations of overhead cranes with designated Authority personnel.

2.14 DEMOLITION OPERATIONS (CCR Title 8, Section 1734)

Before starting demolition activities the required documentation shall be provided to the Authority's Project Manager, upon request, within 72 hours. Contractor shall provide all compliance documentation as required by CCR Title 8 Article 31.

- A. The Contractor shall be responsible for visiting and examining the project site to assess and personally determine the extent of demolition, associated work, debris removal, disposal and general work to be done under this section.
- B. The Contractor shall take possession of all demolished materials, except as noted otherwise in the Contract Documents, and be responsible for disposing of them in accordance with applicable laws and regulations. On-site burning or burial of demolition materials will not be permitted.
- C. Provide continuous noise and dust abatement as required, preventing disturbances and nuisances to the public, workers, and the occupants of adjacent premises and the surrounding areas. Dampen areas affected by demolition operation as necessary to prevent dust nuisance.
- D. Site demolition plan: Indicate methods, procedures, equipment, and structures to be employed. Specify safety measures in accordance with applicable codes including signs, barriers, and temporary walkways. Plans shall be prepared by a qualified person (CSP, CIH, CHST, CHMM, etc.), or as necessary by a professional engineer licensed to practice in the State of California, when so

required by the provisions of the California Board for Professional Engineer and Surveyors.

- E. Equipment, haul routes, and disposal sites to be used in the demolition and disposal work. Copy of manifests showing delivery of disposed materials in accordance with the plan and permit conditions. Certification that all demolished materials removed from the site have been disposed of in accordance with applicable laws and regulations.

2.15 EXCAVATION OPERATIONS (CCR Title 8, Section 1541)

Before starting excavation activities more than 5 feet deep into which people shall enter, the required documentation shall be provided to the Authority's Project Manager, upon request, within 72 hours. All compliance documentation shall comply with the following CCR Title 8, Section 1541 requirements:

- A. A copy of the Contractor's Excavation Permit.
- B. Attention is directed to the applicable sections of the Labor Code concerning trench excavation safety plans, "Trench Safety." Excavation for any trench 5 feet or more in depth shall not begin until the Contractor has received approval from the Engineer of the Contractor's detailed plan for worker protection from the hazards of caving ground during the excavation of that trench and any design calculations used in the preparation of the detailed plan. Excavations 20 feet or greater shall be engineered and plan stamped by a California registered professional engineer.
- C. The detailed plan shall show the details of the design of shoring, bracing, sloping or other provisions to be made for worker protection during the excavation. No plan shall allow the use of shoring, sloping or a protective system less effective than that required by the Construction Safety Orders of the Division of Occupational Safety and Health. If the plan complies with the shoring system standards established by the Construction Safety Orders, the plan shall be submitted at least five (5) days before the Contractor intends to begin excavation for the trench.
- D. Excavations and trenches shall be inspected by a "Competent Person" daily and after every rainfall to determine if they are safe. Daily inspections shall be recorded. Documentation is to be kept on site and available for review upon request.
- E. Excavations are considered class 'C' soil unless documented testing in accordance with 29 CFR Subpart P, Section 1926.650 and CCR Title 8 Standards supports a class 'B' soil classification and is confirmed and stamped by a California registered professional engineer. In no case will excavations be classified as class 'A' soil.

2.16 FALL PROTECTION (CCR Title 8, Sections 1669-1671)

The following standards are required when performing work on Authority property. The required documentation shall be provided to the Authority's Project Manager, upon request, within 72 hours.

- A. Fall protection is required for workers exposed to falls in excess of six (6) feet.
- B. When conventional fall protections methods are impractical or create a greater hazard, a written plan in conformance with CCR Title 8, Article 24, shall be submitted to the Authority a minimum of seven (7) days in advance of the scheduled activity.

2.17 FORKLIFTS, BACKHOES AND OTHER INDUSTRIAL TRACTORS (CCR Title 8, Section 3664)

CCR Title 8 defines backhoes as “industrial tractors”. All compliance documentation shall be provided as required by CCR Title 8, Section 3664. The following required documentation shall be provided to the Authority’s Project Manager, upon request, within 72 hours:

- A. A copy of each operator’s certificate or a list of company-authorized industrial tractor operators that have been properly trained in the equipment’s use and limitations. Please state which equipment, and model each operator has been authorized to operate (i.e. forklifts, backhoe, bulldozer, front-end loader, etc.).

2.18 ELECTRICAL OPERATIONS

HIGH VOLTAGE (CCR Title 8, Sections 2700-2974)

Any work on electrical equipment defined by OSHA as high-voltage, at or above 600 volts, requires specialized training certifications and personal protective equipment. Before any high-voltage work commences, the Authority Project Manger must be notified and must provide approval. The following required NFPA 70E certification and a certificate of training from a recognized organization of a two day high voltage safety training course shall be provided to the Authority’s Project Manager, upon request, within 72 hours:

- A. A list of the name(s) of the company-designated high voltage Qualified Electrical Worker(s)

LOW VOLTAGE (CCR Title 8, Sections 2299-2599)

Only qualified persons shall work on electrical equipment or systems.

- A. 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

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, Authority 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

RESTROOM IMPROVEMENTS AT FULLERTON PARK AND RIDE

PROJECT SPECIFICATIONS

C-2-2409

March 2022

ORANGE COUNTY TRANSPORTATION AUTHORITY

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**SECTION 01 11 00
SUMMARY OF WORK**

PART 1 - GENERAL

1.01 DESCRIPTION

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

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

F. It will be the responsibility of the Contractor to stage the construction activities at the project site, using the Site Specific Work Plan process (SSWP)

G. Ownership of Materials:

1. Materials furnished by the Contractor under this contract shall become the property of the OCTA.

H. General Summary of Work:

1. Work to be performed by Contractor shall consist of the construction of the work shown on the drawings and detailed in the specifications.
2. The descriptions provided in this section are general in nature and are not meant to detail all work required by the contract documents.
3. The work under this contract consists of selective demolition, modifications, and renovations of the existing men's, women's and driver's restroom in each of the two buildings at Fullerton Park and Ride located at 3000 West Orangethorpe Avenue, Fullerton, CA 92833.
4. This project is a facility modification project under OCTA Level 3 Health, Safety and Environmental Specifications and requirements.

I. Other features of the work include, but are not limited to, the following:

1. Door and frame replacement to accessory spaces at both buildings.
2. Updates to interior lighting system at both buildings.
3. Replacement of Janitor's room floor sink at both buildings.
4. Complete mobilization and demobilization.
5. Obtaining of necessary construction and related permits from various jurisdictional agencies. Contractor shall be responsible for all related fees from various jurisdictional agencies.
6. Obtain and pay for all licenses required by all jurisdictions associated with the approval and requirements of the project.

1.02 INTENT OF DRAWINGS AND SPECIFICATIONS

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

1.03 REFERENCE MATERIAL

- A. Reference specifications or standards referred to in the plans or specifications shall be the most recent version developed as of Contract award. Where referenced standards refer to the "specifications" or the "special conditions," this shall be understood by Contractor to mean the drawings and specifications of this contract. Contractor is responsible to obtain all reference material at its own expense and to make itself familiar with the requirements therein.

1.05 PROJECT ACCESS AND CONTRACT LIMITS

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

PART 2 – PRODUCTS

Not Used

PART 3 – EXECUTION

Not Used

PART 4 – MEASUREMENT AND PAYMENT

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

END OF SECTION

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.

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

PART 2 – PRODUCTS

Not Used

PART 3 – EXECUTION

Not Used

PART 4 – MEASUREMENT AND PAYMENT

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

END OF SECTION

SECTION 01 14 23

COORDINATION WITH OCTA AND LOCAL AGENCIES

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Requirements for coordination with OCTA and Local Agencies.

1.02 REGULATIONS

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

1.03 COORDINATION

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

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

1.04 GENERAL REQUIREMENTS

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

PART 2 – PRODUCTS

Not Used

PART 3 – EXECUTION

Not Used

PART 4 – MEASUREMENT AND PAYMENT

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

END OF SECTION

**SECTION 01 14 25
PROCEDURES IN CONSTRUCTION**

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

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

B. Related Sections:

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

1.02 WORK BY CONTRACTOR

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

1.03 SUBMITTALS

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

1.04 STORM WATER MANAGEMENT

- A. Contractor is responsible for preventing and/or mitigating potential chemical releases, erosion and sedimentation impacts associated with storm water runoff. Contractor shall comply with OCTA's bus base industrial SWPPP and comply with the Statewide General Permit for Storm Water Discharges Associated with Industrial Activities (IGP) order number 2014-0057-DWQ or the latest order (See link below). Contractor shall prepare and submit a best management practices (BMP) plan for OCTA's review and acceptance; and shall implement BMP plan and maintain the BMPs for the duration of the project. See Section 01 57 13, Temporary Erosion and Sedimentation Control, for additional requirements.
http://www.waterboards.ca.gov/board_decisions/adopted_orders/water_quality/2014/wqo2014_0057_dwq_rev_mar2015.pdf.
- B. Use best management practices (BMPs) Contractor proposes in connection with the execution of construction activity at the project site. Use BMPs included in the Construction Site Best Management Practices (BMP) Manual prepared by the California Stormwater Quality Association, www.cabmphandbooks.com.
- C. Provide copies of the contractor's BMP plan to subcontractors and keep a copy available onsite at the project office. Provide amendments to the BMP plan when there is a change in construction or operations, or where storm water runoff conditions may affect the discharge of significant quantities of pollutants to surface waters, groundwater, or separate municipal storm sewer systems. Submit the amended BMP plan to the OCTA for review and acceptance as soon as practicable, and retain the amended plan on site.
- D. Preparation and implementation of an OCTA-accepted BMP plan does not relieve the Contractor or subcontractors of their responsibilities to comply with state, county, and local governmental requirements, including those for storm water management and non-point source runoff controls.

1.05 MATERIAL SAFETY DATA SHEETS (MSDS)

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

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

1.06 CONTRACTOR USE OF WORK SITE

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

- 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

**RESTROOM IMPROVEMENTS
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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 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 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.

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

3.09 PREVENTION OF TRAFFIC IMPACTS

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

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

3.10 PREVENTION OF ROAD DAMAGE

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

3.11 SCAQMD REQUIREMENTS

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

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

3.12 PREVENTION OF NOISE IMPACTS

- A. Limit noise-producing activities to hours required by the local jurisdictions for construction activities.
- B. Construction-related equipment, including heavy-duty equipment, motor vehicles, and portable equipment, shall be turned off when not in use for more than 30 minutes. Diesel-fueled commercial motor vehicles with gross vehicular weight ratings of greater than 10,000 pounds shall be turned off when not in use for more than 5 minutes.
- C. Contractor shall require by contract specifications that the following construction best management practices (BMPs) be implemented by contractors to reduce construction noise levels:
 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

1.02 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:

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.
- 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)

**RESTROOM IMPROVEMENTS
AT FULLERTON PARK AND RIDE**

**C-2-2409
EXHIBIT B**

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

PART 2 – 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 starting from 001. Contractor shall prepare and maintain a log of RFI's and, at any time requested by the OCTA, Contractor shall furnish copies of the log showing all outstanding RFI's. Contractor shall also note all unanswered RFI's in the log.
- L. Contractor shall allow for 14 calendar days review and response time for RFI's.

1.04 RESPONSE TO RFI'S

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

additional information, in which case OCTA's time for response will date from time of receipt of additional information.

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

1.05 SPOKEN COMMUNICATIONS

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

PART 2 – PRODUCTS

Not Used

PART 3 – EXECUTION

Not Used.

PART 4 – MEASUREMENT AND PAYMENT

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

END OF SECTION

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SECTION 01 29 00

PAYMENT PROCEDURES

PART 1 – GENERAL

1.01 SUMMARY

A. Section Includes:

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

B. Related Sections:

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

1.02 DEFINITIONS

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

1.03 SCHEDULE OF VALUES

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

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

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

1.04 APPLICATION FOR PAYMENT – GENERAL

- A. Progress Payment Application: The Authority, no later than 25th day of each month, shall prepare a progress payment estimate based on the estimated percentage of completion of work in the approved Schedule of Values and on the Contractor's actually incurred allowable expenses on such work. Fabricated materials, materials on site but not installed in construction and work items not completed shall not be included in progress payment and will not be paid by the Authority. The Authority will issue the progress payment, in the amount it deems appropriate, by approximately the 15th days of the following month.
- B. Application for progress payments and partial progress payments shall be in accordance with Contract General Provision and the approved Schedule of Values.
- C. The Contractor shall submit the progress payment application prepared by the Authority and signed by the Contractor's authorized representative and furnish an invoice for further process based on a schedule to be established at the 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.

**RESTROOM IMPROVEMENTS
AT FULLERTON PARK AND RIDE**

**C-2-2409
EXHIBIT B**

PART 4 - MEASUREMENT AND PAYMENT

Not Used.

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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.

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)

- 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.
- 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 within 14 calendar days after receipt of each of resubmittals from Contractor. After review and return by the Engineer, resubmit the submittals within 7 calendar days.

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

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

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

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

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

1.05 CITY PLAN CHECK DRAWINGS AND SHOP DRAWINGS

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

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

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

1.06 PRODUCT DATA

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

1.07 CERTIFICATES OF COMPLIANCE

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

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

1.08 SAMPLES

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

1.09 SURVEY DATA

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

1.10 GENERAL DISTRIBUTION

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

1.11 REVIEW OF SUBMITTALS

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

1.12 SUBMITTAL STATUS

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

1.13 SUBMITTALS DESIGNATED AS "CONFORMS"

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

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

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

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

1.15 SUBMITTALS DESIGNATED AS "NO ACTION TAKEN"

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

PART 2 – PRODUCTS

Not Used.

PART 3 – EXECUTION

Not Used.

PART 4 – MEASUREMENT AND PAYMENT

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

END OF SECTION

SECTION 01 35 13

SPECIAL PROJECT PROCEDURES

PART 1 - GENERAL

1.01 SECTION INCLUDES

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

1.02 RELATED SECTIONS

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

PART 2 - PRODUCTS

2.01 PRODUCTS FOR PATCHING AND EXTENDING WORK

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

PART 3 - EXECUTION

3.01 EXAMINATION

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

3.02 PREPARATION

A. Coverings:

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.

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. Safety Data Sheet, per Section 01 14 25, Procedures in Construction.
 3. Notification to OCTA Project Manager as soon as reasonably possible of any injury to Contractor's employee, subcontractor of any tier, supplier or other entity engaged in any portion of the work while on OCTA Project Manager property. Contractor shall submit an injury report to OCTA Project Manager within 24 hours of said injury.
 4. Other records as required by agencies listed in Part 1.03.

1.06 SAFETY AND HEALTH PERSONNEL

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

1.07 CONSTRUCTION AND SAFETY EQUIPMENT

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

1.08 TESTING EQUIPMENT

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

1.09 IDENTIFICATION OF CONTRACTOR/SUBCONTRACTOR PERSONNEL

- A. While performing work at worksite, Contractor personnel of any tier shall be identified with employee's company name or logo affixed to employee's hardhat, identification badge, or other identification acceptable to OCTA Project Manager.
- B. Contractor personnel shall wear hard hats, orange safety vests or orange T-shirts with reflective strips, safety glasses, and safety shoes at all times while on the project.

PART 2 – PRODUCTS

Not Used.

PART 3 – EXECUTION

Not Used.

PART 4 – MEASUREMENT AND PAYMENT

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

END OF SECTION

SECTION 01 41 00

REGULATORY REQUIREMENTS

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

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

B. Related Sections:

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

1.02 SUBMITTALS

A. Submit in accordance with Section 01 33 00, Submittal Procedures.

B. Before starting the work, submit to OCTA Project Manager copies of permit applications, permits, licenses, receipts for fee payments, judgments, and other similar documents, correspondence, and records obtained for performance of the work.

C. At completion, submit certifications, releases, jurisdictional settlements, notices and other similar documents under Section 01 77 00, Closeout Procedures.

1.03 APPLICABILITY OF INDUSTRY STANDARDS

A. Construction Industry Standards referenced in the contract documents have the same force and effect as if published herein and are made a part of the contract documents. Refer to Section 01 42 00 References.

B. Reference standards (referenced in the contract documents or by governing regulations) have precedence over non-referenced standards that are recognized in the industry for applicability to the work.

1. Building Codes: Performance of the Work shall meet or exceed the minimum requirements of California Code of Regulations (CCR), Title 24, including the following:

- a. CCR Title 24, Part 2: Uniform Building Code (UBC), latest edition, with State

of California amendments; referenced as California Building Code (CBC).

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

1.04 GOVERNING REGULATIONS AND AUTHORITIES

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

shown on the plans which are in direct conflict with the work will be dealt with by change orders.

- C. Comply with requirements under the National Pollutant Discharge Elimination System (NPDES).

1.05 OTHER APPLICABLE LAWS, ORDINANCES AND REGULATIONS

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

1.06 PERMITS

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

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

PART 2 – PRODUCTS

Not Used.

PART 3 – EXECUTION

Not Used.

PART 4 - MEASUREMENT AND PAYMENT

4.01 MEASUREMENT

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

4.02 PAYMENT

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

END OF SECTION

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

1.03 ABBREVIATIONS, ACRONYMS, NAMES AND TERMS, GENERAL

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

AC or ac	Alternating current or air conditioning (depending upon context)
AMP or amp	Ampere
C	Celsius
CFM or cfm	Cubic feet per minute
CM or cm	Centimeter
CY or cy	Cubic yard
DC or dc	Direct current
DEG or deg	Degrees
F	Fahrenheit
FPM or fpm	Feet per minute
FPS or fps	Feet per second
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

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- 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).
 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

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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
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

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

1.05 REFERENCE STANDARDS

A. General

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.
2. References to USDOT ADA Standards refer to the U.S. Department of Transportation ADA Standards for Transportation Facilities, effective 11/29/06, available at www.access-board.gov.
3. References to USDOJ ADA Standards are to the U.S. Department of Justice ADA Standards for Accessible Design, 1994, available at www.access-board.gov, or to new standards (currently pending) if in effect at the time of execution of the contract documents.

PART 2 – PRODUCTS

Not Used.

PART 3 – EXECUTION

Not Used.

PART 4 - MEASUREMENT AND PAYMENT

Not Used.

END OF SECTION

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SECTION 01 42 16

DEFINITIONS

PART 1 - GENERAL

1.01 GENERAL

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

1.02 DEFINITION OF TERMS

- A. Wherever in the specifications and other Contract Documents, the following terms and abbreviations or pronouns in place of them, are used, the intent and meaning shall be interpreted as provided in this section unless the context otherwise requires.
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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7. Provide: To furnish/supply and install equipment/materials by Contractor per Contract documents.

PART 2 – PRODUCTS

Not Used.

PART 3 – EXECUTION

Not Used.

PART 4 – MEASUREMENT AND PAYMENT

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

END OF SECTION

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.

- 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.
- K. OCTA Quality Assurance Inspection and Testing:
 - 1. The Authority will select and pay for an independent testing and inspection laboratory or agency, to conduct test and inspection for quality assurance purposes. Contractor is fully responsible for all quality control testing and inspection as required on contract drawings and/or specifications, required by AHJ, and as standard industry practice.
 - 2. Contractor shall coordinate and notify OCTA when work is ready for quality assurance testing and inspection.
 - 3. Contractor shall provide OCTA Project Manager, independent testing and inspection personnel, and OCTA's Consultant with full access to the work and reasonable time for inspection for ascertaining whether or not the work is performed in accordance with the requirements and intent of the contract. No work shall be covered and no materials shall be installed without making the work and materials available for inspection by OCTA.

If OCTA Project Manager so requests, Contractor shall, at any time before acceptance of the work, remove and uncover such portions of the finished work as may be directed for quality assurance testing and inspection.

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

PART 2 - PRODUCTS

Not Used

PART 3 – EXECUTION

Not Used

PART 4 - MEASUREMENT AND PAYMENT

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

END OF SECTION

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

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

PART 2 – PRODUCTS

Not Used

PART 3 – EXECUTION

3.01 PERSONNEL QUALIFICATION

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

PART 4 – MEASUREMENT AND PAYMENT

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

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SECTION 01 45 00

QUALITY CONTROL

PART 1 – GENERAL

1.01 SUMMARY

A. Section Includes:

1. Authority of OCTA Project Manager.
2. Responsibilities of the Contractor.
3. Inspection and testing by OCTA Project Manager.

B. Related Sections:

1. Section 01 14 23, Coordination with OCTA and Local Agencies.
2. Section 01 33 00, Submittal Procedures.
3. Section 01 41 00, Regulatory Requirements.
4. Section 01 43 00, Quality Assurance.
5. Section 01 60 00, Product Requirements.

1.02 AUTHORITY OF OCTA PROJECT MANAGER

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

1.03 REFERENCES

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

1.04 REGULATORY REQUIREMENTS FOR TESTING AND INSPECTION

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

1.05 RESPONSIBILITIES OF THE CONTRACTOR

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

1.06 SUPERVISION AND CONSTRUCTION PROCEDURES

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

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

1.07 QUALITY OF THE WORK

- A. Quality of Products: Unless otherwise indicated or specified, all products shall be new, free of defects and fit for the intended use.
- B. Quality of Installation: All Work shall be produced plumb, level, square and true, or true to indicated angle, and with proper alignment and relationship between the various elements. New material shall be installed so that drainage merges with existing flow patterns on the site towards the drains.
- C. Protection of Existing and Completed Work: Take all measures necessary to preserve and protect existing and completed Work free from damage, deterioration, soiling and staining, until Acceptance by the Authority.
- D. Standards and Code Compliance and Manufacturer's Instructions and Recommendations: Unless more stringent requirements are indicated or specified, comply with manufacturer's instructions and recommendations, reference standards and building code research report requirements in preparing, fabricating, erecting, installing, applying, connecting and finishing Work.

- E. Deviations from Standards and Code Compliance and Manufacturer's Instructions and Recommendations: Document and explain all deviations from reference standards and building code research report requirements and manufacturer's product installation instructions and recommendations, including acknowledgement by the manufacturer that such deviations are acceptable and appropriate for the Project.
- F. Verification of Quality: Work shall be subject to verification of quality by the Authority or Engineer in accordance with provisions of the Conditions of the Contract.
 - 1. Contractor shall cooperate by making Work available for inspection by the Authority or Engineer or their designated representative.
 - 2. Such verification may include mill, plant, shop, or field inspection as required. OCTA designated Inspector shall access to material inspection.
 - 3. Provide access to all parts of the Work, including plants where materials or equipment are manufactured or fabricated.
 - 4. Provide all information and assistance as required, including that by and from subcontractors, fabricators, materials suppliers and manufacturers, for verification of quality by the Authority or Engineer.
 - 5. Contract modifications, if any, resulting from such verification activities shall be governed by applicable provisions in the Conditions of the Contract.
- G. Observations by the Engineer and Engineer's Consultants: Periodic and occasional observations of Work in progress may be made by the Engineer and Engineer's consultants as deemed necessary to review progress of Work and general conformance with design intent.
- H. Limitations on Inspection, Test and Observations: Neither employment of an Inspector of Record, independent testing and inspection agency, or observations by the Engineer and Engineer's consultants shall in no way relieve Contractor of obligation to perform Work in full conformance to all requirements of Contract Documents and applicable Building Code and other regulatory requirements.
- I. The Engineer's Acceptance and Rejection of Work: The Engineer reserves the right to reject all Work not in conformance to the requirements of the Drawings and Specifications.
- J. Correction of Non-Conforming Work: Non-conforming Work shall be modified, replaced, repaired or redone by the Contractor at no change in Contract Sum or Contract Time.
- K. Acceptance of Non-Conforming Work: Acceptance of non-conforming Work, without specific written acknowledgement and approval of the Authority, shall not relieve the Contractor of the obligation to correct such Work.
- L. Contract Adjustment for Non-conforming Work: Should the Authority or Engineer determine that it is not feasible or in Authority's interest to require non-conforming

Work to be repaired or replaced, an equitable reduction in Contract Sum shall be made by agreement between the Authority and Contractor. If equitable amount cannot be agreed upon, a Construction Change Directive will be issued and the amount in dispute resolved in accordance with the Conditions of the Contract.

- M. Non-Responsibility for Non-Conforming Work: The Engineer and the Engineer's consultants disclaim any and all responsibility for Work produced not in conformance with the Drawings and Specifications.

1.08 INSPECTION AND TESTING

- A. The work is to be completed in accordance with the specifications, the drawings, and such instructions or directions as OCTA Project Manager may give to supplement drawings and specifications. Wherever the words "directed," "permitted," "approved," "acceptable," "satisfactory to," or similar words or phrases occur in the contract documents, they shall be understood to be functions of OCTA Project Manager to be exercised at his discretion.
- B. The OCTA shall not be responsible for and shall not have control or charge over the acts or omissions of the Contractor, subcontractors, or any of their agents or employees, or any other persons performing any of the work.
- C. Inspections and Tests by Authorities Having Jurisdiction: Contractor shall cause all tests and inspections required by authorities having jurisdiction to be made for Work under this Contract, Public Works Department, Fire Department, Health Department, AQMD, SCE and similar agencies. Except as specifically noted, scheduling, conducting and paying for such inspections shall be solely the Contractor's responsibility.
- D. Inspections and Tests by Serving Utilities: Contractor shall cause all tests and inspections required by serving utilities to be made for Work under this Contract. Scheduling, conducting and paying for such inspections shall be solely the Contractor's responsibility.
- E. Inspections and Tests by Manufacturer's Representatives: Contractor shall cause all tests and inspections specified to be conducted by materials or systems manufacturers to be made. Additionally, all tests and inspections required by materials or systems manufacturers as conditions of warranty or certification of Work shall be made, the cost of which shall be included in the Contract Sum.
1. Test and Inspection Reports: After each inspection and test, one copy of report shall be promptly submitted to the Engineer, Engineer's consultant (as applicable), Authority, Contractor, City Inspector, and to agency having jurisdiction (if required by Code).
- a. Reports shall clearly identify the following:
- Date issued.
Project name and number.

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

Name of inspector.

Date and time of sampling or inspection.

Location in Project where sampling or inspection was conducted.

Type of inspection or test.

Date of test.

Results of tests.

Comments concerning conformance with Contract Documents and other requirements.

- b. Test reports shall indicate specified or required values and shall include statement whether test results indicate satisfactory performance of products.
 - c. Samples taken, but not tested, shall be reported.
 - d. Test reports shall confirm that methods used for sampling and testing conform to specified test procedures.
- F. Contractor shall provide OCTA Project Manager, independent testing and inspection agency personnel, inspector of record and OCTA's consultant with full access to the work and reasonable time for inspection for ascertaining whether or not the work is performed in accordance with the requirements and intent of the contract. No work shall be covered or materials used without making the work or materials available for inspection by OCTA Project Manager. If OCTA Project Manager so requests, the Contractor shall, at any time before acceptance of the work, remove or uncover such portions of the finished work as may be directed.
- G. After examination, Contractor shall restore the work to the standard required by the contract documents. Inspection will not relieve the Contractor from the responsibility for the quality of this work and to perform the work in accordance with the requirements of the contract documents.
- H. All materials and every process of manufacture and construction shall be subject to inspection at all times. OCTA Project Manager and his designated representatives shall have free access to all operations. Contractor shall provide necessary materials and OCTA Project Manager shall have the right to select suitable samples of materials for testing or examination which the contractor shall supply without charge. In case such samples must be shipped to some other point for inspection or testing, Contractor shall box or crate samples as necessary and shall deliver them at points designated for shipment without charge. Omission of inspection shall not relieve the Contractor of its obligations to produce the work required by the contract documents. Materials not in compliance with contract requirements shall be removed promptly from the vicinity of the work, and the Contractor, at its expense, shall promptly remove, reconstruct, replace, and make good any defective work as directed in writing by OCTA Project Manager. Oversight or error in judgment of inspectors, or previous acceptance of the work, shall not relieve Contractor from the obligation to correct defects whenever discovered.
- I. If the Contractor does not correct nonconforming work or remove rejected materials within a reasonable time fixed by written notice, OCTA Project Manager may direct

that removals and corrections be performed by other contractors. Charges for such removals and corrections shall be deducted from the Contractor's payment due under this contract or may be paid for by the Contractor's bonds held for this contract.

- J. All inspection by OCTA Project Manager is for the protection of the OCTA and its interest and shall not relieve the Contractor of responsibility for providing work in accordance with the contract documents. After completion of the work, a final inspection will be made and any previous inspection or acceptance will not preclude rejection at the final inspection of any item that is not satisfactory to OCTA Project Manager or is not in accordance with the contract documents.
- K. If, within the period of time prescribed by law or by the terms of any applicable special warranty required by the contract documents, whichever is longer, any of the work is found to be defective or not in accordance with the contract documents, the Contractor shall correct it promptly after receipt of a written notice from OCTA Project Manager. This obligation shall survive acceptance of the work or termination of the contract. In the event the OCTA prefers to accept or not require correction of defective or nonconforming work, the OCTA may do so instead of requiring its removal and correction, in which case OCTA Project Manager shall determine an appropriate sum to be deducted from the contract price or otherwise charged against the Contractor, which determination shall be final and binding upon the parties. Such adjustment shall be effected whether or not final payment has been made.
- L. All defective work which has been rejected shall be remedied or removed and replaced by the Contractor at its own expense, in a manner acceptable to OCTA Project Manager.
- M. Whenever all of the work provided for in the contract or authorized as force account work has been completed and the final cleaning-up performed, OCTA Project Manager will make the final inspection, and, if the work is found to be satisfactory, Contractor will be notified in writing of the acceptance. All portions of the work shall be maintained by the Contractor at the standards required by the contract documents until final acceptance.
- N. At OCTA Project Manager's discretion, portions of the work that are determined to be substantially complete may be accepted before all the project work is completed. After acceptance of substantially completed work, Contractor shall not use the finished product for any purpose without permission of OCTA Project Manager.

PART 2 – PRODUCTS

Not Used

PART 3 – EXECUTION

3.01 FIELD QUALITY CONTROL/QUALITY ASSURANCE

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

PART 4 – MEASUREMENT AND PAYMENT

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

END OF SECTION

SECTION 01 50 00

TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Temporary facilities and controls used during construction.

B. Related Sections:

1. Section 01 14 25, Procedures in Construction.
2. Section 01 14 27, Legal Relations and Responsibility.
3. Section 01 14 43, Environmental Resource Protection.
4. Section 01 71 13, Mobilization and Demobilization
5. Section 01 74 19, Construction Waste Management and Disposal.

1.02 SUBMITTALS

A. Submit in accordance with Section 01 33 00, Submittal Procedures.

B. Site Plans: Show temporary facilities, utility hookups, staging areas, and parking areas for construction personnel.

C. Moisture Protection Plan: Describe procedures and controls for: protecting materials and construction from water absorption and damage, including delivery, handling, and storage; discarding water-damage materials; protocols for mitigation of water into completed work; and replacing water-damaged work.

1.03 QUALITY ASSURANCE

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

PART 2 - PRODUCTS

2.01 TEMPORARY FACILITIES, PRODUCTS, AND CONTROL

- A. Common-Use Field Office: not required.
- B. Storage and Fabrication Sheds: No equipment or tools are allowed to be stored at the jobsite without the OCTA Project Manager's written permission. If on-site storage is permitted, provide access and orderly provision for maintenance and for inspection of products.
- C. Telephone Service: Provide mobile telephone service for project superintendent.
- D. Temporary Electricity:
 - 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:

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).
- C. California Stormwater Quality Association (CASQA)

1.03 SUBMITTALS

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

1.04 DELIVERY, STORAGE, AND HANDLING

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

PART 2 - PRODUCTS

2.01 MATERIALS

A. Miscellaneous Materials:

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

PART 3 - EXECUTION

3.01 GENERAL

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

2. Work may involve construction of temporary berms, dikes, dams, sediment basins, and slope drains; use of temporary mats; or other control devices or methods as necessary to control erosion.
- E. Construct facilities required for clearing, grading, and land alteration activities, to ensure that sediment-laden water does not enter drainage systems or violate applicable water standards. Conform to requirements of Section 01 14 43, Environmental Resource Protection.
- F. Permanent Features:
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 the Construction BMP handbook prepared by the CASQA, www.cabmphandbooks.com:
 1. Where storm drain inlets are operational before permanent stabilization of disturbed drainage area.
 2. Adjacent to and immediately downhill of utility type construction in existing paved areas with catch basin drainage.
 3. When cleaning streets.
- C. Use berms when required to direct drainage to flow through filters and prevent bypassing of inlets.
- D. Do not permit more than one-foot depth of sediment to accumulate against storm drain inlet protection.
 1. Remove sediment and restore inlet protection as needed to maintain sediment trapping and filtering capability.

PART 4 - MEASUREMENT AND PAYMENT

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

END OF SECTION

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.

**RESTROOM IMPROVEMENTS
AT FULLERTON PARK AND RIDE**

**C-2-2409
EXHIBIT B**

PART 4 - MEASUREMENT AND PAYMENT

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

END OF SECTION

SECTION 01 71 13

MOBILIZATION AND DEMOBILIZATION

PART 1 - GENERAL

1.01 DESCRIPTION

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

1.02 DEFINITIONS

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

1.03 SUBMITTALS

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

PART 2 - PRODUCTS

Not Used

PART 3 – EXECUTION

3.01 GENERAL

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

PART 4 – MEASUREMENT AND PAYMENT

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

END OF SECTION

SECTION 01 71 23

FIELD ENGINEERING

PART 1 – GENERAL

1.01 DESCRIPTION

A. Work Includes:

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.

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

PART 2 – PRODUCTS

Not Used

PART 3 – EXECUTION

3.01 EXAMINATION

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

3.02 SURVEYS AND RECORDS

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

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

3.03 SURVEY REFERENCE POINTS

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

PART 4 - MEASUREMENT AND PAYMENT

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

END OF SECTION

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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 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 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 bury at site any waste material, rubbish or debris. Remove such material from project to a lawful disposal area by the end of each work day; pay all associated hauling and dumping charges.
- M. Perform any additional cleaning or cleaning at shorter intervals when instructed to do so by OCTA Project Manager.

3.02 FINAL CLEANING

- A. SUBSTANTIAL COMPLETION REVIEW CLEANING, GENERAL

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

B. FINAL COMPLETION INTERIOR CLEANING

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

C. FINAL COMPLETION SITE CLEANING

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

PART 2 – PRODUCTS

Not Used

PART 3 – EXECUTION

Not Used

PART 4 – MEASUREMENT AND PAYMENT

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

END OF SECTION

SECTION 01 77 00

CLOSEOUT PROCEDURES

PART 1 – GENERAL

1.01 SUMMARY

A. Section Includes:

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

B. Related Sections:

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

1.02 SUBSTANTIAL COMPLETION

- A. Preliminary punch list review: At Contractor's request, the Engineer will attend a preliminary Contract closeout review, not earlier than 14 days prior to anticipated Substantial Completion review day. The Engineer and Contractor shall conduct a brief walk-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-through 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

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.

**RESTROOM IMPROVEMENTS
AT FULLERTON PARK AND RIDE**

**C-2-2409
EXHIBIT B**

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.

**RESTROOM IMPROVEMENTS
AT FULLERTON PARK AND RIDE**

**C-2-2409
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: 1111 Pump Circle Newport Beach, CA 92663	Type: 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.

**RESTROOM IMPROVEMENTS
AT FULLERTON PARK AND RIDE**

**C-2-2409
EXHIBIT B**

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.

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.

1.03 WARRANTIES AND GUARANTEES

- A. General: Provide all warranties and manufacturer's guarantees with OCTA named as the beneficiary. For equipment, products, or components bearing a manufacturer's warranty of guarantee that extends for a period of time beyond the Contractor's warranty and guarantee, so state in the warranty or guarantee.
- B. Warranty: Assurance to the Authority by the Contractor, installer, supplier, manufacturer or other party responsible as warrantor, for the quantity, quality, performance and other representations of a product, system service of the Work, in

- whole or in part, for the duration of the specified period of time. Warranty shall be an agreement to repair to repair or replace, without cost and undue hardship to the Authority, work performed under the Contract which is found to be defective during the warranty or guaranty period (correction period).
- C. Guaranty: Assurance to the Authority by the Contractor or product manufacturer or other specified party, as guarantor, that the specified warranty will be fulfilled by the guarantor in the event of default by the warrantor.
 - D. Standard Product Warranty: Preprinted, written warranty published by product manufacturer for particular products and specifically endorsed by the manufacturer to the Authority.
 - E. Special Project Warranty: Written warranty required by or incorporated into Contract Documents, to extend time limits provided by standard warranty or to provide greater rights for the Authority. For provisions for special warranties, refer to the Conditions of the Contract for terms of the Contractor's special warranty of the workmanship and materials.
 - F. Specific Warranty and Guarantee Requirements: Refer to Divisions 02 and higher.
 - G. Disclaimers and Limitations: Manufacturer's disclaimers and limitations on product warranties shall not relieve the Contractor of warranty on the work that incorporates the products, nor shall they relieve suppliers, manufacturers and installers required to countersign special warranties with Contractor.
 - H. Related Damages and Losses: When correcting warranted work that has been found defective, remove and replace other work that has been damaged as a result of such defect or that must be removed and replaced to provide access for correction of warranted work.
 - I. Correction Period: The Correction Period shall be synonymous with warranty period and guaranty period used in the Contract Specifications. All defective work shall be initiated with 12 hours for critical system operations, as determined solely by the Authority, and within 3 calendar days for all other warranty work.
 - J. Reinstatement of Warranty: When work covered by a warranty has been found defective and has been corrected by replacement or rebuilding, reinstate the warranty by written endorsement. The reinstated warranty shall be equal to the original warranty with an equitable adjustment for depreciation.
 - K. Replacement Cost: Upon determination that work covered by a warranty has been found to be defective, replace or reconstruct the work to a condition acceptable to the OCTA, complying with applicable requirements of the Contract Documents. Contractor shall be responsible for all costs for replacing or reconstructing defective work regardless of whether the OCTA has benefited from use of the work through a portion of its anticipated useful service life.

- L. The OCTA's Recourse: Written warranties made to the OCTA are in addition to implied warranties and shall not limit the duties, obligations, rights, and remedies otherwise available under law nor shall warranty periods be interpreted as limitations on time in which the OCTA can enforce such other duties, obligation, rights, or remedies.
- M. Rejection of Warranties: The OCTA reserves the right to reject warranties and disallow the use of products with warranties in conflict with contract document requirements.
- N. Warranty as Condition of Acceptance: The OCTA reserves the right to refuse to accept work for the project where a special warranty, certification or similar commitment is required until evidence is presented that those required to countersign such commitments are willing to do so.

1.04 PREPARATION OF WARRANTY AND GUARANTEE SUBMITTALS

- A. Number of Copies: Two, unless otherwise specified or directed.
- B. Special Project Warranty and Manufacturer's Guarantee Forms: Forms for Special Project Warranties and for Manufacturer's Guarantees are included in the Conditions of the Contract at the end of this Section. Prepare a written document utilizing the appropriate form, ready for execution by the Contractor or the Contractor and subcontractor, supplier or manufacturer. Submit a draft to the OCTA 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.

1.05 FORM OF WARRANTY SUBMITTALS

- A. Form of warranty and bond submittals: At final completion, compile 2 copies of each required warranty and guaranty and bond, properly executed by the Contractor, or by the Contractor and subcontractor, supplier or manufacturer. Collect and assemble all written warranties and guarantees into binders and deliver binders to OCTA Project Manager for final review and acceptance.
- B. Prior to submission, verify that documents are in proper form, contain all required information and are properly signed.
- C. Organize the warranty documents into an orderly sequence based on the table of contents of the Specifications.
- D. Include a table of contents for the binder, neatly typed, following order, section names, and numbers of the Specifications.
- E. Bind warranties and guarantees in heavy-duty, commercial quality, 3-ring vinyl covered loose-leaf binders, thickness as necessary to accommodate contents, with clear front and spine to receive inserts, and sized for 8 ½" by 11" paper.
- F. Provide heavy paper dividers with celluloid or plastic covered tabs for each separate warranty. Mark tabs to identify products or installation, and the name, address, telephone number and responsible person for applicable installer, supplier and manufacturer.
- G. Include on a separate typed sheet, if information is not contained in warranty or guarantee form, a description of the product or installation, and the name, address, telephone number, and responsible person for applicable installer, supplier, and manufacturer.
- H. Identify each binder on front and spine with typed or printed inserts with title, "WARRANTIES, GUARANTEES, AND BONDS", the project title, and the name of the Contractor. If more than one volume of warranties and guarantees is produced, identify volume number of binder.
- I. When operating and maintenance data manuals are required for warranted construction, include additional copies of each required warranty in each required

manual. Coordinate with requirements specified in Section 01 78 00 Closeout Submittals.

1.06 TIME OF WARRANTY AND GUARANTEE SUBMITTALS

- A. Preliminary Submittal: Unless otherwise specified, obtain preliminary copies of warranties and guarantees within ten (10) calendar days of completion of applicable item or work. Prepare and submit preliminary copies for review as specified herein.
- B. Final Submittal: Submit fully executed copies of warranties and guarantees within ten (10) days of date of substantial completion but not later than three (3) days prior to date of application for final payment.
- C. Date of Warranties and Guarantees: Unless otherwise directed, the commencement date for warranty and guarantee periods shall be the date of established in Certificate of Completion.
- D. For warranties for work such as designated systems, equipment, component part or other portion of the Work is completed, accepted, and occupied or put to beneficial use by the Authority, by a separate agreement with Contractor, prior to Final Completion, submit properly executed warranties to the Engineer within ten (10) calendar days of completion of that designated portion of the Work. List date of commencement of warranty, guaranty, or bond period as date of Acceptance.
- E. For warranties for Work not accepted as of the date of substantial completion, submit documents within ten (10) calendar days after acceptance. List the commencement date as the date of acceptance of such Work and as beginning of warranty, guaranty, and bond period.
- F. Duration of Warranties and Guarantees: Unless otherwise specified or prescribed by law, warranty and guaranty periods (Correction Period) for all work shall not be less than one year from the filing date of notice of completion. See product specifications Sections in contract specifications for extended warranty and guaranty beyond the minimum duration.

PARTS 2 – PRODUCTS

Not used.

PART 3 – EXECUTION

Not used.

**RESTROOM IMPROVEMENTS
AT FULLERTON PARK AND RIDE**

**C-2-2409
EXHIBIT B**

PART 4 – MEASUREMENT AND PAYMENT

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

END OF SECTION

WARRANTY/GUARANTEE

FOR WORK

We, the undersigned, do hereby warranty and guarantee that the parts of the Work described above which we have furnished and/or installed for the OCTA is in accordance with the Contract Documents and that all said Work as installed will fulfill or exceed all of the Warranty and Guarantee requirements. We agree to repair or replace Work installed by us, together with any adjacent Work, which is displaced or damaged by doing so, that proves to be defective in Workmanship, material, or operation within a period of one (1) year from the date of final acceptance by the OCTA or from the date of Certificate of Substantial Completion, whichever is the earlier. Ordinary wear and tear and unusual neglect or abuse is accepted.

In the event of our failure to comply with the above-mentioned conditions within a reasonable time period determined by the OCTA, after notification in writing, we, the undersigned, all collectively and separately, hereby authorize the OCTA to have said defective Work repaired and/or replaced and made good, and agree to pay to the OCTA upon demand all moneys that the OCTA may expend in making good said defective Work, including all collection cost and reasonable attorney fees.

(Subcontractor, Sub subcontractor, 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. Preinstruction Conference: Conduct conference at project site to comply with requirements in Section 01 31 00, Project Management and Coordination. Review methods and procedures related to demonstration and training including, but not limited to, the following:
 1. Inspect and discuss locations and other facilities required for instruction.
 2. Review and finalize instruction schedule and verify availability of educational materials, instructors' personnel, audiovisual equipment, and facilities needed to avoid delays.
 3. Review required content of instruction.
 4. For instruction that must occur outside, review weather and forecasted weather conditions and procedures to follow if conditions are unfavorable.

1.05 COORDINATION

- A. Coordinate instruction schedule with OCTA's operations. Adjust schedule as required to minimize disrupting OCTA's operations.
- B. Coordinate instructors, including providing notification of dates, times, length of instruction time, and course content.
- C. Coordinate content of training modules with content of approved emergency, operation, and maintenance manuals. Do not submit instruction program until operation and maintenance data has been reviewed and approved by OCTA Project Manager.

PART 2 - PRODUCTS

2.01 INSTRUCTION PROGRAM

- A. Program Structure: Develop an instruction program that includes individual training modules for each system and for equipment not part of a system, as required by individual specification sections.
- B. Training Modules: Develop a learning objective and teaching outline for each module. Include a description of specific skills and knowledge that participant is expected to master. For each module, include instruction for the following as applicable to the system, equipment, or component:
 - 1. Basis of System Design, Operational Requirements, and Criteria: Include the following:
 - a. System, subsystem, and equipment descriptions.
 - b. Performance and design criteria if Contractor is delegated design responsibility.
 - c. Operating standards.
 - d. Regulatory requirements.
 - e. Equipment function.
 - f. Operating characteristics.
 - g. Limiting conditions.
 - h. Performance curves.
 - 2. Documentation: Review the following items in detail:
 - a. Emergency manuals.
 - b. Operations manuals.
 - c. Maintenance manuals.
 - d. Project record documents.
 - e. Identification systems.
 - f. Warranties and bonds.
 - g. Maintenance service agreements and similar continuing commitments.

3. Emergencies: Include the following, as applicable:
 - 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 19
SELECTIVE DEMOLITION**

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes:
 - 1. Demolition and removal of selected portions of building or structure.
 - 2. Salvage of existing items to be reused or recycled.
- B. Related Requirements:
 - 1. Section 01 10 00 "Summary" for restrictions on use of the premises, Owner-occupancy requirements, and phasing requirements.
 - 2. Section 01 73 00 "Execution" for cutting and patching procedures.

1.02 DEFINITIONS

- A. Remove: Detach items from existing construction and dispose of them off-site unless indicated to be salvaged or reinstalled.
- B. Remove and Salvage: Detach items from existing construction, in a manner to prevent damage, and deliver to Owner ready for reuse or store as required.
- C. Remove and Reinstall: Detach items from existing construction, in a manner to prevent damage, prepare for reuse, and reinstall where indicated.
- D. Existing to Remain: Leave existing items that are not to be removed and that are not otherwise indicated to be salvaged or reinstalled.
- E. Dismantle: To remove by disassembling or detaching an item from a surface, using gentle methods and equipment to prevent damage to the item and surfaces; disposing of items unless indicated to be salvaged or reinstalled.

1.03 MATERIALS OWNERSHIP

- A. Unless otherwise indicated, demolition waste becomes property of Contractor.
- B. Historic items, relics, antiques, and similar objects including, but not limited to, cornerstones and their contents, commemorative plaques and tablets, and other items of interest or value to Owner that may be uncovered during demolition remain the property of Owner.

1. Carefully salvage in a manner to prevent damage and promptly return to Owner.

1.04 PREINSTALLATION MEETINGS

- A. Predemolition Conference: Conduct conference at Project site.
 1. Inspect and discuss condition of construction to be selectively demolished.
 2. Review structural load limitations of existing structure.
 3. Review and finalize selective demolition schedule and verify availability of materials, demolition personnel, equipment, and facilities needed to make progress and avoid delays.
 4. Review requirements of work performed by other trades that rely on substrates exposed by selective demolition operations.
 5. Review areas where existing construction is to remain and requires protection.

1.05 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For refrigerant recovery technician.
- B. Proposed Protection Measures: Submit report, including Drawings, that indicates the measures proposed for protecting individuals and property, for environmental protection and for dust control. Indicate proposed locations and construction of barriers.
- C. Schedule of Selective Demolition Activities: Indicate the following:
 1. Detailed sequence of selective demolition and removal work, with starting and ending dates for each activity. Ensure Owner's building manager's on-site operations are uninterrupted.
 2. Interruption of utility services. Indicate how long utility services will be interrupted.
 3. Coordination for shutoff, capping, and continuation of utility services.
 4. Use of elevator and stairs.
 5. Coordination of Owner's continuing occupancy of portions of existing building and of Owner's partial occupancy of completed Work.
- D. Predemolition Photographs or Video: Show existing conditions of adjoining construction, including finish surfaces, that might be misconstrued as damage caused by salvage and demolition operations. Submit before Work begins.
- E. Warranties: Documentation indicating that existing warranties are still in effect after completion of selective demolition.

1.06 CLOSEOUT SUBMITTALS

- A. Inventory: Submit a list of items that have been removed and salvaged.

1.07 FIELD CONDITIONS

- A. Owner will occupy portions of building immediately adjacent to selective demolition area. Conduct selective demolition so Owner's operations will not be disrupted.
- B. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.
- C. Notify Architect of discrepancies between existing conditions and Drawings before proceeding with selective demolition.
- D. Hazardous Materials: It is not expected that hazardous materials will be encountered in the Work.
 - 1. If suspected hazardous materials are encountered, do not disturb; immediately notify Architect and Owner. Hazardous materials will be removed by Owner under a separate contract.
- E. Storage or sale of removed items or materials on-site is not permitted.
- F. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.
 - 1. Maintain fire-protection facilities in service during selective demolition operations.

1.08 COORDINATION

- A. Arrange selective demolition schedule so as not to interfere with Owner's operations.

PART 2 - PRODUCTS

2.01 PERFORMANCE REQUIREMENTS

- A. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.
- B. Standards: Comply with ANSI/ASSP A10.6 and NFPA 241.
- C. Sustainable Design Requirements for Building Reuse:
 - 1. Maintain existing interior nonstructural elements (interior walls, doors, floor coverings, and ceiling systems) not indicated to be demolished; do not demolish such existing construction beyond indicated limits.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Verify that utilities have been disconnected and capped before starting selective demolition operations.
- B. Review Project Record Documents of existing construction or other existing condition and hazardous material information provided by Owner. Owner does not guarantee that existing conditions are same as those indicated in Project Record Documents.
- C. Steel Reinforcing: Locate steel reinforcing and include recommendations for x-raying and indentifying reinforcing in slabs
- D. .
- E. Survey of Existing Conditions: Record existing conditions by use of measured drawings.
 - 1. Inventory and record the condition of items to be removed and salvaged. Provide photographs or video of conditions that might be misconstrued as damage caused by salvage operations.
 - 2. Before selective demolition or removal of existing building elements that will be reproduced or duplicated in final Work, make permanent record of measurements, materials, and construction details required to make exact reproduction.

3.02 PREPARATION

- A. Refrigerant: Before starting demolition, remove refrigerant from mechanical equipment according to 40 CFR 82 and regulations of authorities having jurisdiction.

3.03 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS

- A. Existing Services/Systems to Remain: Maintain services/systems indicated to remain and protect them against damage.
- B. Existing Services/Systems to Be Removed, Relocated, or Abandoned: Locate, identify, disconnect, and seal or cap off utility services and mechanical/electrical systems serving areas to be selectively demolished.
 - 1. If services/systems are required to be removed, relocated, or abandoned, provide temporary services/systems that bypass area of selective demolition and that maintain continuity of services/systems to other parts of building.
 - 2. Disconnect, demolish, and remove fire-suppression systems, plumbing, and HVAC systems, equipment, and components indicated on Drawings to be removed.

- a. Piping to Be Removed: Remove portion of piping indicated to be removed and cap or plug remaining piping with same or compatible piping material.
- b. Equipment to Be Removed: Disconnect and cap services and remove equipment.
- c. Equipment to Be Removed and Reinstalled: Disconnect and cap services and remove, clean, and store equipment; when appropriate, reinstall, reconnect, and make equipment operational.
- d. Equipment to Be Removed and Salvaged: Disconnect and cap services and remove equipment and deliver to Owner.
- e. Ducts to Be Removed: Remove portion of ducts indicated to be removed and plug remaining ducts with same or compatible ductwork material.
- f. Ducts to Be Abandoned in Place: Cap or plug ducts with same or compatible ductwork material and leave in place.

3.04 PROTECTION

- A. Temporary Protection: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.
 - 1. Provide protection to ensure safe passage of people around selective demolition area and to and from occupied portions of building.
 - 2. Protect walls, ceilings, floors, and other existing finish work that are to remain or that are exposed during selective demolition operations.
 - 3. Cover and protect furniture, furnishings, and equipment that have not been removed.
 - 4. Comply with requirements for temporary enclosures, dust control, heating, and cooling specified in Section 01 50 00 "Temporary Facilities and Controls."
- B. Temporary Shoring: Design, provide, and maintain shoring, bracing, and structural supports as required to preserve stability and prevent movement, settlement, or collapse of construction and finishes to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished.
 - 1. Strengthen or add new supports when required during progress of selective demolition.
- C. Remove temporary barricades and protections where hazards no longer exist.

3.05 SELECTIVE DEMOLITION, GENERAL

- A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:

1. Proceed with selective demolition systematically, from higher to lower level. Complete selective demolition operations above each floor or tier before disturbing supporting members on the next lower level.
 2. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping. Temporarily cover openings to remain.
 3. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
 4. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain portable fire-suppression devices during flame-cutting operations.
 5. Maintain fire watch during and for at least two hours after flame-cutting operations.
 6. Maintain adequate ventilation when using cutting torches.
 7. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.
 8. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
 9. Dispose of demolished items and materials promptly. Comply with requirements in Section 01 74 19 "Construction Waste Management and Disposal."
- B. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
- C. Removed and Salvaged Items:
1. Clean salvaged items.
 2. Pack or crate items after cleaning. Identify contents of containers.
 3. Store items in a secure area until delivery to Owner.
 4. Transport items to Owner's storage area designated by Owner.
 5. Protect items from damage during transport and storage.
- D. Removed and Reinstalled Items:
1. Clean and repair items to functional condition adequate for intended reuse.
 2. Pack or crate items after cleaning and repairing. Identify contents of containers.
 3. Protect items from damage during transport and storage.

4. Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make item functional for use indicated.
- E. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by Architect, items may be removed to a suitable, protected storage location during selective demolition[and cleaned] and reinstalled in their original locations after selective demolition operations are complete.

3.06 SELECTIVE DEMOLITION PROCEDURES FOR SPECIFIC MATERIALS

- A. Concrete: Demolish in small sections. Using power-driven saw, cut concrete to a depth of at least 3/4 inch at junctures with construction to remain. Dislodge concrete from reinforcement at perimeter of areas being demolished, cut reinforcement, and then remove remainder of concrete. Neatly trim openings to dimensions indicated.
- B. Concrete Slabs-on-Grade: Saw-cut perimeter of area to be demolished, and then break up and remove.

3.07 DISPOSAL OF DEMOLISHED MATERIALS

- A. Remove demolition waste materials from Project site and dispose of them in an EPA-approved construction and demolition waste landfill acceptable to authorities having jurisdiction.
 1. Do not allow demolished materials to accumulate on-site.
 2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
 3. Comply with requirements specified in Section 01 74 19 "Construction Waste Management and Disposal."
- B. Burning: Do not burn demolished materials.

3.08 CLEANING

- A. Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before selective demolition operations began.

END OF SECTION 02 41 19

SECTION 02 82 00

REGULATED AND HAZARDOUS MATERIALS

PART 1 - GENERAL

1.1 SUMMARY

- A. The purpose of the work described in this section is to abate and/or stabilize regulated and hazardous building materials (asbestos, lead paint, mercury, polychlorinated byphenols [PCBs], etc.) contained within the building structure that may be affected in the completion of the scope of work described in the SUMMARY OF WORK (Section 011100). As part of the base scope of work, the CONTRACTOR shall be responsible for the removal, transport, and disposal or recycling of all designated items, unless otherwise stipulated, regardless of the actual quantities.
- B. The CONTRACTOR shall furnish all labor, materials, equipment, and related items required to remove/abate all substances which will be affected by the project and are regulated under federal, state, and local statutes and land ban restrictions to the contract limits as designated herein.
- C. Information pertaining to the type, location, and estimated quantities of regulated or hazardous materials is provided in the following documents. These reports are limited in nature and the CONTRACTOR has a duty to understand the limitations of these documents and in its professional judgment determine the presence of hazardous materials that may not be identified in the reports. These reports form an integral part of this specification and are included herein by reference.
 - 1. *Limited Lead-Based Paint/Ceramic Tile Inspection Report*, prepared by AESCO, dated March 8, 2022.

1.2 RELATED SECTIONS

- A. Division 01 – General Requirements
- B. Section 013300 – Submittals
- C. Section 013523 – Owner Safety Requirements
- D. Section 014500 - Quality Control
- E. Section 024119 – Selective Demolition

1.3 RELATED REQUIREMENTS

- A. Comply with applicable Federal and State Occupational Safety and Health regulations and environmental statutes. Comply with applicable State regulations and codes, and any municipal requirements. Some regulations and industry guidelines that are applicable to this project include, but are not limited to the following:
 - 1. Code of Federal Regulations (CFR)
 - a. 29 CFR 1926 - Safety and Health Regulations for Construction.
 - b. 29 CFR 1910 - Safety and Health Regulations for General Industry.
 - c. 29 CFR 1910.1020 - Access to Employee Exposure and Medical Records.

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- d. 29 CFR 1910.1025 - Lead, General Industry.
- e. 29 CFR 1910.134 - Respiratory Protection.
- f. 29 CFR 1910.145 - Specifications for Accident Prevention Signs and Tags.
- g. 29 CFR 1910.1001 - Asbestos.
- h. 29 CFR 1910.1200 - Hazard Communication
- i. 29 CFR 1926.55 - Gases, Vapors, Fumes, Dusts and Mists
- j. 29 CFR 1926.62 - Lead - Construction Industry
- k. 29 CFR 1926.1101 - Safety and Health Regulations for Construction - Asbestos.
- l. 34 CFR 231 Appendix C - Procedures for Containing and Removing Building Materials Containing Asbestos.
- m. 40 CFR 61 - Subpart A and Subpart M, USEPA, National Emission Standards for Hazardous Air Pollutants (NESHAPS).
- n. 40 CFR 745 - Lead-Based Paint Poisoning Prevention in Certain Residential Structures.
- o. 40 CFR 763 - Asbestos Hazard Emergency Response Act
- 2. California Code of Regulations (CCR)
 - a. Title 8, Section 1230 - Temperature, Illumination, Sanitation and Ventilation.
 - b. Title 8, Section 1529 - Asbestos.
 - c. Title 8, Section 1531 - Respiratory Protective Equipment.
 - d. Title 8, Section 1532.1 - Lead in the Construction Industry
 - e. Title 8, Section 3203 - Injury and Illness Prevention Program.
 - f. Title 8, Section 3204 - Access to Employee Exposure and Medical Records.
 - g. Title 8, Section 5144 - Respiratory Protection.
 - h. Title 8, Section 5216 - General Industry Safety Orders, Lead Regulations.
 - i. Title 8, Section 5194 - Hazard Communication.
 - j. Title 8, Article 2.5 - Registration Asbestos-Related Work Section 341.6 through 341.14.
 - k. Title 8, Section 5208 - Asbestos.
 - l. Title 17 Sections 35001-36100 - Accreditation, Certification and Work Practices for Lead Based Paint and Lead Hazards
 - m. Title 22, Division 4.5 - Minimum Standards for Management of Hazardous and Extremely Hazardous Waste.
 - n. Title 22, Section 67740 - Waste Analysis and Record Keeping.
- 3. Other Local Regulations
 - a. California Health and Safety Code, Sections 13121 and 13144.1.
 - b. California Health and Safety Code, Sections 25249-25249.13 and 25915-25919.7.
- 4. American National Standards Institute (ANSI)
 - a. ANSI WK 4519 - Personal Protective Footwear.
 - b. ANSI Z9.2 - Fundamentals Governing the Design and Operation of Local Exhaust and Ventilation Systems.
 - c. ANSI Z87.1 - Practice for Occupational and Educational Personal Eye and Face Protection Devices.
 - d. ANSI Z88.2 - Practices for Respiratory Protection.
 - e. ANSI Z88.6 - Respiratory Protection: Respiratory Use Physical Qualifications for Personnel.
 - f. ANSI Z89.1 - Industrial Head Protection.
- 5. American Society for Testing and Materials (ASTM)

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- a. ASTM D1331 - Test Methods for Surface and Interfacial Tension of Solutions of Surface-Active Agents.
- b. ASTM E1368 – Standard Practice for Visual Inspection of Asbestos Abatement Projects
- c. ASTM E1494 - Practice for Encapsulants for Spray- or Trowel-Applied Friable Asbestos-Containing Building Materials.
6. Compressed Gas Association, Inc.
 - a. G-7.1 - Commodity Specification for Air.
7. National Fire Protection Association (NFPA)
 - a. NFPA 70 - National Electric Code.
8. Underwriters Laboratories, Inc.
 - a. UL 586 - Test Performance of High Efficiency Particulate Air Filter Units.
9. National Institute for Occupation Safety and Health (NIOSH)
 - a. Method 7400: Asbestos and Fibers by PCM
 - b. Method 7082: Lead by Flame AAS
10. Environmental Protection Agency Documents
 - a. EPA 530-SW-85-007 - Asbestos Waste Management Guidance.
 - b. EPA EPA 560/5-85-024 - Fundamentals Governing the Design and Operation of Local Exhaust Systems Asbestos Waste Management Guidance.
 - c. EPA 560 OPTS-86.001 - Guide to Respiratory Protection for the Asbestos Abatement Industry.
 - d. Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing, US Housing and Urban Development (HUD)

1.4 ADMINISTRATIVE REQUIREMENTS

A. Coordination

1. Contractor shall coordinate all remedial action work with the Owner, tenants and Agencies Having Jurisdiction as required.

1.5 SUBMITTALS

A. At least 10 days prior to the commencement of the Work, the CONTRACTOR must submit, in accordance with section 013300 Submittals, documentation for review that includes, without limitation, the following:

1. Submit copies of licenses and registrations required including subcontractors licenses.
2. Submit copies of written notification to the regulatory agencies with jurisdiction over this type of work (i.e. Division of Occupational Safety and Health, Department of Public Health, Air Quality management District, etc.):
3. Submit proof of insurance coverage required including proof of insurance for subcontractors.
4. Submit proof of legal right to use patented equipment or processes (if applicable).
5. Manufacturer's certification that HEPA vacuums, differential pressure air filtration devices and other local exhaust ventilation equipment conform to ANSI Z9.2 79.
6. Site specific work plan detailing paint film stabilization, paint related removal methods and asbestos abatement removal procedures to be utilized and measures to prevent the release of hazardous materials to soil, water, air, and other environmental media.
7. Submit full manufacturers' product data and safety data sheet for all chemical products to be used on site.

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8. Submit documentation that CONTRACTOR'S employees performing paint film stabilization, removal, disposal, and air sampling operations have received training in accordance with applicable regulations.
9. Submit documentation from physician that all employees or agents who may be exposed to regulated or hazardous materials in excess of background levels have received medical surveillance in accordance with applicable regulations to determine whether they are physically capable of working while wearing the respirator required without suffering adverse health effects. The CONTRACTOR must be aware of and provide information to the examining physician about unusual conditions in the workplace environment (e.g. high temperatures, humidity, chemical contaminants) that may impact on the employee's ability to perform work activities.
10. Submit documentation from a physician that all employees or agents who may be exposed to lead contaminated dust have received a comprehensive medical examination as required by applicable regulations. In addition, the CONTRACTOR is to provide Blood Lead Tests on each employee within a two-week period prior to the commencement of said work and within a two-week period of the completion of this project.
11. Submit documentation of respirator fit testing for all CONTRACTOR employees and agents who must enter the Work Area. This fit testing must be in accordance with qualitative procedures as required by applicable worker safety regulations or be qualitative in nature and conducted at least annually.
12. Name and contact information of independent testing company who will challenge test all vacuums and air filtration devices used on this project.
13. Name and contact information for CONTRACTOR'S independent consultant that will conduct work plan preparation, project monitoring and clearance testing ensuring a clean work area upon completion of regulated and hazardous removal activities.
14. Name and contact information for laboratory who will analyze air samples or waste samples and documentation of their certification to conduct such analysis.
15. Name of Waste Transporter who will transport hazardous and non-hazardous waste on this project and documentation that the Transporter is allowed to transport such waste..
16. Name of Waste Landfill to which all waste will be sent and documentation that such landfill is allowed to accept such waste.
17. Emergency Precautions and Procedures to include, but not be limited to the following:
 - a. Establish emergency and fire exits from the Work Area.
 - b. As necessary but prior to commencement of work, notify local medical emergency personnel, both ambulance crews and hospital emergency room staff, of the abatement operations as to the possibility of having to handle contaminated or injured workers.
 - c. A plan to administer first aid to injured personnel after decontamination. When an injury occurs, the CONTRACTOR must stop Work and implement fiber reduction techniques (e.g., water spraying) until the injured person has been removed from the Work Area.
 - d. Before starting actual removal of regulated or hazardous materials, it is customary to notify local police and fire departments as to the danger of entering the Work Area. It would be prudent to invite representatives of these departments to attend an informal training program to be conducted by the CONTRACTOR. The training program should include information regarding abatement activities, decontamination practices, etc. The CONTRACTOR should make every effort to

help these agencies form plans of action should their personnel need to enter a contaminated area.

PART 2 - PRODUCTS

2.1 SUMMARY

- A. Deliver all consumable materials in the original packages, containers or bundles bearing the name of the manufacturer and brand name (where applicable).
- B. All poly shall be flame-retardant regardless of its designated use on this project.
- C. Disposal bags shall be constructed of 6 mil poly with labels required by OSHA, CDPH, Toxic Substance Control regulations.

PART 3 - EXECUTION

3.1 SUMMARY

- A. CONTRACTORS and subcontractors conducting regulated and/or hazardous material related construction work will be evaluated on a performance standard which includes, but is not limited to, cleanliness of work area, work practices as verified by exposure monitoring, containment set up, and ultimately, the clean-up of dust, and debris.
- B. Any work practice that creates regulated or hazardous material debris must be conducted within a regulated area as defined in applicable regulations and within a containment designed to control the emission of such materials.
- C. The containment system shall be designed and constructed to prevent visible dust or debris from migrating out of the work area as well as the escape of airborne lead or asbestos at or above regulatory levels (generally clearance levels for asbestos and action levels for lead). Should dust or debris generated by the work be found outside the containment, or the airborne concentrations outside the containment exceed background levels, the CONTRACTOR'S containment is inadequate. The CONTRACTOR and/or subcontractors will be required to redesign the containment to be more effective.

3.2 SUBMITTALS DURING WORK

- A. CONTRACTOR must proactively coordinate the signing of all waste manifests by the OWNER as to not cause any delay to the project schedule.
- B. During stabilization and/or abatement activities, CONTRACTOR must submit to the OWNER or OWNER's representative documentation that includes, without limitation, the following:
 - 1. Submit copies of the Work Area entry/exit log book. Log book must record name, affiliation, time in, and time out for each entry into the Work Area.
 - 2. Submit copies of logs documenting filter changes on respirators, HEPA vacuums, water filtration device, and other engineering controls.
 - 3. Submit copies of Material Safety Data Sheets (MSDS) for solvents, encapsulants, wetting agents and replacement materials, as necessary.
 - 4. Submit and post on site (within 48 hours) results of all required OSHA air monitoring.
 - 5. Submit copies of all accident/incident reports where injury or damage has occurred on or to OWNER's property.

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6. Manometer graphs identifying project name, date, and location.
7. Submit copies any notification changes or amendments as necessary

3.3 POST ABATEMENT SUBMITTALS

- A. CONTRACTOR shall provide the following post-construction submittals to Owner within thirty (30) days of the completion of asbestos abatement work.
1. Copies of revised notifications to regulatory agencies.
 2. Information on all new workers not covered by the pre-construction submittals and not submitted during the project.
 3. A copy of worker exposure monitoring results collected in compliance with DOSH regulations including daily/representative/fullshift/ breathing-zone air samples, and 30-minute excursion samples.
 4. A copy of the worker/visitor log showing the following for all persons entering the work area: date, name, social security number, entering, and leaving times, company or agency represented, and reason for entry. The CONTRACTOR'S time records will not be accepted in lieu of a worker/visitor log.
 5. Copies of all accident reports submitted during the course of work. If no accidents occur during the project this should be stated in writing by the CONTRACTOR.
 6. Receipts from the landfill operator acknowledging the CONTRACTOR'S delivery of wastes, including dates, container types and quantities, tare weights or material delivered, and all appropriate signatures.
 7. A complete record of the air filtration devices used certifying DOP testing (if performed) and a circular chart recording, indicating continuous operation and documenting differential air pressure.
 8. Copies of DOP Testing Performed on HEPA Equipment not Previously Submitted
 9. Manometer graphs identifying project name, date, and location.
 10. A copy of the waste record showing dates, times, manifest numbers, quantities of wastes, types of containers removed from the work area, the hauler, and the signature of the recorder.
 11. Completed Uniform Hazardous Waste forms
 12. Other Documents as Requested

3.4 MONITORING

- A. OWNER reserves the right to perform air and performance monitoring at any time

3.5 CLEARANCE AIR MONITORING

- A. Asbestos
1. CONTRACTOR shall retain the services of a Certified Asbestos Consultant (CAC) or Certified Site Surveillance Technician (CSST) working under the direct supervision of a CAC. The CAC or CSST performs pre-start visual inspections, final visual inspections, contractor oversight activities, area air monitoring, personal air monitoring, clearance air monitoring. .
 2. The number, type and analytical method for asbestos samples will be communicated in the pre-project submittal document.
 3. Clearance criteria for asbestos related work shall be those established by the EPA under the AHERA (40 CFR 763).
- B. Lead
1. CONTRACTOR shall retain the services of a California Department of Public Health Certified Inspector/Risk Assessor and/or Project Monitor. The role of the CDPH certified

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person performs pre-start visual inspections, final visual inspections, contractor oversight activities, personal air monitoring, as well as area air monitoring and clearance sampling as applicable.

2. The number, type and analytical method for lead samples will be communicated in the pre-project submittal document.
3. Clearance criteria for lead related work shall be those promulgated by the State of California, Department of Public Health.

END OF SECTION

SECTION 07 62 00

SHEET METAL FLASHING AND TRIM

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. Section Includes:
 - 1. Formed low-slope roof sheet metal fabrications.
 - a. Base flashing.
 - b. Counterflashing.
 - c. Flashing receivers.
 - d. Cold pipe roof-penetration flashing.
 - e. Hot pipe roof-penetration flashing.

1.03 COORDINATION

- A. Coordinate sheet metal flashing and trim layout and seams with sizes and locations of penetrations to be flashed, and joints and seams in adjacent materials.
- B. Coordinate sheet metal flashing and trim installation with adjoining roofing and wall materials, joints, and seams to provide leakproof, secure, and noncorrosive installation.

1.04 ACTION SUBMITTALS

- A. Product Data: For each type of product.

1.05 QUALITY ASSURANCE

- A. Fabricator Qualifications: Employs skilled workers who custom fabricate sheet metal flashing and trim similar to that required for this Project and whose products have a record of successful in-service performance.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Do not store sheet metal flashing and trim materials in contact with other materials that might cause staining, denting, or other surface damage. Store sheet metal flashing and trim materials away from uncured concrete and masonry.
- B. Protect strippable protective covering on sheet metal flashing and trim from exposure to sunlight and high humidity, except to extent necessary for period of sheet metal flashing and trim installation.

PART 2 - PRODUCTS

2.01 PERFORMANCE REQUIREMENTS

- A. General: Sheet metal flashing and trim assemblies shall withstand wind loads, structural movement, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction. Completed sheet metal flashing and trim shall not rattle, leak, or loosen, and shall remain watertight.

2.02 SHEET METALS

- A. General: Protect mechanical and other finishes on exposed surfaces from damage by applying strippable, temporary protective film before shipping.
- B. Aluminum Sheet: ASTM B 209, alloy as standard with manufacturer for finish required, with temper as required to suit forming operations and performance required.
- C. Stainless-Steel Sheet: ASTM A 240/A 240M or ASTM A 666, Type 304, dead soft, fully annealed; with smooth, flat surface.

2.03 MISCELLANEOUS MATERIALS

- A. General: Provide materials and types of fasteners, protective coatings, sealants, and other miscellaneous items as required for complete sheet metal flashing and trim installation and as recommended by manufacturer of primary sheet metal[or manufactured item] unless otherwise indicated.
- B. Fasteners: Wood screws, annular threaded nails, self-tapping screws, self-locking rivets and bolts, and other suitable fasteners designed to withstand design loads and recommended by manufacturer of primary sheet metal.
 - 1. General: Blind fasteners or self-drilling screws, gasketed, with hex-washer head.
 - a. Exposed Fasteners: Heads matching color of sheet metal using plastic caps or factory-applied coating. Provide metal-backed EPDM or PVC sealing washers under heads of exposed fasteners bearing on weather side of metal.

2.04 MANUFACTURED SHEET METAL FLASHING AND TRIM

- A. Reglets: Units of type, material, and profile required, formed to provide secure interlocking of separate reglet and counterflashing pieces, and compatible with flashing indicated with factory-mitered and -welded corners and junctions and with interlocking counterflashing on exterior face, of same metal as reglet.
 - 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Fry Reglet Corporation.
 - 2. Concrete Type: Provide temporary closure tape to keep reglet free of concrete materials, special fasteners for attaching reglet to concrete forms, and guides to ensure alignment of reglet section ends.
 - 3. Accessories:
 - a. Counterflashing Wind-Restraint Clips: Provide clips to be installed before counterflashing to prevent wind uplift of counterflashing's lower edge.

2.05 FABRICATION, GENERAL

- A. General: Custom fabricate sheet metal flashing and trim to comply with details shown and recommendations in cited sheet metal standard that apply to design, dimensions, geometry, metal thickness, and other characteristics of item required. Fabricate sheet metal flashing and trim in shop to greatest extent possible.
 - 1. Fabricate sheet metal flashing and trim in thickness or weight needed to comply with performance requirements, but not less than that specified for each application and metal.
 - 2. Obtain field measurements for accurate fit before shop fabrication.
 - 3. Form sheet metal flashing and trim to fit substrates without excessive oil canning, buckling, and tool marks; true to line, levels, and slopes; and with exposed edges folded back to form hems.
 - 4. Conceal fasteners and expansion provisions where possible. Do not use exposed fasteners on faces exposed to view.
- B. Expansion Provisions: Form metal for thermal expansion of exposed flashing and trim.
 - 1. Form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with butyl sealant concealed within joints.
 - 2. Use lapped expansion joints only where indicated on Drawings.
- C. Sealant Joints: Where movable, nonexpansion-type joints are required, form metal to provide for proper installation of elastomeric sealant according to cited sheet metal standard.

- D. Fabricate cleats and attachment devices from same material as accessory being anchored or from compatible, noncorrosive metal.
- E. Fabricate cleats and attachment devices of sizes as recommended by cited sheet metal standard for application, but not less than thickness of metal being secured.

2.06 LOW-SLOPE ROOF SHEET METAL FABRICATIONS

- A. Base Flashing: Fabricate from the following materials:
 - 1. Aluminum: 0.040 inch thick.
 - 2. Stainless Steel: 0.019 inch thick.
 - 3. Galvanized Steel: 0.028 inch thick.
- B. Counterflashing: Fabricate from the following materials:
 - 1. Aluminum: 0.032 inch thick.
 - 2. Galvanized Steel: 0.022 inch thick.
- C. Flashing Receivers: Fabricate from the following materials:
 - 1. Aluminum: 0.032 inch thick.
 - 2. Stainless Steel: 0.016 inch thick.
 - 3. Galvanized Steel: 0.022 inch thick.
- D. Cold Pipe Roof-Penetration Flashing: Fabricate from the following materials:
 - 1. Stainless Steel: 0.019 inch thick.
 - 2. Galvanized Steel: 0.028 inch thick.
- E. Hot Pipe Roof-Penetration Flashing: Fabricate from the following materials:
 - 1. Stainless Steel: 0.019 inch thick.
 - 2. Galvanized Steel: 0.028 inch thick.

2.07 WALL SHEET METAL FABRICATIONS

- A. Through-Wall Flashing: Fabricate continuous flashings in minimum 96-inch- long, but not exceeding 12-foot- long, sections, under copings, and at shelf angles. Fabricate discontinuous lintel, sill, and similar flashings to extend 6 inches beyond each side of wall openings; and form with 2-inch- high, end dams. Fabricate from the following materials:
 - 1. Stainless Steel: 0.016 inch thick.

- B. Flashings at Openings in Frame Construction: Fabricate head, sill,[jamb,] and similar flashings to extend [4 inches] <Insert dimension> beyond wall openings. Form head and sill flashing with 2-inch- high, end dams. Fabricate from the following materials:

1. Aluminum: 0.032 inch thick.
2. Stainless Steel: 0.016 inch thick.
3. Galvanized Steel: 0.022 inch thick.

2.08 MISCELLANEOUS SHEET METAL FABRICATIONS

- A. Equipment Support Flashing: Fabricate from the following materials:

1. Stainless Steel: 0.019 inch thick.
2. Galvanized Steel: 0.028 inch thick.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, substrate, and other conditions affecting performance of the Work.
1. Verify compliance with requirements for installation tolerances of substrates.
 2. Verify that substrate is sound, dry, smooth, clean, sloped for drainage, and securely anchored.
 3. Verify that air- or water-resistant barriers have been installed over sheathing or backing substrate to prevent air infiltration or water penetration.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION, GENERAL

- A. General: Anchor sheet metal flashing and trim and other components of the Work securely in place, with provisions for thermal and structural movement. Use fasteners, protective coatings, separators, sealants, and other miscellaneous items as required to complete sheet metal flashing and trim system.
1. Install sheet metal flashing and trim true to line, levels, and slopes. Provide uniform, neat seams with minimum exposure of solder, welds, and sealant.
 2. Install sheet metal flashing and trim to fit substrates and to result in watertight performance. Verify shapes and dimensions of surfaces to be covered before fabricating sheet metal.

3. Space cleats not more than 12 inches apart. Attach each cleat with at least two fasteners. Bend tabs over fasteners.
 4. Install exposed sheet metal flashing and trim with limited oil canning, and free of buckling and tool marks.
 5. Torch cutting of sheet metal flashing and trim is not permitted.
- B. Metal Protection: Where dissimilar metals contact each other, or where metal contacts pressure-treated wood or other corrosive substrates, protect against galvanic action or corrosion by painting contact surfaces with bituminous coating or by other permanent separation as recommended by sheet metal manufacturer or cited sheet metal standard.
1. Coat concealed side of flashing and trim fabricated from the following sheet metal(s) with bituminous coating where flashing and trim contact wood, ferrous metal, or cementitious construction.
- C. Expansion Provisions:
1. Provide for thermal expansion of exposed flashing and trim. Space movement joints at maximum of 10 feet with no joints within 24 inches of corner or intersection.
 - a. Form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with butyl sealant concealed within joints.
 - b. Use lapped expansion joints only where indicated on Drawings. Apply sealant tape concealed in joint.
 2. Conceal where possible in exposed work.
 3. Locate to minimize possibility of leakage.
 4. Cover and seal anchors as required for a tight installation.
- D. Fasteners:
1. Size: Use fastener sizes that:
 - a. Penetrate other substrates not less than recommended by fastener manufacturer to achieve maximum pull-out resistance.
 2. Conceal where possible in exposed work.
 3. Locate to minimize possibility of leakage.
 4. Cover and seal as required for a tight installation.

3.03 ROOF FLASHING INSTALLATION

- A. General: Install sheet metal flashing and trim to comply with performance requirements, sheet metal manufacturer's written installation instructions, and cited sheet metal standard. Provide concealed fasteners where possible, and set units true to line, levels, and slopes. Install work with laps, joints, and seams that are permanently watertight and weather resistant.

3.04 MANUFACTURED WALL FLASHING INSTALLATION

- A. General: Install sheet metal wall flashing to intercept and exclude penetrating moisture according to cited sheet metal standard unless otherwise indicated. Coordinate installation of wall flashing with installation of wall-opening components such as windows, doors, and louvers.

3.05 MISCELLANEOUS FLASHING INSTALLATION

- A. Equipment Support Flashing: Coordinate installation of equipment support flashing with installation of roofing and equipment. Weld or seal flashing with elastomeric sealant to equipment support member.

3.06 CLEANING AND PROTECTION

- A. Clean the following exposed metal surfaces of substances that interfere with uniform oxidation and weathering.
 - 1. Aluminum sheet with as-milled finish.
 - 2. Stainless-steel sheet.
- B. Clean and neutralize flux materials. Clean off excess solder.
- C. Clean off excess sealants.
- D. Remove temporary protective coverings and strippable films as sheet metal flashing and trim are installed unless otherwise indicated in manufacturer's written installation instructions. On completion of sheet metal flashing and trim installation, remove unused materials and clean finished surfaces as recommended by sheet metal flashing and trim manufacturer. Maintain sheet metal flashing and trim in clean condition during construction.
- E. Replace sheet metal flashing and trim that have been damaged or that have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

END OF SECTION 07 62 00

SECTION 07 92 00

JOINT SEALANTS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. Section Includes:

- 1. The following joint sealant compositions:
 - a. Silicone joint sealants.
 - b. Nonstaining silicone joint sealants.
 - c. Urethane joint sealants.
 - d. Immersible joint sealants.
 - e. Silyl-terminated polyether joint sealants.
 - f. Mildew-resistant joint sealants.
 - g. Butyl joint sealants.
 - h. Latex joint sealants.
- 2. Joint sealant backings:
 - a. Cylindrical backings.
 - b. Bond-breaker tape.
- 3. Miscellaneous materials including:
 - a. Primers.
 - b. Cleaners.
 - c. Masking tape.

- B. Joint Sealant Schedule: Select joint sealant compositions from the following application schedules for each severity of use, substrate, and joint type. Where more than one sealant composition is listed, select the one best suited for the conditions indicated or encountered.

1. Interior joints in horizontal traffic surfaces.
 - a. Cast-in-place concrete slabs and decks, including steps:
 - 1) Expansion joints: JS-011, JS-016, JS-021, JS-106.
 - 2) Isolation joints: JS-011, JS-012, JS-016, JS-021, JS-106, JS-122, JS-127.
2. Interior joints in vertical surfaces and horizontal nontraffic surfaces, subject to differential movement, including ceilings, soffits and other overhead surfaces.
 - a. Exposed interior surfaces including ceilings, soffits, walls, and partitions:
 - 1) Control joints: JS-001, JS-002, JS-011, JS-012, JS-106, JS-117, JS-122, JS-202, JS-206, JS-207; except as follows:
 - a) Do not use silicone sealants and joints receiving field applied paint coatings.
 - b) For materials listed below use sealants indicated.
 - 2) Expansion joints: JS-001, JS-011, JS-106, JS-206; except as follows:
 - a) Do not use silicone sealants at joints receiving field applied paint coatings.
 - b) For materials listed below use sealants indicated.
 - b. Exposed surfaces of unit masonry and concrete, walls and partitions:
 - 1) Vertical control joints: JS-051, JS-052, JS-056, JS-062, JS-106, JS-117, JS-122, JS-202, JS-206, JS-207; except do not use silicone sealants at joints receiving field applied paint coatings.
 - 2) Vertical expansion joints: JS-051, JS-056, JS-106, JS-206; except do not use silicone sealants at joints receiving field applied paint coatings.
3. Interior joints in vertical surfaces and horizontal nontraffic surfaces not subject to significant movement; dry locations only.
 - a. Joints in ceilings, soffits, and other overhead surfaces: JS-401, except do not use silicone containing sealant for joints receiving field applied paint coatings.
 - b. Control joints on exposed interior surfaces of exterior walls: JS-401; except do not use silicone containing sealant for joints receiving field applied paint coatings.

- c. Joints between interior wall surfaces and perimeter of door and opening frames, windows, and elevator entrances. JS-401, except do not use silicone containing sealant for joints receiving field applied paint coatings.
- 4. Mildew-resistant interior joints in vertical surfaces and horizontal nontraffic surfaces, including ceilings, soffits and other overhead surfaces; including in rooms with sinks, showers, toilets, urinals, and similar plumbing fixtures.
 - a. Plumbing fixtures and adjoining walls, floors, and counters:
 - 1) Joints between fixture and adjacent surface: JS-254, JS-257; except use only JS-257 where receiving field applied paint coatings.
- 5. Concealed mastics.
 - a. Metal thresholds: JS-351

1.03 ACTION SUBMITTALS

- A. Product Data: For each joint-sealant product.
- B. Samples for Initial Selection: Manufacturer's color charts consisting of strips of cured sealants showing the full range of colors available for each product exposed to view.
- C. Samples for Verification: For each kind and color of joint sealant required, provide Samples with joint sealants in 1/2-inch-wide joints formed between two 6-inch-long strips of material matching the appearance of exposed surfaces adjacent to joint sealants.
- D. Joint-Sealant Schedule: Include the following information:
 - 1. Joint-sealant application, joint location, and designation.
 - 2. Joint-sealant manufacturer and product name.
 - 3. Joint-sealant formulation.
 - 4. Joint-sealant color.

1.04 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For qualified testing agency.
- B. Field-Adhesion-Test Reports: For each sealant application tested.

1.05 QUALITY ASSURANCE

- A. Mockups: Install sealant in mockups of assemblies specified in other Sections that are indicated to receive joint sealants specified in this Section. Use materials and installation methods specified in this Section.

1.06 FIELD CONDITIONS

- A. Do not proceed with installation of joint sealants under the following conditions:
 - 1. When ambient and substrate temperature conditions are outside limits permitted by joint-sealant manufacturer[or are below 40 deg F].
 - 2. When joint substrates are wet.
 - 3. Where joint widths are less than those allowed by joint-sealant manufacturer for applications indicated.
 - 4. Where contaminants capable of interfering with adhesion have not yet been removed from joint substrates.

1.07 WARRANTY

- A. Special Installer's Warranty: Installer agrees to repair or replace joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.
 - 1. Warranty Period: Two years from date of Substantial Completion.
- B. Special Manufacturer's Warranty: Manufacturer agrees to furnish joint sealants to repair or replace those joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.
 - 1. Warranty Period: Five years from date of Substantial Completion.
- C. Special warranties specified in this article exclude deterioration or failure of joint sealants from the following:
 - 1. Movement of the structure caused by stresses on the sealant exceeding sealant manufacturer's written specifications for sealant elongation and compression.
 - 2. Disintegration of joint substrates from causes exceeding design specifications.
 - 3. Mechanical damage caused by individuals, tools, or other outside agents.
 - 4. Changes in sealant appearance caused by accumulation of dirt or other atmospheric contaminants.

PART 2 - PRODUCTS

2.01 JOINT SEALANTS, GENERAL

- A. Compatibility: Provide joint sealants, backings, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by joint-sealant manufacturer, based on testing and field experience.

- B. Colors of Exposed Joint Sealants: As selected by Architect from manufacturer's full range.

2.02 SILICONE JOINT SEALANTS

- A. JS-001 - Silicone, S, NS, 100/50, NT: Single-component, nonsag, plus 100 percent and minus 50 percent movement capability, nontraffic-use, neutral-curing silicone joint sealant; ASTM C 920, Type S, Grade NS, Class 100/50, Use NT.
 - 1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. GE Construction Sealants; SCS2700 SilPruf LM .
 - b. Sika Corporation U.S.; Sikasil WS-290.
- B. JS-002 - Silicone, S, NS, 50, NT: Single-component, nonsag, plus 50 percent and minus 50 percent movement capability, nontraffic-use, neutral-curing silicone joint sealant; ASTM C 920, Type S, Grade NS, Class 50, Use NT.
 - 1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Dow Corning Corporation; 791.
 - b. GE Construction Sealants; Momentive Performance Materials Inc; SCS2000 SilPruf.
 - c. May National Associates, Inc., a subsidiary of Sika Corporation U.S.; Bondaflex Sil 265 LTS.
 - d. Pecora Corporation; PCS.
 - e. Sika Corporation U.S.; Sikasil WS-295 FPS.
 - f. Insert manufacturer's name; product name or designation.
- C. JS-011 - Silicone, S, NS, 100/50, T, NT: Single-component, nonsag, plus 100 percent and minus 50 percent movement capability, traffic- and nontraffic-use, neutral-curing silicone joint sealant; ASTM C 920, Type S, Grade NS, Class 100/50, Uses T and NT.
 - 1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Dow Corning Corporation; NS.
 - b. May National Associates, Inc., a subsidiary of Sika Corporation U.S.; Bondaflex Sil 728 NS.
- D. JS-012 - Silicone, S, NS, 50, T, NT: Single-component, nonsag, plus 50 percent and minus 50 percent movement capability, traffic- and nontraffic-use, neutral-curing silicone joint sealant; ASTM C 920, Type S, Grade NS, Class 50, Uses T and NT.

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1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Dow Corning Corporation; 799.
 - b. Soudal USA; RTV 50.
- E. JS-014 - Silicone, S, NS, 25, T, NT: Single-component, nonsag, plus 25 percent and minus 25 percent movement capability, traffic- and nontraffic-use, neutral-curing silicone joint sealant; ASTM C 920, Type S, Grade NS, Class 25, Uses T and NT.
 1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. May National Associates, Inc., a subsidiary of Sika Corporation U.S.; Bondaflex Sil 199 PG .
 - b. Sika Corporation U.S.; Sikasil-N Plus US.
- F. JS-016 - Silicone, S, P, 100/50, T, NT: Single-component, pourable, plus 100 percent and minus 50 percent movement capability traffic- and nontraffic-use, neutral-curing silicone joint sealant; ASTM C 920, Type S, Grade P, Class 100/50, Uses T and NT.
 1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. May National Associates, Inc., a subsidiary of Sika Corporation U.S.; Bondaflex Sil 728 SG.
- G. JS-019 - Silicone, S, P, 25, T, NT: Single-component, pourable, plus 25 percent and minus 25 percent movement capability, traffic- and nontraffic-use, neutral-curing silicone joint sealant; ASTM C 920, Type S, Grade P, Class 25, Uses T and NT.
 1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. May National Associates, Inc., a subsidiary of Sika Corporation U.S.; Bondaflex Sil 200 SC.
- H. JS-021 - Silicone, M, P, 100/50, T, NT: Multicomponent, pourable, plus 100 percent and minus 50 percent movement capability, traffic- and nontraffic-use, neutral-curing silicone joint sealant; ASTM C 920, Type M, Grade P, Class 100/50, Uses T and NT.
 1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. May National Associates, Inc., a subsidiary of Sika Corporation U.S.; Bondaflex Sil 728 RCS.

2.03 NONSTAINING SILICONE JOINT SEALANTS

- A. Nonstaining Joint Sealants: No staining of substrates when tested according to ASTM C 1248.
- B. JS-051 - Silicone, Nonstaining, S, NS, 100/50, NT: Nonstaining, single-component, nonsag, plus 100 percent and minus 50 percent movement capability, nontraffic-use, neutral-curing silicone joint sealant; ASTM C 920, Type S, Grade NS, Class 100/50, Use NT.
 - 1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. May National Associates, Inc., a subsidiary of Sika Corporation U.S.; Bondaflex Sil 290 NB.
 - b. Pecora Corporation; 890FTS/TXTR.
 - c. Tremco Incorporated; Spectrem 1.
- C. JS-052 - Silicone, Nonstaining, S, NS, 50, NT: Nonstaining, single-component, nonsag, plus 50 percent and minus 50 percent movement capability, nontraffic-use, neutral-curing silicone joint sealant; ASTM C 920, Type S, Grade NS, Class 50, Use NT.
 - 1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Dow Corning Corporation; 795.
 - b. GE Construction Sealants; Momentive Performance Materials Inc; SilPruf NB.
 - c. May National Associates, Inc., a subsidiary of Sika Corporation U.S.; Bondaflex Sil 295 FPS NB.
 - d. Pecora Corporation; 864NST.
 - e. Tremco Incorporated; Spectrem 2.
- D. JS-056 - Silicone, Nonstaining, S, NS, 100/50, T, NT: Nonstaining, single-component, nonsag, plus 100 percent and minus 50 percent movement capability, traffic- and nontraffic-use, neutral-curing silicone joint sealant; ASTM C 920, Type S, Grade NS, Class 100/50, Uses T and NT.
 - 1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Dow Corning Corporation; 790.
- E. JS-062 - Silicone, Nonstaining, M, NS, 50, NT: Nonstaining, multicomponent, nonsag, plus 50 percent and minus 50 percent movement capability, nontraffic-use, neutral-curing silicone joint sealant; ASTM C 920, Type M, Grade NS, Class 50, Use NT.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

- a. Tremco Incorporated; Spectrem 4-TS.

2.04 URETHANE JOINT SEALANTS

- A. JS-106 - Urethane, S, NS, 100/50, T, NT: Single-component, nonsag, plus 100 percent and minus 50 percent movement capability, traffic- and nontraffic-use, urethane joint sealant; ASTM C 920, Type S, Grade NS, Class 100/50, Uses T and NT.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

- a. Sika Corporation U.S.; Sikaflex 15LM.

- B. JS-109 - Urethane, S, NS, 25, T, NT: Single-component, nonsag, plus 25 percent and minus 25 percent movement capability, traffic- and nontraffic-use, urethane joint sealant; ASTM C 920, Type S, Grade NS, Class 25, Uses T and NT.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

- a. LymTal International, Inc.; Iso-Flex 330.

- C. JS-113 - Urethane, S, P, 35, T, NT: Single-component, pourable, plus 35 percent and minus 35 percent movement capability, traffic- and nontraffic-use, urethane joint sealant; ASTM C 920, Type S, Grade P, Class 35, Uses T and NT.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

- a. Bostik, Inc.; Chem-Calk 955-SL.

- D. JS-114 - Urethane, S, P, 25, T, NT: Single-component, pourable, plus 25 percent and minus 25 percent movement capability, traffic- and nontraffic-use, urethane joint sealant; ASTM C 920, Type S, Grade P, Class 25, Uses T and NT.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

- a. BASF Construction Chemicals - Building Systems; Sonolastic SL 1.

- b. Pecora Corporation; NR-201.

- c. Polymeric Systems, Inc.; Flexiprene 952.

- d. Schnee-Morehead, Inc.; an ITW company; Permathane SM7101.

- e. Sherwin-Williams Company (The); Stampede 1SL.

**RESTROOM IMPROVEMENTS
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- E. JS-117 - Urethane, M, NS, 50, NT: Multicomponent, nonsag, plus 50 percent and minus 50 percent movement capability nontraffic-use, urethane joint sealant; ASTM C 920, Type M, Grade NS, Class 50, Use NT.
1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Pecora Corporation; Dynatrol II.
- F. JS-122 - Urethane, M, NS, 50, T, NT: Multicomponent, nonsag, plus 50 percent and minus 50 percent movement capability, traffic- and nontraffic-use, urethane joint sealant; ASTM C 920, Type M, Grade NS, Class 50, Uses T and NT.
1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Tremco Incorporated; Dymeric 240.
- G. JS-124 - Urethane, M, NS, 25, T, NT: Multicomponent, nonsag, plus 25 percent and minus 25 percent movement capability, traffic- and nontraffic-use, urethane joint sealant; ASTM C 920, Type M, Grade NS, Class 25, Uses T and NT.
1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Bostik, Inc.; Chem-Calk 505.
 - b. LymTal International, Inc.; [Iso-Flex 881] [Iso-Flex 885 SG].
 - c. Sika Corporation U.S.; Sikaflex - 2c NS EZ Mix.
- H. JS-127 - Urethane, M, P, 50, T, NT: Multicomponent, pourable, plus 50 percent and minus 50 percent movement capability, traffic- and nontraffic-use, urethane joint sealant; ASTM C 920, Type M, Grade P, Class 50, Uses T and NT.
1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. LymTal International, Inc.; Iso-Flex 888QC.
- I. JS-129 - Urethane, M, P, 25, T, NT: Multicomponent, pourable, plus 25 percent and minus 25 percent movement capability, traffic- and nontraffic-use, urethane joint sealant; ASTM C 920, Type M, Grade P, Class 25, Uses T and NT.
1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Bostik, Inc.; Chem-Calk 555-SL.
 - b. LymTal International, Inc.; Iso-Flex 880 GB.
 - c. Pecora Corporation; [Dynatrol II SG] [Urexpan NR 200]

- d. Sherwin-Williams Company (The); Stampede-2SL.
- e. Tremco Incorporated; THC 900/901.

2.05 SILYL-TERMINATED POLYETHER (STPE) JOINT SEALANTS

- A. JS-202 - STPE, S, NS, 50, NT: Single-component, nonsag, plus 50 percent and minus 50 percent movement capability, nontraffic-use, silyl-terminated polyether joint sealant; ASTM C 920, Type S, Grade NS, Class 50, Use NT.
 - 1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. GE Construction Sealants; Momentive Performance Materials Inc; SCS7000.
 - b. Pecora Corporation; DynaTrol I-XL Tru-White.
 - c. Sherwin-Williams Company (The); Stampede 100.
- B. JS-206 - STPE, S, NS, 100/50, T, NT: Single-component, nonsag, plus 100 percent and minus 50 percent movement capability, traffic- and nontraffic-use, silyl-terminated polyether joint sealant; ASTM C 920, Type S, Grade NS, Class 100, Uses T and NT.
 - 1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Soudal USA; SoudaSeal 150LM.
- C. JS-207 - STPE, S, NS, 50, T, NT: Single-component, nonsag, plus 50 percent and minus 50 percent movement capability, traffic- and nontraffic-use, silyl-terminated polyether joint sealant; ASTM C 920, Type S, Grade NS, Class 50, Uses T and NT.
 - 1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Soudal USA; SoudaSeal 50LM.

2.06 MILDEW-RESISTANT JOINT SEALANTS

- A. Mildew-Resistant Joint Sealants: Formulated for prolonged exposure to humidity with fungicide to prevent mold and mildew growth.
- B. JS-254 - Silicone, Mildew Resistant, Acid Curing, S, NS, 25, NT: Mildew-resistant, single-component, nonsag, plus 25 percent and minus 25 percent movement capability, nontraffic-use, acid-curing silicone joint sealant; ASTM C 920, Type S, Grade NS, Class 25, Use NT.
 - 1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

- a. Dow Corning Corporation; 786-M White.
 - b. GE Construction Sealants; Momentive Performance Materials Inc.; SCS1700 Sanitary.
 - c. May National Associates, Inc., a subsidiary of Sika Corporation U.S.; Bondaflex Sil 100 WF.
 - d. Soudal USA; RTV GP.
 - e. Tremco Incorporated; Tremsil 200.
- C. JS-257 - STPE, Mildew Resistant, S, NS, 50, NT: Mildew-resistant, single-component, nonsag, plus 50 percent and minus 50 percent movement capability, nontraffic-use, silyl-terminated polyether joint sealant; ASTM C 920, Type S, Grade NS, Class 50, Use NT.
- 1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. BASF Construction Chemicals - Building Systems; Sonolastic 150.

2.07 BUTYL JOINT SEALANTS

- A. JS-351 - Butyl-Rubber-Based Joint Sealants: ASTM C 1311.
- 1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Bostik, Inc.; Chem-Calk 300.
 - b. Pecora Corporation; BC-158.

2.08 LATEX JOINT SEALANTS

- A. JS-401 - Acrylic Latex: Acrylic latex or siliconized acrylic latex, ASTM C 834, Type OP, Grade NF.
- 1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. BASF Construction Chemicals - Building Systems; Sonolac.
 - b. May National Associates, Inc., a subsidiary of Sika Corporation U.S.; [Bondaflex 600] [Bondaflex Sil-A 700].
 - c. Pecora Corporation; AC-20.
 - d. Sherwin-Williams Company (The); [850A] [950A] [PowerHouse].

2.09 JOINT-SEALANT BACKING

- A. Sealant Backing Material, General: Nonstaining; compatible with joint substrates, sealants, primers, and other joint fillers; and approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.
 - 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. BASF Construction Chemicals - Building Systems.
 - b. Construction Foam Products, a division of Nomaco, Inc.
- B. Cylindrical Sealant Backings: ASTM C 1330, Type indicated below and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance, and type indicated below except where approved otherwise in writing by joint-sealant manufacturer for joint application indicated:
 - 1. Location, Exterior:
 - a. Exposure, Wet:
 - 1) Position, Vertical:
 - a) Type C (closed cell material with a surface skin).
 - b) Type B (bicellular material with a surface skin).
 - 2) Position, Horizontal:
 - a) Type C (closed cell material with a surface skin).
 - b) Type B (bicellular material with a surface skin).
 - b. Exposure, Dry:
 - 1) Position, Vertical: Type B (bicellular material with a surface skin).
 - 2) Position, Horizontal: Type B (bicellular material with a surface skin).
 - 2. Location, Interior:
 - a. Exposure, Wet:
 - 1) Position, Vertical:
 - a) Type C (closed cell material with a surface skin).
 - b) Type B (bicellular material with a surface skin).
 - 2) Position, Horizontal:

- a) Type C (closed cell material with a surface skin).
 - b) Type B (bicellular material with a surface skin).
- b. Exposure, Dry:
 - 1) Position, Vertical:
 - a) Type O (open-cell material)
 - b) Type B (bicellular material with a surface skin).
 - 2) Position, Horizontal: Type B (bicellular material with a surface skin).
- C. Bond-Breaker Tape: Polyethylene tape or other plastic tape recommended by sealant manufacturer for preventing sealant from adhering to rigid, inflexible joint-filler materials or joint surfaces at back of joint. Provide self-adhesive tape where applicable.

2.10 MISCELLANEOUS MATERIALS

- A. Primer: Material recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.
- B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials, free of oily residues or other substances capable of staining or harming joint substrates and adjacent nonporous surfaces in any way, and formulated to promote optimum adhesion of sealants to joint substrates.
- C. Masking Tape: Nonstaining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine joints indicated to receive joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

- A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions and the following requirements:

1. Remove all foreign material from joint substrates that could interfere with adhesion of joint sealant, including dust, paints (except for permanent, protective coatings tested and approved for sealant adhesion and compatibility by sealant manufacturer), old joint sealants, oil, grease, waterproofing, water repellents, water, surface dirt, and frost.
 2. Clean porous joint substrate surfaces by brushing, grinding, mechanical abrading, or a combination of these methods to produce a clean, sound substrate capable of developing optimum bond with joint sealants. Remove loose particles remaining after cleaning operations above by vacuuming or blowing out joints with oil-free compressed air. Porous joint substrates include the following:
 - a. Concrete.
 - b. <Insert other porous joint substrate>.
 3. Remove laitance and form-release agents from concrete.
 4. Clean nonporous joint substrate surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of joint sealants. Nonporous joint substrates include the following:
 - a. Metal.
 - b. <Insert other nonporous joint substrate>.
- B. Joint Priming: Prime joint substrates where recommended by joint-sealant manufacturer or as indicated by preconstruction joint-sealant-substrate tests or prior experience. Apply primer to comply with joint-sealant manufacturer's written instructions. Confine primers to areas of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces.
- C. Masking Tape: Use masking tape where required to prevent contact of sealant or primer with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

3.03 INSTALLATION OF JOINT SEALANTS

- A. General: Comply with joint-sealant manufacturer's written installation instructions for products and applications indicated, unless more stringent requirements apply.
- B. Sealant Installation Standard: Comply with recommendations in ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.
- C. Install sealant backings of kind indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.
 1. Do not leave gaps between ends of sealant backings.
 2. Do not stretch, twist, puncture, or tear sealant backings.

3. Remove absorbent sealant backings that have become wet before sealant application, and replace them with dry materials.
- D. Install bond-breaker tape behind sealants where sealant backings are not used between sealants and backs of joints.
- E. Install sealants using proven techniques that comply with the following and at the same time backings are installed:
 1. Place sealants so they directly contact and fully wet joint substrates.
 2. Completely fill recesses in each joint configuration.
 3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.
- F. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants according to requirements specified in subparagraphs below to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint.
 1. Remove excess sealant from surfaces adjacent to joints.
 2. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.
 3. Provide concave joint profile per Figure 8A in ASTM C 1193 unless otherwise indicated.
 4. Provide flush joint profile at [locations indicated on Drawings] <Insert locations> according to Figure 8B in ASTM C 1193.
 5. Provide recessed joint configuration of recess depth and at [locations indicated on Drawings] <Insert locations> according to Figure 8C in ASTM C 1193.
 - a. Use masking tape to protect surfaces adjacent to recessed tooled joints.

3.04 CLEANING

- A. Clean off excess sealant or sealant smears adjacent to joints as the Work progresses by methods and with cleaning materials approved in writing by manufacturers of joint sealants and of products in which joints occur.

3.05 PROTECTION

- A. Protect joint sealants during and after curing period from contact with contaminating substances and from damage resulting from construction operations or other causes so sealants are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out, remove, and repair damaged or deteriorated joint sealants immediately so installations with repaired areas are indistinguishable from original work.

END OF SECTION 07 92 00

SECTION 08 11 19

STAINLESS STEEL DOORS AND FRAMES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. Section Includes:
 - 1. Stainless steel doors and frames.
- B. Related Requirements:
 - 1. Section 08 71 00 "Door Hardware" for door hardware for stainless steel doors.

1.03 COORDINATION

- A. Coordinate anchorage installation for stainless steel frames. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors. Deliver such items to Project site in time for installation.
- B. Coordinate requirements for installation of door hardware, electrified door hardware, and access control and security systems.

1.04 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Include construction details, material descriptions, core descriptions, and finishes.
- B. Shop Drawings: Include the following:
 - 1. Elevations of each door type.
 - 2. Details of doors, including vertical and horizontal edge details and metal thicknesses.
 - 3. Frame details for each frame type, including dimensioned profiles and metal thicknesses.

4. Locations of reinforcement and preparations for hardware.
5. Details of each different wall opening condition.
6. Details of electrical raceway and preparation for electrified hardware, access control systems, and security systems.
7. Details of anchorages, joints, field splices, and connections.
8. Details of accessories.
9. Details of moldings, removable stops, and glazing.
10. Location of louvers and kickplates.

C. Samples:

1. Finishes: For each type of exposed finish required, prepared on Samples of not less than 3 by 5 inches.
2. Doors: Show vertical-edge, top, and bottom construction; core construction; and hinge and other applied hardware reinforcement.
3. Frames: Show profile, corner joint, floor and wall anchors, and silencers. Include separate section showing fixed hollow-metal panels and glazing if applicable.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Deliver stainless steel doors and frames palletized, packaged, or crated to provide protection during transit and Project-site storage. Do not use nonvented plastic.
- B. Deliver welded frames with two removable spreader bars across bottom of frames, tack welded to jambs and mullions.
- C. Store stainless steel doors and frames under cover at Project site with head up. Place units on minimum 4-inch- high wood blocking.
- D. Provide minimum 1/4-inch space between each stacked door to permit air circulation.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 1. Next Door Company.
 2. Security Metal Products; a brand of ASSA ABLOY.
 3. Stainless Doors, Inc.

4. Steelcraft; an Allegion brand.

2.02 STAINLESS STEEL DOORS AND FRAMES

- A. Construct stainless steel door and frame assemblies to comply with NAAMM-HMMA 866 for the application indicated, including materials, fabrication methods, hardware reinforcement, tolerances, and clearances, and as specified. Comply with SDI ANSI/A250.4, for Physical Performance Level A.
- B. Doors and Frames for Highly Corrosive Environments: .
 1. Stainless Steel Doors:
 - a. Type: As indicated in the Door and Frame Schedule.
 - b. Thickness: 1-3/4 inches.
 - c. Face Sheets: Type 316 stainless steel sheet, minimum thickness [0.050 inch] [0.062 inch] [0.078 inch].
 - d. Edge Construction: Continuously welded with no visible seam.
 - e. Top and Bottom Edges: Closed with continuous stainless steel channels with minimum thickness of 0.062 inch, welded to face sheets.
 - 1) Provide flush top and bottom closures for exterior doors, with weep holes at bottom edge.
 - f. Core Construction: Polyisocyanurate, polystyrene, or polyurethane laminated to face sheets.
 - g. Louvers: As indicated in drawings
 2. Stainless Steel Frames:
 - a. Materials: Type 316 stainless steel sheet.
 - b. Door Frames for Openings 48 Inches Wide or Less: Fabricate from stainless steel sheet, minimum thickness [0.062 inch] [0.078 inch] [0.109 inch].
 - c. Door Frames for Openings More Than 48 Inches Wide: Fabricate from stainless steel sheet, minimum thickness [0.078 inch] [0.109 inch].
 3. Finish: ASTM A480/A480M .

2.03 MATERIALS

- A. Recycled Content of Steel Products: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 25 percent.

- B. Stainless Steel Sheet: ASTM A240/A240M, austenitic stainless steel, Type 304 or 316 as indicated.
- C. Steel Sheet: ASTM A1008/A1008M or ASTM A1011/A1011M, commercial steel, Type B.
- D. Metallic-Coated Steel Sheet: ASTM A653/A653M, commercial steel, Type B; with minimum G60 or A60 metallic coating.
- E. Foam-Plastic Insulation: Manufacturer's standard [polystyrene] [urethane] board insulation with maximum flame-spread and smoke-developed indexes of 75 and 450, respectively, according to ASTM E84. Enclose insulation completely within door.
- F. Mineral-Fiber Insulation: Insulation made of rock-wool fibers, slag-wool fibers, or glass fibers.
- G. Inserts, Bolts, and Anchor Fasteners:
 - 1. Stainless steel components complying with ASTM F593 and ASTM F594, Alloy Group 1 or 2 for bolts and nuts.
 - 2. Hot-dip galvanized steel according to ASTM A153/A153M or ASTM F2329.

2.04 FABRICATION

- A. Stainless Steel Door Fabrication: Provide doors rigid and free of defects, warp, or buckle. Accurately form metal to required sizes and profiles, with minimum radius for thickness of metal.
 - 1. Tolerances: Fabricate doors to tolerances indicated in NAAMM-HMMA 866.
 - 2. Stops and Moldings: Factory cut openings in doors. Provide minimum 0.038-inch-thick, stainless steel stops and moldings around glazed lites. Form corners of stops and moldings with butted or mitered hairline joints.
 - a. Glazed Lites: Provide fixed stops and moldings welded on secure side of door.
 - b. Coordinate rabbet width between fixed and removable stops with type of glazing and type of installation indicated.
- B. Stainless Steel Frame Fabrication: Provide stainless steel frames rigid and free of defects, warp, or buckle. Accurately form metal to required sizes and profiles, with minimum radius for thickness of metal.
 - 1. Tolerances: Fabricate frames to tolerances indicated in NAAMM-HMMA 866.
 - 2. Fabricate in one piece except where handling and shipping limitations require multiple sections. Where frames are fabricated in sections, provide alignment plates or angles at each joint, fabricated of metal of same or greater thickness as frames. To ensure proper assembly at Project site, clearly identify work that cannot be permanently factory assembled before shipment.

3. Provide countersunk, flat-, or oval-head exposed screws and bolts for exposed fasteners unless otherwise indicated.
4. Door Silencers: Except on weather-stripped and gasketed frames, drill stops to receive door silencers as follows. Provide plastic plugs to keep holes clear during construction.
 - a. Single-Door Frames: Drill stop in strike jamb to receive three door silencers.
 - b. Double-Door Frames: Drill stop in head jamb to receive two door silencers.
5. Stops and Moldings: Provide stops and moldings formed integrally with stainless steel frames around [glazed lites] [and] [solid panels], minimum 5/8 inch high unless otherwise indicated. Form corners of stops and moldings with butted or mitered hairline joints.
 - a. Provide stops for installation with countersunk flat- or oval-head machine screws spaced uniformly not more than 9 inches o.c. and not more than 2 inches o.c. from each corner.
6. Terminated Stops: Where indicated on Drawings for interior door frames, terminate stops 6 inches above finish floor with a [45] [90]-degree angle cut, and close open end of stop with stainless steel sheet closure. Cover opening in extension of frame with welded-stainless steel filler plate, with welds ground smooth and flush with frame.
7. Provide stops for installation with countersunk flat- or oval-head machine screws spaced uniformly not more than 9 inches o.c. and not more than 2 inches o.c. from each corner.
8. Grouted Frames:
 - a. Plaster Guards: Weld guards to frame at back of hardware mortises and mounting holes in frames to be grouted.
 - b. Head Reinforcement: For frames more than 48 inches wide, provide continuous head reinforcement for full width of opening, welded to back of frame at head.
- C. Hardware Preparation: Factory prepare stainless steel doors and frames to receive templated mortised hardware, and electrical wiring; include cutouts, reinforcement, mortising, drilling, and tapping, according to the Door Hardware Schedule, and templates.
 1. Reinforce doors to receive nontemplated mortised and surface-mounted door hardware.
 2. Comply with ANSI/BHMA A156.115 for preparing hollow-metal doors and frames for hardware.

2.05 FINISHES

- A. Stainless Steel Finishes: Remove tool and die marks and stretch lines, or blend into finish. Grind and polish surfaces to produce uniform finish, free of cross scratches. When polishing is completed, passivate and rinse surfaces. Remove embedded foreign matter and leave surfaces chemically clean.
- B. Grain Direction: For finishes exhibiting grain, run grain vertically on door faces and frame jambs.

PART 3 - EXECUTION

3.01 PREPARATION

- A. Remove welded-in shipping spreaders installed at factory. Restore exposed finish by grinding, filling, and dressing, as required to make repaired area smooth, flush, and invisible on exposed faces.
- B. Prior to installation and with installation spreaders in place, adjust and securely brace stainless steel door frames for squareness, alignment, twist, and plumb to the following tolerances:
 - 1. Squareness: Plus or minus 1/16 inch, measured at door rabbet on a line 90 degrees from jamb, and perpendicular to frame head.
 - 2. Alignment: Plus or minus 1/16 inch, measured at jambs on a horizontal line parallel to plane of wall.
 - 3. Twist: Plus or minus 1/16 inch, measured at opposite face corners of jambs on parallel lines, and perpendicular to plane of wall.
 - 4. Plumbness: Plus or minus 1/16 inch, measured at jambs on a perpendicular line from head to floor.
- C. Drill and tap doors and frames to receive nontemplated mortised and surface-mounted door hardware.

3.02 INSTALLATION

- A. Install stainless steel doors and frames plumb, rigid, properly aligned, and securely fastened in place; comply with approved Shop Drawings and with manufacturer's written instructions.
- B. Stainless Steel Frames:
 - 1. Set frames accurately in position; plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is complete, remove temporary braces, without damage to completed Work.

- a. Where frames are fabricated in sections, field splice at approved locations by welding face joint continuously; grind, fill, dress, and make splice smooth, flush, and invisible on exposed faces.
 - b. Install frames with removable glazing stops located on secure side of opening.
2. Solidly pack mineral-fiber insulation inside frames.
3. In-Place Concrete or Masonry Construction: Secure frames in place with postinstalled expansion anchors.
4. Installation Tolerances: Adjust stainless steel frames for squareness, alignment, twist, and plumb to the following tolerances:
 - a. Squareness: Plus or minus 1/16 inch, measured at door rabbet on a line 90 degrees from jamb, and perpendicular to frame head.
 - b. Alignment: Plus or minus 1/16 inch, measured at jambs on a horizontal line parallel to plane of wall.
 - c. Twist: Plus or minus 1/16 inch, measured at opposite face corners of jambs on parallel lines, and perpendicular to plane of wall.
 - d. Plumbness: Plus or minus 1/16 inch, measured at jambs at floor.

3.03 ADJUSTING AND CLEANING

- A. Clean grout and other bonding material off stainless steel doors and frames immediately after installation.

END OF SECTION 08 11 19

SECTION 08 17 13

INTEGRATED METAL DOOR OPENING ASSEMBLIES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. Section includes integrated metal door-opening assemblies consisting of doors, metal frame, operating hardware, and accessories.

1.03 DEFINITIONS

- A. Minimum Thickness: Minimum thickness of base metal without coatings according to NAAMM-HMMA 803 or SDI A250.8.

1.04 COORDINATION

- A. Coordinate anchorage installation for integrated metal door-opening assembly frames. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors. Deliver such items to Project site in time for installation.
- B. Coordinate requirements for installation of door hardware, electrified door hardware, and access control and security systems.

1.05 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Shop Drawings: Include the following:
 - 1. Elevations of each integrated metal door-opening assembly type.

2. Frame details for each frame type, including dimensioned profiles and metal thicknesses.

1.06 INFORMATIONAL SUBMITTALS

- A. Sample Warranty: For manufacturer's warranty.

1.07 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: For integrated door assemblies, including hardware, to include in operation and maintenance manuals.

1.08 DELIVERY, STORAGE, AND HANDLING

- A. Deliver integrated metal door-opening assemblies palletized, packaged, or crated to provide protection during transit and Project-site storage. Do not use nonvented plastic.
 1. Provide additional protection to prevent damage to factory-finished units.
- B. Deliver welded frames with two removable spreader bars across bottom of frames, tack welded to jambs and mullions.
- C. Store integrated metal door assemblies vertically under cover at Project site with head up. Place on minimum 4-inch- high wood blocking. Provide minimum 1/4-inch space between each stacked door to permit air circulation.

1.09 WARRANTY

- A. Special Warranty: Manufacturer agrees to repair or replace integrated metal door-opening assembly and components that fail in materials or workmanship within specified warranty period.
 1. Failures include, but are not limited to, the following:
 - a. Faulty operation of hardware or other components.
 - b. Deterioration of metals, metal finishes, and other materials beyond normal use or weathering.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Basis of Design:
 - 1. Hayward Turnstiles, Inc, Model SwingGate HT336 with Bars"
 - a. Galvanized Steel gate and frame
 - b. Integrated kick plate to conform with CBC 11B-404.2.10
- B. Source Limitations: Obtain integrated metal door-opening assemblies, including doors, frames and hardware, from single source from single manufacturer.

2.02 INTEGRATED METAL DOOR-OPENING ASSEMBLY HARDWARE, GENERAL

- 1. Integrated Metal Door-Opening Assembly Hardware Sets: Provide quantity, item, size, finish, or color indicated, as well as named manufacturers' products .
- 2. Opening-Force Requirements:
 - a. Accessible Interior Doors: Not more than 5 lbf to fully open door.

2.03 ACCESSORIES

- A. Galvanized steel kickplate complying with CBC 11B-404.2.10

2.04 FRAME ANCHORS

- A. Jamb Anchors:
 - 1. Type: Anchors of minimum size and type required by applicable door and frame standard, and suitable for performance level indicated.
- B. Floor Anchors for Concrete Slabs with Underlayment: Adjustable-type anchors with extension clips, allowing not less than 2-inch height adjustment. Terminate bottom of frames at top of underlayment.

2.05 FABRICATION

- A. Hollow-Metal Frames: Fabricate in one piece, except where handling and shipping limitations require multiple sections. Where frames are fabricated in sections, provide alignment plates or angles at each joint, fabricated of metal of same or greater thickness as frames.
 - 1. Provide countersunk, flat- or oval-head exposed screws and bolts for exposed fasteners unless otherwise indicated.
 - 2. Door Silencers: Except on weather-stripped frames, drill stops to receive door silencers as follows. Keep holes clear during construction.
 - a. Single-Door Frames: Drill stop in strike jamb to receive three door silencers.

2.06 FINISHES

- A. Door Faces and Frames: Manufacturer's standard factory finish, Galvanized steel.

PART 3 - EXECUTION

3.01 PREPARATION

- A. Remove welded-in shipping spreaders installed at factory. Restore exposed finish by grinding, filling, and dressing, as required to make repaired area smooth, flush, and invisible on exposed faces. Touch up factory-applied finishes where spreaders are removed.

3.02 INSTALLATION

- A. General: Install integrated metal door-opening assemblies plumb, rigid, properly aligned, and securely fastened in place. Comply with approved Shop Drawings and with manufacturer's written instructions.
- B. Hollow-Metal Frames: Comply with SDI A250.11 and NFPA 80.
 - 1. Set frames accurately in position; plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is complete, remove temporary braces without damage to completed Work.
 - a. Where frames are fabricated in sections, field splice at approved locations by welding face joint continuously; grind, fill, dress, and make splice smooth, flush, and invisible on exposed faces. Touch up finishes.

- b. Install frames with removable stops located on secure side of opening.
- 2. Floor Anchors: Secure with postinstalled expansion anchors.
 - a. Floor anchors may be set with power-actuated fasteners instead of postinstalled expansion anchors if so indicated and approved on Shop Drawings.
- 3. Solidly pack mineral-fiber insulation inside frames.
- 4. Masonry Walls: Coordinate installation of frames to allow for solidly filling space between frames and masonry with grout or mortar.
- 5. In-Place Concrete or Masonry Construction: Secure frames in place with postinstalled expansion anchors.
- 6. Installation Tolerances: Adjust hollow-metal frames to the following tolerances:
 - a. Squareness: Plus or minus 1/16 inch, measured at door rabbet on a line 90 degrees from jamb perpendicular to frame head.
 - b. Alignment: Plus or minus 1/16 inch, measured at jambs on a horizontal line parallel to plane of wall.
 - c. Twist: Plus or minus 1/16 inch, measured at opposite face corners of jambs on parallel lines, and perpendicular to plane of wall.
 - d. Plumbness: Plus or minus 1/16 inch, measured at jambs at floor.
- C. Hollow-Metal Doors: Fit and adjust hollow-metal doors accurately in frames, within clearances specified below.

3.03 CLEANING AND TOUCHUP

- A. Metallic-Coated Surface Touchup: Clean abraded areas and repair with galvanizing repair paint in accordance with manufacturer's written instructions.
- B. Factory-Finish Touchup: Clean abraded areas and repair with same material used for factory finish in accordance with manufacturer's written instructions.

END OF SECTION 08 17 13

SECTION 08 71 00 - DOOR HARDWARE

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes:
 - 1. Mechanical door hardware for the following:
 - a. Swinging doors.
 - 2. Cylinders for door hardware specified in other Sections.
- B. Related Requirements:
 - 1. Section 08 11 19 "Stainless-Steel Doors and Frames" .

1.02 COORDINATION

- A. Existing Openings: Where hardware components are scheduled for application to existing construction or where modifications to existing door hardware are required, field verify existing conditions and coordinate installation of door hardware to suit opening conditions and to provide proper door operation.

1.03 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.

1.04 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For each type of door hardware to include in maintenance manuals.

1.05 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Door Hardware: Provide one complete set of hardware for each type specified on Drawings. Insert detailed descriptions and specific numbers of units.

1.06 QUALITY ASSURANCE

- A. Installer Qualifications: Supplier of products and an employer of workers trained and approved by product manufacturers and of an Architectural Hardware Consultant who is available during the course of the Work to consult Contractor, Architect, and Owner about door hardware and keying.
- B. Accessibility Requirements: Comply with applicable provisions in the ABA Standards of the Federal agency having jurisdiction, California Building Code, and ICC A117.1 for door hardware on doors in an accessible route.
 - 1. Provide operating devices that do not require tight grasping, pinching, or twisting of the wrist and that operate with a force of not more than 5 lbf (22.2 N).
 - 2. Comply with the following maximum opening-force requirements:
 - a. Interior, Non-Fire-Rated Hinged Doors: 5 lbf (22.2 N) applied perpendicular to door.
 - b. Fire Doors: Minimum opening force allowable by authorities having jurisdiction.
 - 3. Bevel raised thresholds with a slope of not more than 1:2. Provide thresholds not more than 1/2 inch (13 mm) high.
 - 4. Closers: Adjust door and gate closer sweep periods so that, from an open position of 90 degrees, the time required to move the door to a position of 12 degrees from the latch is 5 seconds minimum.
- C.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Inventory door hardware on receipt and provide secure lock-up for door hardware delivered to Project site.
- B. Tag each item or package separately with identification coordinated with the final door hardware schedule, and include installation instructions, templates, and necessary fasteners with each item or package.
- C. Deliver keys to manufacturer of key control system for subsequent delivery to Owner.

1.08 WARRANTY

- A. Special Warranty: Manufacturer agrees to repair or replace components of door hardware that fail in materials or workmanship within specified warranty period.
 - 1. Failures include, but are not limited to, the following:
 - a. Structural failures including excessive deflection, cracking, or breakage.

- b. Faulty operation of doors and door hardware.
 - c. Deterioration of metals, metal finishes, and other materials beyond normal weathering and use.
- 2. Warranty Period: Three years from date of Substantial Completion unless otherwise indicated below:
 - a. Locks: Five years from date of Substantial Completion.
 - b. Closers: 10 years from date of Substantial Completion.

1.09 MAINTENANCE SERVICE

- A. Maintenance Tools and Instructions: Furnish a complete set of specialized tools and maintenance instructions for Owner's continued adjustment, maintenance, and removal and replacement of door hardware.

PART 2 - PRODUCTS

2.01 SCHEDULED DOOR HARDWARE

- A. Provide door hardware for each door as scheduled on Drawings to comply with requirements in this Section.
 - 1. Door Hardware Sets: Provide quantity, item, size, finish or color indicated, and named manufacturers' products.
 - 2. Sequence of Operation: Provide electrified door hardware function, sequence of operation, and interface with other building control systems indicated.
- B. Designations: Requirements for design, grade, function, finish, size, and other distinctive qualities of each type of door hardware are indicated in Part 3 "Door Hardware Schedule" Article. Products are identified by using door hardware designations, as follows:
 - 1. Named Manufacturers' Products: Manufacturer and product designation are listed for each door hardware type required for the purpose of establishing minimum requirements. Manufacturers' names are abbreviated in Part 3 "Door Hardware Schedule" Article.
 - 2. References to BHMA Designations: Provide products complying with these designations and requirements for description, quality, and function.

2.02 HINGES

- A. Hinges: BHMA A156.1.
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings

2.03 MECHANICAL LOCKS AND LATCHES

- A. Lock Functions: As indicated in door hardware schedule.
- B. Lock Throw: Comply with testing requirements for length of bolts required for labeled fire doors, and as follows:
 - 1. Bored Locks: Minimum 1/2-inch latchbolt throw.
 - 2. Mortise Locks: Minimum 3/4-inch latchbolt throw.
 - 3. Deadbolts: Minimum 1-inch bolt throw.
- C. Lock Backset: 2-3/4 inches unless otherwise indicated.
- D. Lock Trim:
 - 1. Description: As indicated on Drawings.
- E. Strikes: Provide manufacturer's standard strike for each lock bolt or latchbolt complying with requirements indicated for applicable lock or latch and with strike box and curved lip extended to protect frame; finished to match lock or latch.

2.04 MANUAL FLUSH BOLTS

- A. Manual Flush Bolts: BHMA A156.16; minimum 3/4-inch throw; designed for mortising into door edge.
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings.

2.05 LOCK CYLINDERS

- A. Lock Cylinders: Tumbler type, constructed from brass or bronze, stainless steel, or nickel silver.

2.06 KEYING

- A. Keying System: Factory registered, complying with guidelines in BHMA A156.28, appendix. Provide one extra key blank for each lock.
- B. Retain "No Master Key System," "Master Key System," "Grand Master Key System," or "Great-Grand Master Key System" Subparagraph below.
 - 1. Master Key System: Match existing building keying system.
- C. Keys: [Nickel silver][Brass].
 - 1. Stamping: Permanently inscribe each key with a visual key control number and include the following notation:

- a. Notation: Information to be furnished by Owner.
- 2. Quantity: In addition to one extra key blank for each lock, provide the following:
 - a. Cylinder Change Keys: Three.
 - b. Master Keys: Five.

2.07 SURFACE CLOSERS

- A. Surface Closers: BHMA A156.4; rack-and-pinion hydraulic type with adjustable sweep and latch speeds controlled by key-operated valves and forged-steel main arm. Comply with manufacturer's written instructions for size of door closers depending on size of door, exposure to weather, and anticipated frequency of use. Provide factory-sized closers, adjustable to meet field conditions and requirements for opening force.
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings.

2.08 METAL PROTECTIVE TRIM UNITS

- A. Metal Protective Trim Units: BHMA A156.6; fabricated from 0.050-inch- thick stainless steel; with manufacturer's standard machine or self-tapping screw fasteners.
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings.

2.09 FABRICATION

- A. Manufacturer's Nameplate: Do not provide products that have manufacturer's name or trade name displayed in a visible location except in conjunction with required fire-rating labels and as otherwise approved by Architect.
 - 1. Manufacturer's identification is permitted on rim of lock cylinders only.
- B. Base Metals: Produce door hardware units of base metal indicated, fabricated by forming method indicated, using manufacturer's standard metal alloy, composition, temper, and hardness. Furnish metals of a quality equal to or greater than that of specified door hardware units and BHMA A156.18.
- C. Fasteners: Provide door hardware manufactured to comply with published templates prepared for machine, wood, and sheet metal screws. Provide screws that comply with commercially recognized industry standards for application intended, except aluminum fasteners are not permitted. Provide Phillips flat-head screws with finished heads to match surface of door hardware unless otherwise indicated.

1. Concealed Fasteners: For door hardware units that are exposed when door is closed, except for units already specified with concealed fasteners. Do not use through bolts for installation where bolt head or nut on opposite face is exposed unless it is the only means of securely attaching the door hardware. Where through bolts are used on hollow door and frame construction, provide sleeves for each through bolt.
2. Fire-Rated Applications:
 - a. Wood or Machine Screws: For the following:
 - 1) Hinges mortised to doors or frames[; use threaded-to-the-head wood screws for wood doors and frames].
 - 2) Strike plates to frames.
 - 3) Closers to doors and frames.
 - b. Steel Through Bolts: For the following unless door blocking is provided:
 - 1) Surface hinges to doors.
 - 2) Closers to doors and frames.
 - 3) Surface-mounted exit devices.
3. Spacers or Sex Bolts: For through bolting of hollow-metal doors.
4. Gasketing Fasteners: Provide noncorrosive fasteners for exterior applications and elsewhere as indicated.

2.10 FINISHES

- A. Provide finishes complying with BHMA A156.18 as indicated in door hardware schedule.
- B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
- C. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine doors and frames, with Installer present, for compliance with requirements for installation tolerances, labeled fire-rated door assembly construction, wall and floor construction, and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

- A. Steel Doors and Frames: For surface-applied door hardware, drill and tap doors and frames in accordance with ANSI/SDI A250.6.

3.03 INSTALLATION

- A. Mounting Heights: Mount door hardware units at heights [indicated on Drawings][to comply with the following] unless otherwise indicated or required to comply with governing regulations.
 - 1. Standard Steel Doors and Frames: ANSI/SDI A250.8.
 - 2. Custom Steel Doors and Frames: HMMA 831.
 - 3. Coordinate and match hardware heights with existing doors
- B. Install each door hardware item to comply with manufacturer's written instructions. Where cutting and fitting are required to install door hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation of surface protective trim units with finishing work. Do not install surface-mounted items until finishes have been completed on substrates involved.
 - 1. Set units level, plumb, and true to line and location. Adjust and reinforce attachment substrates as necessary for proper installation and operation.
 - 2. Drill and countersink units that are not factory prepared for anchorage fasteners. Space fasteners and anchors according to industry standards.
- C. Hinges: Install types and in quantities indicated in door hardware schedule, but not fewer than the number recommended by manufacturer for application indicated or one hinge for every 30 inches of door height, whichever is more stringent, unless other equivalent means of support for door, such as spring hinges or pivots, are provided.
- D. Lock Cylinders: Install construction cores to secure building and areas during construction period.
 - 1. Replace construction cores with permanent cores as indicated in keying schedule.
 - 2. Furnish permanent cores to Owner for installation.

- E. Thresholds: Set thresholds for exterior doors and other doors indicated in full bed of sealant complying with requirements specified in Section 07 92 00 "Joint Sealants."
- F. Perimeter Gasketing: Apply to head and jamb, forming seal between door and frame.
- G. Door Bottoms: Apply to bottom of door, forming seal with threshold when door is closed.

3.04 FIELD QUALITY CONTROL

- A. Independent Architectural Hardware Consultant: [Owner will engage][Engage] a qualified independent Architectural Hardware Consultant to perform inspections and to prepare inspection reports.
 - 1. Independent Architectural Hardware Consultant will inspect door hardware and state in each report whether installed work complies with or deviates from requirements, including whether door hardware is properly installed and adjusted.

3.05 ADJUSTING

- A. Initial Adjustment: Adjust and check each operating item of door hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate as intended. Adjust door control devices to compensate for final operation of heating and ventilating equipment and to comply with referenced accessibility requirements.
 - 1. Door Closers: Adjust sweep period to comply with accessibility requirements and requirements of authorities having jurisdiction.
- B. Occupancy Adjustment: Approximately three months after date of Substantial Completion, Installer's Architectural Hardware Consultant shall examine and readjust each item of door hardware, including adjusting operating forces, as necessary to ensure function of doors, door hardware, and electrified door hardware.

3.06 CLEANING AND PROTECTION

- A. Clean adjacent surfaces soiled by door hardware installation.
- B. Clean operating items as necessary to restore proper function and finish.
- C. Provide final protection and maintain conditions that ensure that door hardware is without damage or deterioration at time of Substantial Completion.

END OF SECTION 08 71 00

SECTION 08 83 00

MIRRORS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. Section includes the following types of silvered flat glass mirrors:
 - 1. Tempered glass mirrors qualifying as safety glazing.
- B. Related Requirements:
 - 1. Section 10 28 00 "Toilet, Bath, and Laundry Accessories" for metal-framed mirrors.

1.03 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Mirrors. Include description of materials and process used to produce each type of silvered flat glass mirror specified that indicates sources of glass, glass coating components, edge sealer, and quality-control provisions.
- B. Samples: For each type of the following:
 - 1. Mirrors: 12 inches square, including edge treatment on two adjoining edges.
 - 2. Mirror Trim: 12 inches long.

1.04 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer.
- B. Product Certificates: For each type of mirror and mirror mastic.

1.05 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For mirrors to include in maintenance manuals.

1.06 QUALITY ASSURANCE

- A. Installer Qualifications: A qualified installer who employs glass installers for this Project who are certified under the National Glass Association's Certified Glass Installer Program.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Protect mirrors according to mirror manufacturer's written instructions and as needed to prevent damage to mirrors from moisture, condensation, temperature changes, direct exposure to sun, or other causes.
- B. Comply with mirror manufacturer's written instructions for shipping, storing, and handling mirrors as needed to prevent deterioration of silvering, damage to edges, and abrasion of glass surfaces and applied coatings. Store indoors.

1.08 FIELD CONDITIONS

- A. Environmental Limitations: Do not install mirrors until ambient temperature and humidity conditions are maintained at levels indicated for final occupancy.

1.09 WARRANTY

- A. Special Warranty: Manufacturer agrees to replace mirrors that deteriorate within specified warranty period. Deterioration of mirrors is defined as defects developed from normal use that are not attributed to mirror breakage or to maintaining and cleaning mirrors contrary to manufacturer's written instructions. Defects include discoloration, black spots, and clouding of the silver film.

- 1. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - 1. Avalon Glass and Mirror Company.
 - 2. D & W Incorporated.
 - 3. Gardner Glass Products, Inc.
 - 4. Glasswerks LA, Inc.
 - 5. Guardian Industries Corp.

6. Independent Mirror Industries, Inc.
 7. National Glass Industries.
 8. Trulite Glass & Aluminum Solutions.
 9. Walker Glass Co., Ltd.
 10. <Insert manufacturer's name>.
- B. Source Limitations for Mirrors: Obtain mirrors from single source from single manufacturer.
- C. Source Limitations for Mirror Accessories: Obtain mirror glazing accessories from single source.

2.02 SILVERED FLAT GLASS MIRRORS

- A. Mirrors, General: ASTM C 1503; manufactured using copper-free, low-lead mirror coating process.
- B. Tempered Glass Mirrors: Mirror Glazing Quality for blemish requirements and complying with ASTM C 1048 for Kind FT, Condition A, tempered float glass before silver coating is applied; clear.
- C. Safety Glazing Products: For [film-backed] [laminated] [tempered] mirrors, provide products that comply with 16 CFR 1201, Category II.

2.03 MISCELLANEOUS MATERIALS

- A. Edge Sealer: Coating compatible with glass coating and approved by mirror manufacturer for use in protecting against silver deterioration at mirrored glass edges.
- B. Mirror Mastic: An adhesive setting compound, asbestos-free, produced specifically for setting mirrors and certified by both mirror and mastic manufacturer as compatible with glass coating and substrates on which mirrors will be installed.
1. Manufacturers: Subject to compliance with requirements, [provide products by the following] [provide products by one of the following] [available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following]:
 - a. Franklin International.
 - b. Laurence, C. R. Co., Inc.
 - c. Liquid Nails Adhesive.
 - d. Palmer Products Corporation.
 - e. Royal Adhesives & Sealants, LLC.

- f. <Insert manufacturer's name>.
2. Adhesive shall have a VOC content of 70 g/L or less.
3. Adhesive shall comply with the testing and product requirements of the California Department of Public Health's (formerly, the California Department of Health Services') "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."

2.04 MIRROR HARDWARE

- A. Aluminum J-Channels: Aluminum extrusions with a return deep enough to produce a glazing channel to accommodate mirrors of thickness indicated and in lengths required to cover edges of mirrors in a single piece.
 1. Finish: Clear bright anodized.

2.05 FABRICATION

- A. Fabricate mirrors in the shop to greatest extent possible.
- B. Mirror Edge Treatment: Flat polished.
 1. Seal edges of mirrors with edge sealer after edge treatment to prevent chemical or atmospheric penetration of glass coating.
 2. Require mirror manufacturer to perform edge treatment and sealing in factory immediately after cutting to final sizes.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine substrates, over which mirrors are to be mounted, with Installer present, for compliance with installation tolerances, substrate preparation, and other conditions affecting performance of the Work.
- B. Verify compatibility with and suitability of substrates, including compatibility of existing finishes or primers with mirror mastic.
- C. Proceed with installation only after unsatisfactory conditions have been corrected and surfaces are dry.

3.02 PREPARATION

- A. Comply with mastic manufacturer's written installation instructions for preparation of substrates, including coating substrates with mastic manufacturer's special bond coating where applicable.

3.03 INSTALLATION

- A. General: Install mirrors to comply with mirror manufacturer's written instructions and with referenced GANA publications. Mount mirrors accurately in place in a manner that avoids distorting reflected images.
 - 1. GANA Publications: ["Laminated Glazing Reference Manual,"]"Glazing Manual" and "Mirrors, Handle with Extreme Care: Tips for the Professional on the Care and Handling of Mirrors."
- B. Provide a minimum airspace of 1/8 inch between back of mirrors and mounting surface for air circulation between back of mirrors and face of mounting surface.
- C. Install mirrors with mastic and mirror hardware. Attach mirror hardware securely to mounting surfaces with mechanical fasteners installed with anchors or inserts as applicable. Install fasteners so heads do not impose point loads on backs of mirrors.
 - 1. Aluminum J-Channels: Provide setting blocks 1/8 inch thick by 4 inches long at quarter points. To prevent trapping water, provide, between setting blocks, two slotted weeps not less than 1/4 inch wide by 3/8 inch long at bottom channel.
 - 2. Install mastic as follows:
 - a. Apply barrier coat to mirror backing where approved in writing by manufacturers of mirrors and backing material.
 - b. Apply mastic to comply with mastic manufacturer's written instructions for coverage and to allow air circulation between back of mirrors and face of mounting surface.
 - c. After mastic is applied, align mirrors and press into place while maintaining a minimum airspace of 1/8 inch between back of mirrors and mounting surface.

3.04 CLEANING AND PROTECTION

- A. Protect mirrors from breakage and contaminating substances resulting from construction operations.
- B. Do not permit edges of mirrors to be exposed to standing water.
- C. Maintain environmental conditions that prevent mirrors from being exposed to moisture from condensation or other sources for continuous periods of time.
- D. Clean exposed surface of mirrors not more than four days before date scheduled for inspections that establish date of Substantial Completion. Clean mirrors as recommended in writing by mirror manufacturer.

**RESTROOM IMPROVEMENTS
AT FULLERTON PARK AND RIDE**

**C-2-2409
EXHIBIT B**

END OF SECTION 08 83 00

SECTION 09 22 16

NON-STRUCTURAL METAL FRAMING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. Section Includes:
 - 1. Non-load-bearing steel framing systems for interior partitions and soffits clad with the following:
 - a. Gypsum board.
- B. Contractor's Discretion:
 - 1. Steel Framing: Provide steel studs and track fabricated from conventional steel sheet or embossed, high strength steel sheet.
 - 2. Partition Head of Wall Systems:
 - a. For non-fire-resistance-rated head of wall systems provide slip-type head joints of any type indicated, except:
 - 1) Where head of wall is exposed to view, provide slip-type head joints specified for exposed locations only.

1.03 DEFINITIONS

- A. Walls: In this Section the term "walls" is synonymous with the term "partition walls" or "partitions."
- B. Composite Partition Assemblies: Clad continuously full height on both sides of stud framing.
- C. Non-Composite Partition Assemblies: Clad full height on only one side of stud framing; or clad partial height on either side of stud framing.
- D. Steel sheet thickness for metal framing specified in this Section is for uncoated conventional steel sheet. Where thickness is indicated by gage, comply with minimum thickness indicated in table below.

**RESTROOM IMPROVEMENTS
AT FULLERTON PARK AND RIDE**

**C-2-2409
EXHIBIT B**

STEEL SHEET THICKNESSES				
DW = Drywall ST = Structural	Flat Steel Sheet			Gage Equivalent for Dimpled Steel Sheet
Gage	Uncoated Thickness	Minimum Thickness	Design Thickness	Uncoated Thickness
	Inch	Mils	Inch	Inch
25	0.018	18	0.0188	0.015
22	0.027	27	0.0283	-
20 DW	0.030	30	0.0312	0.025
20 ST	0.033	33	0.0346	0.028
18	0.043	43	0.0451	-
16	0.054	54	0.0566	-
14	0.068	68	0.0713	-
12	0.097	97	0.1017	-
10	0.118	118	0.1242	-

- E. Tie wire and hanger wire diameters (uncoated) and corresponding U.S. steel wire gage are indicated in the table below:

WIRE DIAMETER				
	Minimum Steel Base Metal (Uncoated) Diameter			Minimum Steel Base Metal (Uncoated) Diameter
Gage	Inch		Gage	Inch
20	0.0348		13	0.0915
19	0.0410		12	0.1055
18	0.0475		11	0.1205
17	0.0540		10	0.1350
16	0.0625		9	0.1483
14	0.0800		8	0.1620

- F. Dry Exposures: A location not normally subjected to dampness or wetness. A location classified as dry may be temporarily subject to dampness or wetness, as in the case of kitchens or locker rooms.
- G. Damp Exposures: Locations protected from weather and not subject to saturation with water or other liquids but subject to moderate degrees of moisture. Examples of such locations include partially protected locations under canopies, marquees, roofed open balconies/porches, and like locations; and interior locations subject to moderate degrees of moisture, such as rooms with tubs and pools, rooms open to damp and wet exposures, crawl spaces, and like locations.

- H. Wet Exposures: Unprotected locations exposed to weather; locations subject to saturation with water or other liquids, such as showers, vehicle washing areas; installations underground or in concrete slabs or masonry in direct contact with the earth; installations in direct contact with water or other liquids, such as pools, fountains, and like locations.

1.04 ACTION SUBMITTALS

- A. Product Data: For each type of product. Include the following:
1. Image or description of label or other identifying mark applied to steel studs and track visually indicating metal thickness or gage.
 2. Embossed, High Strength Steel Studs and Tracks: Include framing manufacturer produced Limiting Wall Height table(s). Include letter signed by authorized representative of framing contractor certifying that steel thicknesses used in framing will comply with framing manufacturer's LWH tables for stud height or length, depth, lateral load, and deflection indicated for each partition type required Project.

1.05 QUALITY ASSURANCE

- A. Code-Compliance Certification of Studs and Tracks: Framing members shall be certified according to the product-certification program of the Certified Steel Stud Association, the Steel Framing Industry Association, or the Steel Stud Manufacturers Association.

PART 2 - PRODUCTS

2.01 PERFORMANCE REQUIREMENTS

- A. Unless otherwise indicated, engineer assemblies to withstand the following loads, applied perpendicular to walls at the point of largest deflection, within the specified deflection limits:
1. At vertical shafts: 10 psf.
 2. At partitions to receive tile: 15 psf.
 3. Elsewhere: 5 psf.

2.02 FRAMING MEMBERS, GENERAL

- A. Comply with ASTM C754 for conditions indicated.
1. Steel Sheet Components: Comply with ASTM C645 requirements for metal unless otherwise indicated.

2. Protective Coating: See Part 1 Article for Definitions of Dry, Damp, and Wet Exposures.
 - a. Framed Assemblies at Dry Exposures: Hot dip galvanized per ASTM A653/A653M, G40 or coating with equivalent corrosion resistance of ASTM A653/A653M, G40, unless otherwise indicated.
 - b. Framed Assemblies at Damp and Wet Exposures: Hot dip galvanized per ASTM A653/A653M, G60. Wet and damp exposures include, but are not limited to, the following:
 - 1) Toilet rooms and bathrooms with openings, including doorways, to shower rooms.

2.03 FRAMING SYSTEMS FOR PARTITIONS AND SOFFITS

- A. Studs and Tracks: ASTM C645. Use either conventional steel studs and tracks or embossed, high-strength steel studs and tracks.
 1. Conventional Steel Studs and Tracks:
 - a. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - 1) CEMCO; California Expanded Metal Products Co.
 - 2) ClarkDietrich Building Systems.
 - 3) SCAFCO Steel Stud Company.
 - b. Minimum Base-Metal Thickness: As indicated on Drawing's Limiting Wall Height (LWH) Tables. Partition Type Drawings refer to LWH Table used for determining minimum base-steel thickness based on Limiting Wall Height of stud.
 - 1) Exception: Minimum 0.033 inch thickness required for framing supporting wall mounted casework.
 - c. Depth: As indicated on Drawings.
- B. Slip-Type Head Joints: Where indicated, provide system capable of allowing partition heads to expand and contract with movement of the structure to prevent axial loading on partition.
 1. Provide one of the following:
 - a. Clip System: Clips designed for use in head-of-wall deflection conditions that provide a positive attachment of studs to tracks while allowing for vertical movement indicated.

- 1) Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a) CEMCO; California Expanded Metal Products Co.
 - b) ClarkDietrich Building Systems.
 - c) SCAFCO Steel Stud Company.
 - b. Single Long-Leg Track System: ASTM C645 top track with 2-inch- deep flanges in thickness not less than indicated for studs, installed with studs friction fit into top track and with continuous bridging located within 12 inches of the top of studs to provide lateral bracing.
 - c. Double-Track System: ASTM C645 top outer tracks, inside track with 2-inch- deep flanges in thickness not less than indicated for studs and fastened to studs, and outer track sized to friction fit over inner track.
 - d. Deflection Track: Steel sheet top track manufactured to prevent cracking of finishes applied to interior partition framing resulting from deflection of structure above; in thickness not less than indicated for studs and in width to accommodate depth of studs.
- C. Flat Strap and Backing Plate: Steel sheet for blocking and bracing in length and width indicated.
1. Minimum Base-Metal Thickness:
 - a. For Bracing: 0.018 inch unless indicated otherwise on Drawings.
 - b. For Blocking: 0.033 inch unless indicated otherwise on Drawings.
 2. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. ClarkDietrich Building Systems.
 - b. SCAFCO Steel Stud Company.
- D. Cold-Rolled Channel Bridging: Steel, 0.053-inch minimum base-steel thickness, with minimum 1/2-inch- wide flanges.
1. Depth: 1-1/2 inches unless indicated otherwise on Drawings.
 2. Clip Angle: Not less than 1-1/2 by 1-1/2 inches, 0.068-inch- thick, galvanized steel.
 3. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. ClarkDietrich Building Systems.

- b. SCAFCO Steel Stud Company.
- E. Hat-Shaped, Rigid Furring Channels: ASTM C645.
 - 1. Minimum Base-Metal Thickness: 0.018 inch unless indicated otherwise on Drawings.
 - 2. Depth: As indicated on Drawings.
 - 3. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. ClarkDietrich Building Systems.
 - b. SCAFCO Steel Stud Company.
- F. Resilient Furring Channels: 1/2-inch- deep, steel sheet members designed to reduce sound transmission.
 - 1. Configuration: As indicated on Drawings.
 - 2. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. ClarkDietrich Building Systems.
 - b. SCAFCO Steel Stud Company.
- G. Cold-Rolled Furring Channels: 0.053-inch uncoated-steel thickness, with minimum 1/2-inch- wide flanges.
 - 1. Depth: As indicated on Drawings.
- H. Z-Shaped Furring: With slotted or nonslotted web, face flange of 1-1/4 inches, wall attachment flange of 7/8 inch.
 - 1. Depth: As indicated on Drawings.
 - 2. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. ClarkDietrich Building Systems.
 - b. SCAFCO Steel Stud Company.

2.04 SUSPENSION SYSTEMS

- A. Tie Wire: ASTM A641/A641M, Class 1 zinc coating, soft temper, 0.062-inch- diameter wire, or double strand of 0.048-inch- diameter wire.

B. Hanger Attachments to Concrete:

1. Post-Installed Anchors: For securing hangers to structure.
2. Power-Actuated Anchors: For securing hangers to structure.
 - a. Fastener systems with an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES AC70 Power-actuated Fasteners Driven into Concrete, Steel and Masonry Elements.

2.05 AUXILIARY MATERIALS

- A. General: Provide auxiliary materials that comply with referenced installation standards.
1. Fasteners for Steel Framing: Of type, material, size, corrosion resistance, holding power, and other properties required to fasten steel members to substrates.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine areas and substrates, with Installer present, and including welded hollow-metal frames, cast-in anchors, and structural framing, for compliance with requirements and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION, GENERAL

- A. Install framing and accessories plumb, square, and true to line, with connections securely fastened.
- B. Install supplementary framing, and blocking to support fixtures, equipment services, heavy trim, grab bars, toilet accessories, furnishings, or similar construction.
- C. Install bracing at terminations in assemblies.
- D. Do not bridge building control and expansion joints with non-load-bearing steel framing members. Frame both sides of joints independently.

3.03 INSTALLING FRAMED ASSEMBLIES

- A. Installation Standard: ASTM C754.
1. Gypsum Board Assemblies: Also comply with requirements in ASTM C840 that apply to framing installation.

- B. Install framing system components according to spacings indicated, but not greater than spacings required by referenced installation standards for assembly types.
 - 1. Comply with ASTM C754, Table 1 except as follows:
 - a. Single-Layer Application: As required by horizontal deflection performance requirements unless otherwise indicated.
- C. Where studs are installed directly against exterior masonry or concrete walls or dissimilar metals at exterior walls, install isolation strip between studs and exterior wall.
- D. Install studs so flanges within framing system point in same direction.
- E. Install tracks at floors and overhead supports. Extend framing full height to structural supports or substrates above suspended ceilings except where partitions are indicated to terminate at suspended ceilings. Continue framing around ducts that penetrate partitions above ceiling.
 - 1. Slip-Type Head Joints: Where framing extends to overhead structural supports, install to produce joints at tops of framing systems that prevent axial loading of finished assemblies.
 - 2. Door Openings: Screw vertical studs at jambs to jamb anchor clips on door frames; install track section (for cripple studs) at head and secure to jamb studs.
 - a. Install two studs at each jamb unless otherwise indicated.
 - 3. Other Framed Openings: Frame openings other than door openings the same as required for door openings unless otherwise indicated. Install framing below sills of openings to match framing required above door heads.
- F. Direct Furring:
 - 1. Screw to wood framing.
 - 2. Attach to concrete or masonry with stub nails, screws designed for masonry attachment, or powder-driven fasteners spaced 24 inches o.c.
- G. Installation Tolerance: Install each framing member so fastening surfaces vary not more than 1/8 inch from the plane formed by faces of adjacent framing.

END OF SECTION 09 22 16

SECTION 09 29 00

GYPSUM BOARD

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. Section Includes:
 - 1. Interior gypsum board.

1.03 DEFINITIONS

- A. Wet and Humid Spaces: Includes, but is not limited to, the following:
 - 1. Toilet rooms
 - 2. Bath rooms.

1.04 ACTION SUBMITTALS

- A. Product Data: For each type of product.

1.05 DELIVERY, STORAGE AND HANDLING

- A. Store materials inside under cover and keep them dry and protected against weather, condensation, direct sunlight, construction traffic, and other potential causes of damage. Stack panels flat and supported on risers on a flat platform to prevent sagging.

1.06 FIELD CONDITIONS

- A. Environmental Limitations: Comply with ASTM C 840 requirements or gypsum board manufacturer's written recommendations, whichever are more stringent.
- B. Do not install paper-faced gypsum panels until installation areas are enclosed and conditioned.

- C. Do not install panels that are wet, those that are moisture damaged, and those that are mold damaged.
 - 1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
 - 2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

PART 2 - PRODUCTS

2.01 GYPSUM BOARD, GENERAL

- A. Size: Provide maximum lengths and widths available that will minimize joints in each area and that correspond with support system indicated.

2.02 INTERIOR GYPSUM BOARD

- A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - 1. American Gypsum.
 - 2. CertainTeed Corporation.
 - 3. Georgia-Pacific Building Products.
- B. Impact-Resistant Gypsum Board, Regular Type, 1/2 inch: ASTM C 1629/C 1629M, Level 2.
 - 1. Long Edges: Tapered.
 - 2. Mold Resistance: ASTM D 3273, score of 10 as rated according to ASTM D 3274.
- C. Impact-Resistant Gypsum Board: ASTM C 1629/C 1629M, Level 3.
 - 1. Core: As indicated on DrawingsLong Edges: Tapered.
 - 2. Mold Resistance: ASTM D 3273, score of 10 as rated according to ASTM D 3274.

2.03 JOINT TREATMENT MATERIALS

- A. General: Comply with ASTM C 475/C 475M.
- B. Joint Tape:
 - 1. Interior Gypsum Board: Paper.

2.04 AUXILIARY MATERIALS

- A. General: Provide auxiliary materials that comply with referenced installation standards and manufacturer's written recommendations.
- B. Steel Drill Screws: ASTM C 1002, unless otherwise indicated.
 - 1. Use screws comply with ASTM C 1002 for fastening panels to steel members less than 0.033 inch thick (20 ga. ST).
 - 2. Use screws complying with ASTM C 954 for fastening panels to steel members from 0.033 to 0.112 inch thick.
 - 3. For fastening cementitious backer units, use screws of type and size recommended by panel manufacturer.
- C. Sound Attenuation Blankets: ASTM C 665, Type I (blankets without membrane facing) produced by combining thermosetting resins with mineral fibers manufactured from glass, slag wool, or rock wool.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine areas and substrates including welded hollow-metal frames and framing, with Installer present, for compliance with requirements and other conditions affecting performance.
- B. Examine panels before installation. Reject panels that are wet, moisture damaged, and mold damaged.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 APPLYING AND FINISHING PANELS, GENERAL

- A. Comply with ASTM C 840.
- B. Install ceiling panels across framing to minimize the number of abutting end joints and to avoid abutting end joints in central area of each ceiling. Stagger abutting end joints of adjacent panels not less than one framing member.
- C. Install panels with face side out. Butt panels together for a light contact at edges and ends with not more than 1/16 inch of open space between panels. Do not force into place.

- D. Locate edge and end joints over supports, except in ceiling applications where intermediate supports or gypsum board back-blocking is provided behind end joints. Do not place tapered edges against cut edges or ends. Stagger vertical joints on opposite sides of partitions. Do not make joints other than control joints at corners of framed openings.
- E. Form control and expansion joints with space between edges of adjoining gypsum panels.
- F. Cover both faces of support framing with gypsum panels in concealed spaces (above ceilings, etc.), except in chases braced internally.
 - 1. Unless concealed application is indicated or required for sound, fire, air, or smoke ratings, coverage may be accomplished with scraps of not less than 8 sq. ft. in area.
 - 2. Fit gypsum panels around ducts, pipes, and conduits.
 - 3. Where partitions intersect structural members projecting below underside of floor/roof slabs and decks, cut gypsum panels to fit profile formed by structural members; allow 1/4- to 3/8 inch- wide joints to install sealant.
- G. Isolate perimeter of gypsum board applied to non-load-bearing partitions at structural abutments, except floors. Provide 1/4- to 1/2 inch- wide spaces at these locations and trim edges with edge trim where edges of panels are exposed. Seal joints between edges and abutting structural surfaces with acoustical sealant.

3.03 INSTALLING TRIM ACCESSORIES

- A. General: For trim with back flanges intended for fasteners, attach to framing with same fasteners used for panels. Otherwise, attach trim according to manufacturer's written instructions.

3.04 FINISHING GYPSUM BOARD

- A. General: Treat gypsum board joints, interior angles, edge trim, control joints, penetrations, fastener heads, surface defects, and elsewhere as required to prepare gypsum board surfaces for decoration. Promptly remove residual joint compound from adjacent surfaces.
- B. Prefill open joints and damaged surface areas.
- C. Apply joint tape over gypsum board joints, except for trim products specifically indicated as not intended to receive tape.

3.05 PROTECTION

- A. Protect adjacent surfaces from drywall compound and promptly remove from floors and other non-drywall surfaces. Repair surfaces stained, marred, or otherwise damaged during drywall application.

**RESTROOM IMPROVEMENTS
AT FULLERTON PARK AND RIDE**

**C-2-2409
EXHIBIT B**

- B. Protect installed products from damage from weather, condensation, direct sunlight, construction, and other causes during remainder of the construction period.
- C. Remove and replace panels that are wet, moisture damaged, and mold damaged.
 - 1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
 - 2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

END OF SECTION 09 29 00

**SECTION 09 67 23
RESINOUS FLOORING**

PART 1 - GENERAL

1.01 Summary

- A. This Section includes:
 - 1. High-performance resinous flooring systems.

1.02 Submittals

- A. Product Data: For each type of product indicated.
 - 1. Data must state that moisture testing is not required
- B. Installer Certificates for Qualification: Signed by manufacturer certifying that installers comply with specified requirements.
- C. Material Certificates: For each resinous flooring component, from manufacturer.
- D. Material Test Reports: For each resinous flooring system.
- E. Maintenance Data: For maintenance manuals.
- F. Samples: Submit one sample of coating, indicating coating applied on horizontal surfaces. Sample shall illustrate transition from Resinous Flooring system. Provide sample which is a true representation of proposed field applied finish-created by the contractor; not laboratory applied finish. Provide minimum 12 feet by 4 feet field sample color and four (2) texture options for owner approval as a mock up at location designated by General Contractor for review and written approval prior to installation of any other areas.
- G. Product Schedule: For resinous flooring.

1.03 Quality Assurance

- A. Installer Qualifications: Manufacturer's authorized representative who is trained and approved for installation of flooring systems required for this Project.
 - 1. Engage an installer who is approved in writing by resinous flooring manufacturer as qualified to apply resinous flooring systems indicated.
 - 2. Installer Letter of Certification: Installer to provide letter stating that they have been in business for at least 5 years.

- B. Source Limitations: Obtain primary resinous flooring materials, including primers, resins, hardening agents, grouting coats, and topcoats, from single source from single manufacturer. Provide secondary materials, including patching and fill material, joint sealant, and repair materials, of type and from source recommended by manufacturer of primary materials.
- C. Pre-installation Conference: Conduct conference at Project site before work and mockups begin.
- D. Mockups: Apply mockups to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.
 - 1. Apply full-thickness mockups on 48-inch square floor area selected by Architect.
 - 2. Simulate finished lighting conditions for Architect's review of mockups.
 - 3. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.
 - 4. Mockup shall demonstrate desired slip resistance for review and approval by General Contractor prior to installing project areas.

1.04 Delivery, Storage, And Handling

- A. Deliver materials in original packages and containers, with seals unbroken, bearing manufacturer's labels indicating brand name and directions for storage and mixing with other components.
 - 1. Maintain containers in clean condition, free of foreign materials and residue.
 - 2. Remove rags and waste from storage areas daily.

1.05 Project Conditions

- A. Environmental Limitations: Comply with resinous flooring manufacturer's written instructions for substrate temperature, ambient temperature, moisture, ventilation, and other conditions affecting resinous flooring application.
- B. Lighting: Provide permanent lighting or, if permanent lighting is not in place, simulate permanent lighting conditions during resinous flooring application.
- C. Close spaces to traffic during resinous flooring application and for not less than 24 hours after application unless manufacturer recommends a longer period.

PART 2 - PRODUCTS

2.01 Manufacturers

- A. Basis of Design for (RF) High-Performance Resinous Flooring: Sherwin Williams Company. Contact Matt Grogan, matt.grogan@sherwin.com , 424-219-2352.

1. FasTop Multi Topfloor SL23, moisture insensitive high performance flooring system.
 - a. UC Slurry: Fastop SL23
 - 1) Texture to be chosen from manufactures texture bar
 - b. Body Coat: GP3746 High Performance Epoxy
 - c. Polyaspartic Sealer: GP4850 Pace-Coat Polyaspartic
2. System Characteristics
 - 1) Color and Pattern: Select from Manufactures Standards
 - 2) Wearing Surface: Smooth, light, medium, or heavy texture
 - 3) Integral Cove Base: 6"
 - 4) Overall System Thickness: 3/16"
3. System Components: Manufactures standard components that are compatible with each other as follows:
 - 1) Urethane Slurry
 - a) Material design basis: Fastop SL23
 - b) Resin: Urethane
 - c) Formulation Description (4) four-component
 - d) Application Method: Rake, Trowel
 - e) Thickness of Coats: 3/16"
 - f) Number of Coats: One
 - 2) Body Coat
 - a) Material design basis: GP3746 High Performance Epoxy
 - b) Resin: Epoxy
 - c) Formulation Description (2) two-component, 100 percent solids
 - d) Type: pigmented
 - e) Thickness of Coats: 10-25 mils DFT
 - f) Number of Coats: One
 - 3) Urethane Sealer
 - a) Material design basis: GP4850 Pace-Coat Polyaspartic
 - b) Resin: Polaspartic

- c) Formulation Description (2) two-component
 - d) Type: pigmented
 - e) Thickness of Coats: 6-8 mils DFT
 - f) Number of Coats: One
 - g) System Physical Properties
- 4. Abrasion Resistance 60 mgs Lost per ASTM D 4060
 - 5. Hardness, Shore D 83 per ASTM D 2240
 - 6. Tensile Strength 968 psi per ASTM C 307
 - 7. Compressive Strength 5,746 psi per ASTM C 579
 - 8. Flexural Strength 2,019 psi per ASTM C580
 - 9. Adhesion 518 psi Concrete Failure ASTM D 7234
 - 10. Impact resistance IR4
 - 11. Shrinkage Nil
 - 12. Water Absorption Impermeable per Karsten Test

2.02 Materials

- A. VOC Content of Resinous Flooring: Provide resinous flooring systems, for use inside the weatherproofing system, that comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24)].
 - 1. Resinous Flooring: 100 g/L.

2.03 High-Performance Resinous Flooring

- A. Resinous Flooring: Abrasion-, impact- and chemical-resistant, high-performance, resin-based, monolithic floor surfacing designed to produce a seamless floor.
- B. System Characteristics:
 - 1. Color and Pattern: As indicated from manufacturers listed above.
 - 2. Slip Resistance: Provide slip resistant finish.

PART 3 - EXECUTION

3.01 Preparation

- A. Inspection: Prior to commencing Work, thoroughly examine all underlying and adjoining work, surfaces and conditions upon which Work is in any way dependent for perfect results. Report all conditions which affect Work. No "waiver of responsibility" for incomplete, inadequate or defective underlaying and adjoining work, surfaces and conditions will be considered, unless notice of such unsatisfactory conditions has been filed and agreed to in writing before Work begins. Commencement of Work constitutes acceptance of surfaces.
- B. USE ONLY MOISTURE INSENSITIVE SYSTEMS, that require no moisture testing and warranted by manufacturer. No systems allowed that require moisture testing.
- C. Only installers approved by the manufacturer in writing shall perform installation of the material.
- D. Surface Preparation: Remove all surface contamination, loose or weakly adherent particles, laitance, grease, oil, curing compounds, paint, dust and debris by blast track method or approved mechanical means (acid etch not allowed). If surface is questionable try a test patch. Create a minimum surface profile for the system specified in accordance with the methods described in ICRI No. 03732 to achieve CSP 4.

3.02 Environmental Conditions

- A. All applicators and all other personnel in the area of the RF installation shall take all required and necessary safety precautions. All manufacturers' installation instructions shall be implicitly instructions shall be implicitly followed.
- B. Repair damaged and deteriorated concrete according to resinous flooring manufacturer's written instructions.
- C. Alkalinity and Adhesion Testing: Verify that concrete substrates have pH within acceptable range. Perform tests recommended by manufacturer. Proceed with application only after substrates pass testing.
- D. Resinous Materials: Mix components and prepare materials according to resinous flooring manufacturer's written instructions.
- E. Use patching and fill material to fill holes and depressions in substrates according to manufacturer's written instructions.
- F. Treat control joints and other nonmoving substrate cracks to prevent cracks from reflecting through resinous flooring according to manufacturer's written instructions.

3.03 Applications

- A. Install resinous floor over properly prepared concrete surface in strict accordance with the manufacturer's directions.
 - 1. Install the primer and/or base coats over thoroughly cleaned and prepared concrete.
 - 2. Install topcoat over flooring after excess aggregate has been removed.
 - 3. Maintain a slab temperature of 60°F to 80°F for 24 hours minimum before applying floor topping.
- B. Apply components of resinous flooring system according to manufacturer's written instructions to produce a uniform, monolithic wearing surface of thickness indicated.
 - 1. Coordinate application of components to provide optimum adhesion of resinous flooring system to substrate, and optimum intercoat adhesion.
 - 2. Cure resinous flooring components according to manufacturer's written instructions. Prevent contamination during application and curing processes.
 - 3. At substrate expansion and isolation joints, comply with resinous flooring manufacturer's written instructions.
- C. Sealant: Saw cut resinous floor topping at expansion joints in concrete slab. Fill sawcuts with sealant prior to final seal coat application. Follow manufacturer's written recommendations.
- D. Slip Resistant Finish: Provide grit for slip resistance.
- E. Apply topcoats in number indicated for flooring system and at spreading rates recommended in writing by manufacturer.

3.04 Completed Work

- A. Cleaning: Upon completion of the Work, clean up and remove from the premises surplus materials, tools, appliances, empty cans, cartons and rubbish resulting from the Work. Clean off all splatterings and drippings, and all resulting stains.
- B. Protection: Protect Work in accordance with manufacturer's directions from damage and wear during the remainder of the construction period. Use protective methods and materials, including temporary covering, recommended in writing by resinous flooring manufacturer.
- C. Contractor shall insure that coating is protected from any traffic until it is fully cured to the satisfaction of the coating manufacturer.

END OF SECTION 09 97 23

SECTION 09 91 23 - INTERIOR PAINTING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. Section includes surface preparation and the application of paint systems on interior substrates.
 - 1. Concrete.
 - a. Non-traffic bearing surfaces.
- B. Related Requirements:
 - 1. Section 09 96 00 "High-Performance Coatings" for tile-like coatings.

1.03 DEFINITIONS

- A. MPI Gloss Level 1 (Flat): Not more than five units at 60 degrees and 10 units at 85 degrees, according to ASTM D 523.
- B. MPI Gloss Level 2 (Velvet-Like): Not more than 10 units at 60 degrees and 10 to 35 units at 85 degrees, according to ASTM D 523.
- C. MPI Gloss Level 3 (Eggshell-Like): 10 to 25 units at 60 degrees and 10 to 35 units at 85 degrees, according to ASTM D 523.
- D. MPI Gloss Level 4 (Satin-Like): 20 to 35 units at 60 degrees and not less than 35 units at 85 degrees, according to ASTM D 523.
- E. MPI Gloss Level 5 (Semi-Gloss): 35 to 70 units at 60 degrees, according to ASTM D 523.
- F. MPI Gloss Level 6 (Gloss): 70 to 85 units at 60 degrees, according to ASTM D 523.
- G. MPI Gloss Level 7 (High Gloss): More than 85 units at 60 degrees, according to ASTM D 523.

1.04 ACTION SUBMITTALS

- A. Product Data: For each type of product. Include preparation requirements and application instructions.
- B. ASHRAE - Sustainable Design Submittals:
 - 1. Product Data: For paints and coatings, indicating VOC content.
- C. Samples for Initial Selection: For each type of topcoat product.
- D. Samples for Verification: For each type of paint system and in each color and gloss of topcoat.
 - 1. Submit Samples on rigid backing, 8 inches square.

1.05 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials[, from the same product run,] that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Paint: 5 percent, but not less than 1 gal. of each material and color applied.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 deg F.
 - 1. Maintain containers in clean condition, free of foreign materials and residue.
 - 2. Remove rags and waste from storage areas daily.

1.07 FIELD CONDITIONS

- A. Apply paints only when temperature of surfaces to be painted and ambient air temperatures are between 50 and 95 deg F.
- B. Do not apply paints when relative humidity exceeds 85 percent; at temperatures less than 5 deg F above the dew point; or to damp or wet surfaces.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

**RESTROOM IMPROVEMENTS
AT FULLERTON PARK AND RIDE**

**C-2-2409
EXHIBIT B**

1. Behr Process Corporation.
2. Benjamin Moore & Co.
3. California Paints.
4. Conco Paints.
5. Coronado Paint; Benjamin Moore company.
6. Diamond Vogel Paints.
7. Dulux (formerly ICI Paints); a brand of AkzoNobel.
8. Dunn-Edwards Corporation.
9. Duron, Inc.
10. Frazee Paint; Comex Group.
11. Glidden Professional.
12. HEMPEL A/S.
13. Insl-X Products Corporation; a Benjamin Moore company
14. Kelly-Moore Paint Company Inc.
15. Kwal Paint; Comex Group.
16. M.A.B. Paints.
17. McCormick Paints.
18. Parker Paint; Comex Group.
19. PPG Paints.
20. Pratt & Lambert.
21. Rodda Paint Co.
22. Rust-Oleum Corporation; a subsidiary of RPM International, Inc.
23. Sherwin-Williams Company (The).
24. United Gilsonite Laboratories.
25. Valspar Corporation.
26. Vista Paint Corporation.
27. Zinsser; Rust-Oleum Corporation.

2.02 PAINT, GENERAL

- A. MPI Standards: Unless indicated otherwise, products shall comply with MPI standards indicated and shall be listed in its "MPI Approved Products Lists," except if approved by a substitution request.
- B. Material Compatibility:

1. Materials for use within each paint system shall be compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
 2. For each coat in a paint system, products shall be recommended in writing by topcoat manufacturers for use in paint system and on substrate indicated.
- C. ASHRAE - Emissions Requirements: Field-applied paints and coatings that are inside the weatherproofing system shall comply with either of the following:
1. ASHRAE - Low-Emitting Materials: VOC emissions shall comply with the requirements of the California Department of Public Health's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."
- D. Colors: As indicated on Drawings Finish Schedule.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.
- B. Verify suitability of substrates, including surface conditions and compatibility, with existing finishes and primers.
- C. Proceed with coating application only after unsatisfactory conditions have been corrected.
 1. Application of coating indicates acceptance of surfaces and conditions.

3.02 PREPARATION

- A. Comply with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual" applicable to substrates and paint systems indicated.
- B. Remove hardware, covers, plates, and similar items already in place that are removable and are not to be painted. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and painting.
 1. After completing painting operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection if any.
- C. Clean substrates of substances that could impair bond of paints, including dust, dirt, oil, grease, and incompatible paints and encapsulants.

1. Remove incompatible primers and reprime substrate with compatible primers or apply tie coat as required to produce paint systems indicated.
- D. Concrete Substrates: Remove release agents, curing compounds, efflorescence, and chalk. Do not paint surfaces if moisture content or alkalinity of surfaces to be painted exceeds that permitted in manufacturer's written instructions.

3.03 APPLICATION

- A. Apply paints according to manufacturer's written instructions and to recommendations in "MPI Manual."
 1. Use applicators and techniques suited for paint and substrate indicated.
 2. Paint surfaces behind movable equipment and furniture same as similar exposed surfaces. Before final installation, paint surfaces behind permanently fixed equipment or furniture with prime coat only.
 3. Paint front and backsides of access panels, removable or hinged covers, and similar hinged items to match exposed surfaces.
 4. Do not paint over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.
 5. Primers specified in painting schedules may be omitted on items that are factory primed or factory finished if acceptable to topcoat manufacturers.
- B. If undercoats or other conditions show through topcoat, apply additional coats until cured film has a uniform paint finish, color, and appearance.
- C. Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.
- D. Painting Fire Suppression, Plumbing, HVAC, Electrical, Communication, and Electronic Safety and Security Work:
 1. Occupied Spaces: Paint the following work where exposed:
 - a. Equipment, including panelboards.
 - b. Uninsulated metal piping.
 - c. Uninsulated plastic piping.
 - d. Pipe hangers and supports.
 - e. Metal conduit.
 - f. Plastic conduit.
 - g. Duct, equipment, and pipe insulation having cotton or canvas insulation covering or other paintable jacket material.

- h. Other items as directed by Architect.
- 2. Paint portions of internal surfaces of metal ducts, without liner, behind air inlets and outlets that are visible from occupied spaces.

3.04 CLEANING AND PROTECTION

- A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.
- B. After completing paint application, clean spattered surfaces. Remove spattered paints by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.
- C. Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.
- D. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

END OF SECTION 09 91 23

SECTION 09 96 00

HIGH PERFORMANCE RESINOUS WALL COATINGS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. This Section includes:
 - 1. High-performance resinous wall and ceiling coating systems.
 - 2. Interior Substrates.
 - a. Concrete.
 - 1) Vertical surfaces.
 - 2) Horizontal surfaces.
 - b. Gypsum board.
- B. Related Requirements:
 - 1. Section 09 91 23 "Interior Painting" for general field painting.

1.03 DEFINITIONS

- A. MPI Gloss Level 5 (Semi-Gloss): 35 to 70 units at 60 degrees, according to ASTM D 523.
- B. MPI Gloss Level 6 (Gloss): 70 to 85 units at 60 degrees, according to ASTM D 523.
- C. MPI Gloss Level 7 (High Gloss): More than 85 units at 60 degrees, according to ASTM D 523.
- D. SRA: Slip Resistant Additive.

1.04 ACTION SUBMITTALS

- A. Product Data: For each type of product. Include preparation requirements and application instructions.
 - 1. Indicate VOC content.
- B. Installer Certificates for Qualification: Signed by manufacturer stating that installers comply with specified requirements.
- C. Material Certificates: For each resinous wall and ceiling component, from manufacturer.
- D. Maintenance Data: For maintenance manuals.
- E. Samples: Submit two 6" X 6" samples of each resinous wall and ceiling system applied to a rigid backing. Provide sample which is a true representation of proposed field applied finish. Provide sample color and texture for approval from Owner in writing or approved by General Contractor prior to installation.
- F. Product Schedule: For resinous wall and ceiling coating systems.

1.05 QUALITY ASSURANCE

- A. Installer Qualifications: Manufacturer's authorized representative who is trained and approved for installation of wall and ceiling systems required for this Project.
 - 1. Engage an installer who is approved in writing by resinous wall and ceiling manufacturer as qualified to apply resinous wall and ceiling systems indicated.
 - 2. Installer Letter of Qualification: Installer to provide letter stating that they have been in business for at least 5 years and listing 5 projects in the last 2 years of similar scope. For each project provide: project name, location, date of installation, contact information, size of project, and manufacturer of materials with system information.
- B. Source Limitations: Obtain primary resinous wall and ceiling materials, including primers, resins, hardening agents, grouting coats, and topcoats, from single source from single manufacturer. Provide secondary materials, including patching and fill material, joint sealant, and repair materials, of type and from source recommended by manufacturer of primary materials.
- C. Pre-installation Conference: Conduct conference at Project site before work and mockups begin.
- D. Mockups: Apply mockups to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution. Do not cover up mockup area.

1. Apply full-thickness mockups on 16 square foot floor area selected by Architect.
 2. Finish surfaces for verification of products, color, texture, and sheen.
 3. Simulate finished lighting conditions for Architect's review of mockups.
 4. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.
- E. Mockup shall demonstrate desired slip resistance for review and approval by Owner's representative in writing.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials in original packages and containers, with seals unbroken, bearing manufacturer's labels indicating brand name and directions for storage and mixing with other components.
1. Maintain containers in clean condition, free of foreign materials and residue.
 2. Remove rags and waste from storage areas daily.

1.07 FIELD CONDITIONS

- A. Environmental Limitations: Comply with resinous wall and ceiling manufacturer's written instructions for substrate temperature, ambient temperature, moisture, ventilation, and other conditions affecting resinous wall and ceiling application.
- B. Lighting: Provide permanent lighting or, if permanent lighting is not in place, simulate permanent lighting conditions during resinous flooring application.
- C. Close spaces to traffic during resinous flooring application and for not less than 24 hours after application unless manufacturer recommends a longer period.
- D. Do not apply exterior coatings in snow, rain, fog, or mist.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by:
1. The Sherwin Williams Company, Cleveland, OH. Representative Contact: Michael Starner (484) 624-2360 michael.starner@sherwin.com .
- B.
- C. ResuWall, 10-14 mils nominal thickness.

1. Primer: Resuflor Aqua 3479 at 300-350 sq. ft. per gallon.
2. Base Coat (2 Coats @ 3-5 mils): Resuflor Aqua 3479 at 300-350 sq. ft. per gallon.
3. Finish Coat: ResuTile 4410/4411 at 400-500 sq. ft. per gallon.

2.02 MATERIALS

- A. VOC Content of Resinous Wall and Ceiling Coating: Provide resinous wall and ceiling systems, for use inside the weatherproofing system, that comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24)].

1. Resinous Flooring: 100 g/L.

See lists of products currently approved by MPI in its "MPI Approved Products Lists." See "Writing Guide" Article in the Evaluations for further discussion. **HIGH-PERFORMANCE RESINOUS WALL**

AND CEILING COATING SYSTEM

- A. Resinous Wall and Ceiling Coating: Abrasion-, impact- and chemical-resistant, high-performance, resin-based, monolithic floor surfacing designed to produce a seamless floor.
- B. System Characteristics:
1. Color and Pattern: As indicated from manufacturers listed above.
 2. Slip Resistance: Provide smooth, orange peel finish unless otherwise specified.
- C. Colors: As indicated on Drawings.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.
- B. Gypsum Board Substrates: Verify that finishing compound is sanded smooth.
- C. Verify suitability of substrates, including surface conditions and compatibility, with existing finishes and primers.
- D. Proceed with coating application only after unsatisfactory conditions have been corrected.
1. Application of coating indicates acceptance of surfaces and conditions.

3.02 PREPARATION

- A. Inspection: Prior to commencing Work, thoroughly examine all underlying and adjoining work, surfaces and conditions upon which Work is in any way dependent for perfect results. Report all conditions which affect Work. No "waiver of responsibility" for incomplete, inadequate or defective underlaying and adjoining work, surfaces and conditions will be considered, unless notice of such unsatisfactory conditions has been filed and agreed to in writing before Work begins. Commencement of Work constitutes acceptance of surfaces.

- B. Surface Preparation: Remove all surface contamination, loose or weakly adherent particles, laitance, grease, oil, curing compounds, paint, dust and debris by blast track method or approved mechanical means (acid etch not allowed). If surface is questionable try a test patch. Create a minimum surface profile for the system specified in accordance with the methods described in ICRI No. 03732 to achieve profile numbers as follows:

- C. CONCRETE SURFACE PROFILE (CSP)
 - 1. Thin film, to 10 mils** **CSP-1 to CSP-3**
 - 2. Thin and medium films, 10 to 40 mils CSP-3 to CSP-5
 - 3. Self-leveling mortars, to 3/16" CSP-4 to CSP-6
 - 4. Mortars and laminates, to 1/4" or more CSP-5 to CSP-10

- D. Verify that concrete substrates are dry and moisture-vapor emissions are within acceptable levels according to manufacturer's written instructions.
 - 1. Moisture Testing: Perform tests indicated below.
 - a. Calcium Chloride Test: Perform anhydrous calcium chloride test per ASTM F 1869. Proceed with installation only after substrates have maximum moisture-vapor-emission rate of 3 lb of water/1000 sq. ft. in 24 hours. Perform tests so that each test area does not exceed 1000 sq. ft. and perform 3 tests for the first 1000 sq. ft. and one additional test for every additional 1000 sq ft.
 - b. In-Situ Probe Test: Perform relative-humidity test using in-situ probes per ASTM F 2170. Proceed with installation only after substrates have a maximum 75 percent relative-humidity-level measurement.

3.03 ENVIRONMENTAL CONDITIONS

- A. All applicators and all other personnel in the area of the RF installation shall take all required and necessary safety precautions. All manufacturers' installation instructions shall be implicitly instructions shall be implicitly followed.

- B. Repair damaged and deteriorated concrete according to resinous wall and ceiling manufacturer's written instructions.

- C. Alkalinity and Adhesion Testing: Verify that concrete substrates have pH within acceptable range. Perform tests recommended by manufacturer. Proceed with application only after substrates pass testing.
- D. Resinous Materials: Mix components and prepare materials according to resinous wall and ceiling manufacturer's written instructions.
- E. Use patching and fill material to fill holes and depressions in substrates according to manufacturer's written instructions.
- F. Treat control joints and other nonmoving substrate cracks to prevent cracks from reflecting through resinous wall and ceiling according to manufacturer's written instructions.

3.04 APPLICATION

- A. Install resinous wall and ceiling coating system over properly prepared concrete surface in strict accordance with the manufacturer's directions.
 - 1. Install the primer and/or base coats over thoroughly cleaned and prepared concrete.
 - 2. Install topcoat over wall and ceiling coating system after excess aggregate or sand dust has been removed.
 - 3. Maintain a slab temperature of 60°F to 80°F for 24 hours minimum before applying wall and ceiling coatings, or as instructed by manufacturer.
- B. Apply components of resinous wall and ceiling system according to manufacturer's written instructions to produce a uniform, monolithic wearing surface of thickness indicated.
 - 1. Coordinate application of components to provide optimum adhesion of resinous wall and ceiling system to substrate, and optimum intercoat adhesion.
 - 2. Cure resinous wall and ceiling components according to manufacturer's written instructions. Prevent contamination during application and curing processes.
 - 3. At substrate expansion and isolation joints, comply with resinous wall and ceiling manufacturer's written instructions.
- C. Sealant: Saw cut resinous wall and ceiling topping at expansion joints in concrete slab. Fill sawcuts with sealant prior to final seal coat application. Follow manufacturer's written recommendations.
- D. Apply primer over prepared substrate at manufacturer's recommended spreading rate.
- E. Sand between coats and remove sand dust prior to next coat.
- F. Apply topcoats in number indicated for wall and ceiling system and at spreading rates recommended in writing by manufacturer.

- G. If undercoats or other conditions show through final coat, apply additional coats until cured film has a uniform coating finish, color, and appearance.

3.05 COMPLETED WORK

- A. Cleaning: Upon completion of the Work, clean up and remove from the premises surplus materials, tools, appliances, empty cans, cartons and rubbish resulting from the Work. Clean off all spattering and drippings, and all resulting stains.
- B. Protection: Protect Work in accordance with manufacturer's directions from damage and wear during the remainder of the construction period. Use protective methods and materials, including temporary covering, recommended in writing by resinous flooring manufacturer.
- C. Contractor shall insure that coating is protected from any traffic until it is fully cured to the satisfaction of the coating manufacturer.

3.06 INTERIOR HIGH-PERFORMANCE COATING SCHEDULE

- A. Concrete Substrates, Vertical Surfaces.
 - 1. Epoxy, High-Build System MPI INT 3.1P:
 - a. Prime Coat: High-build epoxy, matching topcoat (reduced).
 - b. Intermediate Coat: High-build epoxy, matching topcoat. Apply where Premium Grade system is indicated.
 - c. Topcoat: One of following matching gloss level indicated.
 - 1) High-build epoxy, low gloss, MPI #108.
 - 2) High-build epoxy, gloss, MPI #98.
- B. Concrete Substrates, Horizontal Surfaces.
 - 1. Epoxy, High-Build System MPI INT 3.2L:
 - a. Prime Coat: High-build epoxy, matching topcoat (reduced).
 - b. Intermediate Coat: High-build epoxy, matching topcoat. Apply where Premium Grade system is indicated.
 - c. Topcoat: One of following matching gloss level indicated.
 - 1) High-build epoxy, low gloss, MPI #108 with SRA.
 - 2) High-build epoxy, gloss, MPI #98 with SRA.
- C. Gypsum Board Substrates.

1. Epoxy, High-Build System MPI INT 9.2N:
 - a. Prime Coat: Primer sealer, latex, interior, MPI #50.
 - b. Intermediate Coat: High-build epoxy, matching topcoat. Apply where Premium Grade system is indicated.
 - c. Topcoat: One of following matching gloss level indicated.
 - 1) High-build epoxy, low gloss, MPI #108.
 - 2) High-build epoxy, gloss, MPI #98.

END OF SECTION 09 96 00

SECTION 10 21 13.14

STAINLESS-STEEL TOILET COMPARTMENTS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. Section includes stainless-steel compartments configured as follows:
 - 1. Entrance screens doors, wall hung.

1.03 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for toilet compartments.
- B. Shop Drawings: For toilet compartments.
 - 1. Include plans, elevations, sections, details, and attachment details.
- C. Samples for Initial Selection: For each type of toilet compartment material indicated.
 - 1. Include Samples of hardware and accessories involving material and finish selection.
- D. Samples for Verification: For the following products, in manufacturer's standard sizes unless otherwise indicated:
 - 1. Each type of material, finish, and texture required for toilet compartments, prepared on 6-inch- square Samples of same thickness and material indicated for Work.
 - 2. Each type of hardware and accessory.

1.04 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For toilet compartments to include in maintenance manuals.

1.05 PROJECT CONDITIONS

- A. Field Measurements: Verify actual locations of toilet fixtures, walls, columns, ceilings, and other construction contiguous with toilet compartments by field measurements before fabrication.

PART 2 - PRODUCTS

2.01 PERFORMANCE REQUIREMENTS

- A. Regulatory Requirements: Comply with applicable provisions in the U.S. Architectural & Transportation Barriers Compliance Board's ADA-ABA Accessibility Guidelines for Buildings and Facilities for toilet compartments designated as accessible.

2.02 STAINLESS-STEEL TOILET COMPARTMENTS - TC-

- A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - 1. Accurate Partitions Corp., an ASI Group Company.
 - 2. Bradley Corporation.
 - 3. Global Partitions Corp., an ASI Group Company.
- B. Entrance-Screen Door Style:
 - 1. Wall Hung..
- C. Door, Panel, and Pilaster Construction: Seamless, metal facing sheets pressure laminated to core material; with continuous, interlocking molding strip or lapped-and-formed edge closures; corners secured by welding or clips and exposed welds ground smooth. Exposed surfaces shall be free of pitting, seam marks, roller marks, stains, discolorations, telegraphing of core material, or other imperfections.
 - 1. Core Material: Manufacturer's standard sound-deadening honeycomb of resin-impregnated kraft paper in thickness required to provide finished thickness of 1 inch for doors and panels and 1-1/4 inches for pilasters.
 - 2. Tapping Reinforcement: Provide concealed reinforcement for tapping (threading) at locations where machine screws are used for attaching items to units.
- D. Facing Sheets and Closures: Stainless-steel sheet of nominal thicknesses as follows:
 - 1. Doors: Manufacturer's standard thickness, but not less than 0.031 inch.
 - 2. Flat-Panel Urinal Screens: Thickness matching the panels.
- E. Brackets (Fittings):

1. Stirrup Type: Ear or U-brackets made from [either of] following materials:
 - a. Stainless steel.
 2. Full-Height (Continuous) Type: Manufacturer's standard design made from following materials:
 - a. Stainless steel.
- F. Stainless-Steel Finish: Exposed faces finish as follows. Protect exposed surfaces from damage by application of strippable, temporary protective covering before shipment.
1. Manufacturer's standard textured finish.

2.03 HARDWARE AND ACCESSORIES

- A. Hardware and Accessories: Manufacturer's heavy-duty operating hardware and accessories.
1. Hinges: Either of following fabricated from minimum 0.062-inch- thick, stainless-steel, allowing emergency access by lifting door. Mount with through-bolts.
 - a. Continuous, cam type that swings to a closed or partially open position.
 2. Latch and Keeper: Manufacturer's heavy-duty, surface-mounted, cast stainless-steel latch unit designed to resist damage due to slamming, with combination rubber-faced door strike and keeper and with provision for emergency access. Provide units that comply with regulatory requirements for accessibility at compartments designated as accessible. Mount with through-bolts.
 3. Door Bumper: Manufacturer's heavy-duty, rubber-tipped, cast stainless-steel bumper, mounted with through-bolts, for the following:
 - a. Toilet enclosure out-swinging doors.
 - b. Entrance-screen doors.
 4. Door Pull: Manufacturer's heavy-duty cast stainless-steel pull at out-swinging doors that complies with regulatory requirements for accessibility. Provide units on both sides of doors at compartments designated as accessible. Mount with through-bolts.
- B. Anchorages and Fasteners: Manufacturer's standard exposed fasteners of stainless steel, finished to match the items they are securing, with theft-resistant-type heads. Provide sex-type bolts for through-bolt applications. For concealed anchors, use stainless steel, hot-dip galvanized steel, or other rust-resistant, protective-coated steel compatible with related materials.

2.04 MATERIALS

- A. Aluminum Castings: ASTM B 26/B 26M.
- B. Aluminum Extrusions: ASTM B 221.
- C. Brass Castings: ASTM B 584.
- D. Brass Extrusions: ASTM B 455.
- E. Stainless-Steel Sheet: ASTM A 666, Type 304, stretcher-leveled standard of flatness.
- F. Stainless-Steel Castings: ASTM A 743/A 743M.
- G. Zamac: ASTM B 86, commercial zinc-alloy die castings, chrome plated.

2.05 FABRICATION

- A. Fabrication, General: Fabricate toilet compartment components to sizes indicated. Coordinate requirements and provide cutouts for through-partition toilet accessories, and solid blocking within panel where required for attachment of toilet accessories.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine substrates, areas and conditions, with Installer present, for compliance with requirements for fastening, support, alignment, operating clearances, and other conditions affecting performance of the Work.
 - 1. Confirm location and adequacy of blocking and supports required for installation.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.
- C. Coordinate layout and installation of supports, inserts, and anchors built into other units of work for toilet compartment anchorage.

3.02 INSTALLATION

- A. General: Comply with manufacturer's written installation instructions. Install units rigid, straight, level, and plumb. Secure units in position with manufacturer's recommended anchoring devices.
 - 1. Entrance Screens Door Securement:
 - a. Secure panels to walls with full-height (continuous) brackets and panels to pilasters with no fewer than three stirrup brackets attached at midpoint and near top and bottom of panel.

- B. Wall Hung Entrance Doors: Attach with anchoring devices to suit supporting structure. Set units level and plumb, rigid, and secured to resist lateral impact.

3.03 ADJUSTING

- A. Hardware Adjustment: Adjust and lubricate hardware according to hardware manufacturer's written instructions for proper operation.
 - 1. Entrance Screens: Set hinges to return doors to fully closed position.

END OF SECTION 10 21 13.14

SECTION 10 28 00

TOILET, BATH, AND LAUNDRY ACCESSORIES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. Section Includes:
 - 1. Public-use washroom accessories.
 - a. Toilet tissue (roll) dispenser, surface mounted.
 - b. Waste receptacle.
 - c. Combination towel (folded) dispenser/medium waste receptacle, surface mounted.
 - d. Liquid-soap dispenser, vertically oriented, surface mounted.
 - e. Grab bar with exposed fastener mounting flanges.
 - f. Sanitary-napkin disposal unit.
 - g. Seat-cover dispenser.
 - 2. Warm-air dryers.
 - a. Warm-air dryer.
- B. Related Requirements:
 - 1. Section 08 83 00 "Mirrors" for frameless mirrors.
 - 2. Section 10 28 13.63 "Detention Toilet Accessories" for accessories designed for installation in detention facilities.

1.03 COORDINATION

- A. Coordinate accessory locations with other work to prevent interference with clearances required for access by people with disabilities, and for proper installation, adjustment, operation, cleaning, and servicing of accessories.

- B. Deliver inserts and anchoring devices set into concrete or masonry as required to prevent delaying the Work.

1.04 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.
 - 2. Include anchoring and mounting requirements, including requirements for cutouts in other work and substrate preparation.
 - 3. Include electrical characteristics.
- B. Samples: Full size, for each exposed product and for each finish specified.
 - 1. Approved full-size Samples will be returned and may be used in the Work.

1.05 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For accessories to include in maintenance manuals.

PART 2 - PRODUCTS

2.01 PERFORMANCE REQUIREMENTS

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

2.02 PUBLIC-USE WASHROOM ACCESSORIES

- A. Basis-of-Design Product: Subject to compliance with requirements, provide product specified below for each accessory type or comparable product by one of the following:
 - 1. |A&J Washroom Accessories, Inc.
 - 2. American Specialties, Inc.; ASI Group.
 - 3. Bobrick Washroom Equipment, Inc.
 - 4. Bradley Corporation.
 - 5. Brey-Krause Manufacturing Co.
 - 6. GAMCO Specialty Accessories; a division of Bobrick.
 - 7. Sloan Valve Company.

8. Tubular Specialties Manufacturing, Inc.
- B. Toilet Tissue (Roll) Dispenser, Surface Mounted:
1. Basis-of-Design Product: American Specialties: 0046 Single Jumbo Roll Toilet Tissue Dispenser - Round - Surface Mounted.
 2. Description: Single-roll dispenser.
 3. Mounting: Surface mounted.
 4. Material and Finish: 304 Stainless steel, No. 4 finish (satin).
- C. Waste Receptacle:
1. Basis-of-Design Product: American Specialties Semi-recessed Waste Receptacle .
 2. Mounting: Semirecessed .
 3. Minimum Capacity: 12_ gal..
 4. Material and Finish: 304 Stainless steel, No. 4 finish (satin).
 5. Lockset: Tumbler type for waste receptacle.
- D. Combination Towel (Folded) Dispenser/Medium Waste Receptacle, Semirecessed Mounted:
1. Basis-of-Design Product: American Specialties_0469.
 2. Description: Combination unit for dispensing C-fold or multifold towels, with removable waste receptacle.
 3. Mounting: Semirecessed.
 4. Minimum Towel-Dispenser Capacity: 600 C-fold or 800 multifold paper towels.
 5. Minimum Waste-Receptacle Capacity: 12 gal..
 6. Material and Finish: 304 Stainless steel, No. 4 finish (satin).
- E. Liquid-Soap Dispenser, Vertically Oriented, Surface Mounted:
1. Basis-of-Design Product: American Specialties - 0347 Foam Soap Dispenser.
 2. Mounting: Vertically oriented, surface mounted.
 3. Lockset: Tumbler type.
 4. Refill Indicator: Window type.
- F. Grab Bar with Exposed Fastener Mounting Flanges: Driver's Toilet Rooms
1. Basis-of-Design Product: .
 2. Mounting: Flanges with exposed fasteners.

3. Material: Stainless steel, 0.05 inch thick.
 - a. Finish: Smooth, No. 4 finish (satin) on ends and slip-resistant texture in grip area.
4. Outside Diameter: 1-1/2 inches.
5. Configuration and Length: As indicated on Drawings .

G. Sanitary-Napkin Disposal Unit:

1. Basis-of-Design Product: American Specialties Model 0473-1A.
2. Mounting: Surface mounted.
3. Door or Cover: Self-closing, disposal-opening cover and hinged face panel with tumbler lockset.
4. Receptacle: Removable.
5. Material and Finish: 304 Stainless steel, No. 4 finish (satin).

H. Seat-Cover Dispenser:

1. Basis-of-Design Product: American Specialties Model 0447-SM.
2. Mounting: Surface mounted.
3. Minimum Capacity: 250 seat covers.
4. Exposed Material and Finish: 304 Stainless steel, No. 4 finish (satin).

2.03 WARM-AIR DRYERS

A. Warm-Air Dryer: Driver's Room

1. Basis-of-Design Product: American Specialties_0195.
2. Description: Standard-speed, warm-air hand dryer.
3. Mounting: Surface mounted.
4. Operation: Electronic-sensor activated with timed power cut-off switch.
 - a. Operation Time: 30 to 40 seconds.
5. Cover Material and Finish: Cast iron, with enamel finish in color selected by Architect.

B. Warm-Air Dryer: Men's & Women's Toilet Rooms

Insert manufacturer (select from list at beginning of this Article) and product at underscore line below. Basis-of-Design Product: World Dryer_92_MT043_A_.

2. Description: Standard-speed, warm-air hand dryer.

In "Mounting" Subparagraph below, retain last option for surface-mounted units that project from walls by a limited dimension and that comply with the ADA-ABA. Recessed and semirecessed may also comply with the ADA-ABA. Mounting: Surface mounted.

4. Operation: Touch-button activated with timed power cut-off switch.

Insert other operation time in [] option below. Operation Time: 30 to 40 seconds.

Insert other material and finish in [] option below. Cover Material and Finish: Cast iron, with enamel finish in color selected by Architect.

2.04 MATERIALS

- A. Stainless Steel: ASTM A 666, Type 304, 0.031-inch minimum nominal thickness unless otherwise indicated.
- B. Brass: ASTM B 19, flat products; ASTM B 16/B 16M, rods, shapes, forgings, and flat products with finished edges; or ASTM B 30, castings.
- C. Steel Sheet: ASTM A 1008/A 1008M, Designation CS (cold rolled, commercial steel), 0.036-inch minimum nominal thickness.
- D. Galvanized-Steel Sheet: ASTM A 653/A 653M, with G60 hot-dip zinc coating.
- E. Galvanized-Steel Mounting Devices: ASTM A 153/A 153M, hot-dip galvanized after fabrication.
- F. Fasteners: Screws, bolts, and other devices of same material as accessory unit and tamper-and-theft resistant where exposed, and of galvanized steel where concealed.
- G. Chrome Plating: ASTM B 456, Service Condition Number SC 2 (moderate service).
- H. Mirrors: ASTM C 1503, Mirror Glazing Quality, clear-glass mirrors, nominal 6.0 mm thick.

2.05 FABRICATION

- A. General: Fabricate units with tight seams and joints, and exposed edges rolled. Hang doors and access panels with full-length, continuous hinges. Equip units for concealed anchorage and with corrosion-resistant backing plates.
- B. Keys: Provide universal keys for internal access to accessories for servicing and resupplying. Provide minimum of [six] [] keys to Owner's representative.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Install accessories according to manufacturers' written instructions, using fasteners appropriate to substrate indicated and recommended by unit manufacturer. Install units level, plumb, and firmly anchored in locations and at heights indicated.
- B. Grab Bars: Install to withstand a downward load of at least 250 lbf, when tested according to ASTM F 446.

3.02 ADJUSTING AND CLEANING

- A. Adjust accessories for unencumbered, smooth operation. Replace damaged or defective items.
- B. Remove temporary labels and protective coatings.
- C. Clean and polish exposed surfaces according to manufacturer's written instructions.

END OF SECTION 10 28 00

SECTION 10 28 13.63

DETENTION TOILET ACCESSORIES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. Section Includes:
 - 1. Shelves.
 - 2. Grab bars.
- B. Related Requirements:
 - 1. Section 10 28 00 "Toilet, Bath, and Laundry Accessories" for nondetention toilet accessories.

1.03 COORDINATION

- A. Coordinate installation of anchorages for detention toilet accessories. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in adjoining construction. Deliver such items to Project site in time for installation.
- B. Coordinate size and location of recesses in wall construction to receive recessed detention toilet accessories.

1.04 ACTION SUBMITTALS

- A. Product Data: For each type of product.

1.05 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For detention toilet accessories to include in maintenance manuals.

1.06 WARRANTY

- A. Special Warranty: Manufacturer agrees to repair or replace detention toilet accessories that fail in materials or workmanship within specified warranty period.
 - 1. Failures include, but are not limited to, the following:
 - a. Structural failures including deflection exceeding 1/4 inch.
 - b. Faulty operation of hardware.
 - c. Deterioration of metals, metal finishes, and other materials.
 - 2. Warranty Period: Two years from date of Substantial Completion.

PART 2 - PRODUCTS

2.01 DETENTION SHELVES

- A. Surface-Mounted, Stainless-Steel Detention Shelf: Minimum 5-1/2 inches high by 8 inches deep by 18 inches long; formed from 0.078-inch- thick, stainless-steel sheet; with welded side gussets and hemmed front edge.
 - 1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Bradley Corporation; Security Bookshelf, Model [SA55] [SA56].
 - b. Brey-Krause Manufacturing Co.; Exposed Mount Security Shelving, Series K-6060-SS.

2.02 DETENTION GRAB BARS

- A. Grab Bars: 1-1/2 inches in diameter; formed from 0.038-inch- thick, stainless-steel tubing, with 3-inch- diameter flanges formed from 0.125-inch- thick, stainless steel. Closure plates formed from 0.125-inch- thick, stainless steel. All-welded construction.
 - 1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. American Specialties, Inc.; 165.
 - b. Bradley Corporation; SA70 Series.
 - c. Brey-Krause Manufacturing Co.; Security Grab Bar with Closure Plate, [D-7216-SEC] [D-7516-SEC].
 - 2. Length: As indicated on Drawings.
 - 3. Mounting: Front mounting with security fasteners.

B. Materials:

1. Stainless-Steel Tubing: ASTM A 1016 /A 1016M-08, austenitic stainless steel, Type 304, seamless.

2.03 FABRICATION

- A. Coordinate dimensions and attachment methods of detention toilet accessories with those of adjoining construction to produce integrated assemblies with closely fitting joints and with edges and surfaces aligned unless otherwise indicated.
- B. Shear and punch metals cleanly and accurately. Remove burrs.
- C. Form edges and corners to be free of sharp edges and rough areas. Fold back exposed edges of unsupported sheet metal to form a 1/2-inch- wide hem on the concealed side, or ease edges to a radius of approximately 1/32 inch and support with concealed stiffeners.
- D. Form metal in maximum lengths to minimize joints. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing work.
- E. Weld corners and seams continuously to comply with referenced AWS standard and the following:
 1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
 2. Obtain fusion without undercut or overlap.
 3. Remove welding flux immediately.
 4. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.
 5. Weld before finishing components to greatest extent possible. Remove weld spatter and welding oxides from exposed surfaces by descaling or grinding.
- F. Provide for anchorage of type indicated; coordinate with supporting structure. Fabricate and space anchoring devices to secure detention toilet accessories rigidly in place and to support expected loads. Build in straps, plates, and brackets as needed to support and anchor fabricated items to adjoining construction. Reinforce formed-metal units as needed to attach and support other construction.
- G. Cut, reinforce, drill, and tap detention toilet accessories to receive hardware, security fasteners, and similar items.
- H. Form exposed work true to line and level with accurate angles and surfaces. Grind off and ease edges unless otherwise indicated.

- I. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners where possible. Use exposed security fasteners of type indicated or, if not indicated, flat-head (countersunk) security fasteners. Locate joints where least conspicuous.

2.04 ACCESSORIES

- A. Concealed Bolts: ASTM A 307, Grade A unless otherwise indicated.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of detention toilet accessories.
 1. For the record, prepare written report, endorsed by Installer, listing conditions detrimental to performance of detention toilet accessories.
- B. Verify locations of detention toilet accessories.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION

- A. Fastening to In-Place Construction: Provide anchorage devices and fasteners where necessary for securing detention toilet accessories to in-place construction. Include threaded fasteners for concrete inserts, security fasteners, and other connectors.
- B. Provide temporary bracing or anchors in formwork for items that are to be built into concrete or similar construction.
- C. Apply security sealant around perimeter in a continuous ribbon on back of detention toilet accessories before installation.
- D. Security Fasteners: Install detention toilet accessories using security fasteners with head style appropriate for installation requirements, strength, and finish of adjacent materials. Provide stainless-steel security fasteners in stainless-steel materials.

3.03 ADJUSTING AND CLEANING

- A. Remove temporary labels and protective coatings.
- B. Touchup Painting: Immediately after erection, clean bolted connections and abraded areas of shop paint, and paint exposed areas with same material as used for shop painting to comply with SSPC-PA 1 for touching up shop-painted surfaces.

END OF SECTION 10 28 13.63

SECTION 12 36 61

SIMULATED STONE COUNTERTOPS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. Section Includes:
 - 1. Solid-surface-material countertops and backsplashes.
- B. Related Sections:
 - 1. Division 22 for plumbing fixtures.
 - 2. Division 7 for perimeter sealant to adjacent construction.

1.03 ACTION SUBMITTALS

- A. Product Data: For countertop materials and sinks.
- B. Shop drawings:
 - 1. Indicate materials, fabrication details, field jointing, adjacent construction and methods of support, integration of plumbing components and anchorages.
 - 2. Show position of openings required, with rough-in sizes. Provide templates for cast-in or placed frames or anchors, tolerances for item placement and temporary bracing of components.
- C. Samples for Initial Selection: For each type of material exposed to view.
- D. Samples for Verification: For the following products:
 - 1. Countertop material, 3 inches square representative of color, texture, and finish to be expected for final product.
- E. Manufacturer's certificate: Certification that product meet or exceed specified requirements for stain resistance.

1.04 PROJECT CONDITIONS

- A. Field Measurements: Verify dimensions of countertops by field measurements [after base cabinets are installed but] before countertop fabrication is complete.

1.05 QUALITY ASSURANCE

- A. Manufacturer's qualifications: Firm specializing in manufacturing the products specified in this Section with minimum 3 years documented successful experience.
- B. Flammability and toxicity: Maximum flame spread of 15, smoke developed of 25 for a 1/2-inch thickness, when tested in compliance with ASTM E 84.

1.06 COORDINATION

- A. Coordinate locations of utilities that will penetrate countertops or backsplashes.

1.07 HANDLING

- A. Storage: Indoors, properly supported and off the floor.

1.08 WARRANTY

- A. Provide 5-year warranty against cracking, softening and discoloration of the countertops.

1.09 MAINTENANCE

- A. Furnish list of approved cleaning materials and procedure required and provide list of substances that are harmful to product. Include instructions for stain removal, surface and gloss restoration and scratch removal.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Dupont de Nemours & Co. "Corian".

2.02 MATERIALS

- A. Resin: Proprietary type, with integral coloring, stain resistance to domestic chemicals and cleaners.
- B. Color:
 - 1. SS-1: Glacier White by Corian.

2.03 FABRICATION

- A. Fabricate tops in one piece with shop-applied edges and backsplashes unless otherwise indicated. Comply with solid-surface-material manufacturer's written instructions for adhesives, sealers, fabrication, and finishing.

- 1. Install integral sink bowls in countertops in the shop.

PART 3 - EXECUTION

3.01 EXAMINATION/PREPARATION

- A. Examine conditions and measurements affecting the work of this Section at site.
- B. Provide anchoring devices for installation. Provide templates and rough-in measurements.
- C. Correct conditions detrimental to the proper and timely completion of this work before proceeding with installation.

3.02 INSTALLATION

- A. Install components in compliance with the approved shop drawings, NAAWS for the grade specified, and Dupont's instructions, plumb, level, with tight, flush joints.
- B. Anchor securely to supports with a maximum variation from true dimension and position of 1/8 inch.

3.03 CLEANING/PROTECTING

- A. Clean and polish fabrications in compliance with manufacturer's instructions.
- B. Protect finished work from damage by covering with heavy Kraft paper until final cleaning.

END OF SECTION 12 36 61

SECTION 22 00 00

GENERAL PLUMBING REQUIREMENTS

PART 1 - GENERAL

1.01 SCOPE OF WORK

- A. It is intended for the Division 22 scope of work to include complete and functional plumbing systems - including all required materials, labor, equipment, and services necessary to achieve the desired final product. It is further intended for the Division 22 scope of work to include coordination with Divisions 21 and 23 and all work required by Division 22 for complete Fire Protection and HVAC systems.

1.02 REVISION TO DIVISION NUMBERING

- A. These documents have been revised to reflect new numbering standards. All Mechanical documents were previously contained within Division 15. These documents have now been divided into Fire Protection, Plumbing and HVAC and renumbered as Divisions 21, 22 and 23, respectively.

1.03 COORDINATION OF DIVISIONS 21, 22 AND 23.

- A. Divisions 21, 22 and 23 are used to communicate the requirements for the total Mechanical scope of work. It is intended for these three Divisions to serve as a single document, communicating the Mechanical scope of work.

1.04 REFERENCES

- A. Division 00 and Division 01 of these specifications shall govern Division 22 work, including Bidding Requirements, Conditions of the Contract, and Supplementary Conditions. It is the Division 22 Contractor's responsibility to be aware of all information and requirements included in these locations, and to include those requirements as part of the Division 22 scope of work.
- B. It shall be understood by the Division 22 Contractor that the Division 22 scope of work is intended to involve a coordinated effort with all other Divisions of work. Refer to other sections of the documents for additional related requirements and to ensure a coordinated effort.
- C. References to industry standards, testing procedures, etc. are noted in individual sections of these specifications. The requirements and standards from the referenced documents shall be considered part of the requirements of these specifications.
- D. This section applies to all Division 22 work. The Division 22 Contractor shall ensure that all Division 22 work described throughout other specification sections and on the drawings is in accordance with this section.

- E. It shall be understood by the Contractor that the Division 22 information is intended to serve as a single document, and each section of these specifications directly or indirectly relates to all other sections. As such, each section does not attempt to identify every other Division 22 section that is related. Significant references to information outside of Division 22 are, however, occasionally provided for informational purposes. This information is provided to assist in coordination, but the lack of a reference to another portion of the Contract Documents does not relieve the Contractor of the responsibility for coordination with other sections of Division 22 and all other trades.

1.05 DEFINITIONS

- A. The following definitions shall apply to the use of these words when used in Division 22. These definitions are not intended to define use of these words outside of Division 22.
- B. Acceptance: The Owner's assumption of ownership of the plumbing system.
- C. Concealed, Exterior Installations: Concealed from view and protected from weather conditions and physical contact by building occupants but subject to outdoor ambient temperatures. Examples include installations within unheated shelters.
- D. Concealed, Interior Installations: Concealed from view and protected from physical contact by building occupants. Examples include above ceilings and in duct shafts.
- E. Contractor (The Contractor, This Contractor, Division 22 Contractor, etc.): The contractor responsible for the Division 22 scope of work.
- F. Date of Acceptance: The official date when Acceptance occurs. This will coincide with the granting of Substantial Completion unless noted otherwise by the Owner's Representative. It shall not be assumed that the Date of Acceptance has deviated from Substantial Completion unless written documentation is provided by the Owner's Representative indicating differently.
- G. Exposed, Exterior Installations: Exposed to view outdoors or subject to outdoor ambient temperatures and weather conditions. Examples include rooftop locations.
- H. Exposed, Interior Installations: Exposed to view indoors. Examples include finished occupied spaces and mechanical equipment rooms.
- I. Finished Spaces: Spaces other than mechanical and electrical equipment rooms, furred spaces, pipe and duct shafts, unheated spaces immediately below roof, spaces above ceilings, unexcavated spaces, crawlspace, and tunnels.
- J. Mechanical: Shall refer in a consolidated manner to and be interchangeable with "Divisions 21, 22 and 23".
- K. Plumbing: Shall be considered interchangeable with "Division 22".

- L. Owner's Representative: The Architect or his designated representative, as outlined in the General Conditions.
- M. Provide: Furnish and install.

1.06 ABBREVIATIONS

- A. The following are industry abbreviations used in these specifications: ABS: Acrylonitrile-butadiene-styrene plastic; ASJ: All-service jacket; BR: Butyl rubber; Buna-N: Nitrile rubber; CPVC: Chlorinated polyvinyl chloride plastic; CR: Chlorosulfonated polyethylene synthetic rubber; CSM: Chlorosulfonyl-polyethylene rubber; CWP: Cold working pressure; DDC: Direct digital control; DOP: Dioctyl phthalate or bis-(2-ethylhexyl) phthalate; EMCS: Energy Management and Control System; EPDM: Ethylene-propylene-diene terpolymer rubber; FOG: Fats, oils, and greases; FRP: Fiberglass-reinforced plastic; FSK: Foil, scrim, kraft paper; FSP: Foil, scrim, polyethylene; HDPE: High-density polyethylene plastic; HEPA: High-efficiency particulate air; I/O: Input/output; LLDPE: Linear, low-density polyethylene plastic; MS/TP: Master slave/token passing; MSS: Manufacturers Standardization Society for The Valve and Fittings Industry Inc.; NBR: Acrylonitrile-butadiene rubber; NC: Noise criteria; NR: Natural rubber; NUSIG: National Uniform Seismic Installation Guidelines; PE: Polyethylene plastic; PEX: Crosslinked polyethylene plastic; PC: Personal computer; PID: Proportional plus integral plus derivative; PMMA: Polymethyl methacrylate (acrylic) plastic; PP: Polypropylene plastic; PTFE: Polytetrafluoroethylene plastic; PUR: Polyurethane plastic; PVC: Polyvinyl chloride plastic; PVDC: Polyvinylidene chloride; RC: Room criteria; RTD: Resistance temperature detector; SSL: Self-sealing lap; SWP: Steam working pressure; TFE: Tetrafluoroethylene plastic; TPE: Thermoplastic elastomer; ULPA: Ultra low penetration air.

1.07 APPLICABLE CODES

- A. Division 22 work shall be performed in accordance with applicable codes and standards as adopted by the authorities having jurisdiction including amendments. Following is a listing of major codes and standards, the requirements of which shall be considered part of the scope of this project. This list should not be considered comprehensive, and codes or standards not included in this list should not be considered to be excluded from the scope of the project.
 - 1. Americans with Disabilities Act (ADA)
 - 2. Applicable State and Local Codes and Ordinances
 - 3. National Electrical Code
 - 4. International Building Code
 - 5. International Fire Code
 - 6. International Mechanical Code
 - 7. Uniform Plumbing Code
 - 8. California Code of Regulations, (CCR), Title 24, Latest Edition.
 - 9. California Building Code (CBC), Latest Edition.
 - 10. California Mechanical Code (CMC), Latest Edition.
 - 11. California Plumbing Code (CPC), Latest Edition.
 - 12. California Electrical Code (CEC), Latest Edition.

1.08 PERMITS AND FEES

- A. All permits and inspections required to complete the Division 22 scope of work shall be included in the Division 22 bid price. All certifications provided as part of the permit and inspection process shall be provided to the Owner as part of the Division 22 scope of work as specified in these documents.
- B. All fees required by utility providers shall be included in the Division 22 bid price, including water, gas, sanitary sewer, and storm sewer connections. This shall include all charges to the project by these agencies, including but not limited to general fees, equipment charges (meters, vaults, etc.), tap fees, and utility main installation charges.

1.09 ALTERNATES (REFER TO DIVISION 01)

- A. The bid price for the scope of work shall be separated into base bid and alternate values when indicated. Both base bid and alternate bid prices shall reflect a complete and working plumbing system, with specific features and/or portions of the systems designated as base bid or alternate as described.

1.10 SCOPE AND APPROPRIATE USE OF BID DOCUMENTS

- A. These specifications and accompanying drawings are intended to communicate the design concept for this project and outline the scope of work. They should not be viewed as a comprehensive document that details every specific task, item, or piece of equipment required to complete the project. It is understood that industry knowledge and experience is required to establish an accurate and complete scope of work from these documents, and it is assumed that the Division 22 Contractor possesses that knowledge and experience. Work not specifically noted in these specifications or the accompanying drawings, but which is required to complete the project, shall be included by the Division 22 Contractor as part of his scope of work.
- B. These specifications and the accompanying drawings are intended to supplement each other. Information included in either one shall be incorporated into the project as if included in both. In the event of any conflicts, the most stringent requirements shall be considered the governing scope of work until and unless clarification can be obtained by the Contractor.
- C. In the event of dimensional discrepancies between Division 22 documents and other disciplines, Architectural and Structural documents take precedence over Division 22. Refer to this information for sufficient understanding to the extent that it impacts the Division 22 scope of work.
- D. Drawings are intended to indicate the general arrangement of piping, ductwork, equipment and other components of Division 22 systems. They shall be followed as closely as possible, but shall be considered diagrammatic in nature. They are not intended to show every component, fitting, offset, etc. Components, fittings, offsets, etc. as required to meet the intent of the documents and to achieve coordination with other trades shall be included in the Division 22 scope of work. Note that more detailed information about routing may be provided for certain areas of the project where special constraints exist. It is the intent of this detailed information to better

communicate the constraints, but these drawings and details shall still be considered diagrammatic in nature as outlined above.

1.11 ROUTING AND LOCATIONS

- A. It is the Contractor's responsibility to coordinate equipment locations and system routing with available space and with all other trades.
- B. It is the Contractor's responsibility to coordinate and verify the exact locations and routing of equipment and systems prior to fabrication and installation. If discrepancies become apparent as part of the verification process, the Contractor shall ask for written clarification/direction. Alteration, removal and/or replacement of work already installed as a result of failure to verify and/or coordinate locations and routing prior to fabrication and/or installation shall be at the Contractor's expense.
- C. Locations of equipment shown on the drawings are approximate unless specifically dimensioned.
- D. All ductwork, piping, tubing, conduit, etc. shall be concealed within building construction unless noted otherwise. Mechanical rooms are considered to be within building construction for the purposes of this requirement.
- E. Existing utilities, piping, and ductwork have been indicated as closely as possible. The Contractor can assume that points of connection to existing utilities have been shown within 10 feet (3 meters) of the actual location. When actual points of connection are more than 10 feet (3 meters) from the location shown on the drawings, the Contractor shall notify the Owner's Representative prior to commencing this portion of the work.
- F. The Contractor is responsible for any remedial work required from failure to locate and preserve underground utilities. This shall include all work necessary to repair any damaged utilities to their original condition.

1.12 SCHEDULING

- A. It is understood that while drawings are to be followed as closely as circumstances permit, the Contractor shall be responsible for installation of systems according to the true intent and meaning of Contract Documents. Anything not clear or in conflict will be explained by making application to Owner's Representative. The Contractor shall familiarize himself with his scope of work as well as the required coordination with other trades and the scheduling of other trades sufficiently to address coordination issues in a timely manner such that they do not result in remedial work for other trades.
- B. Should conditions arise where certain changes would be advisable, secure approval from Owner's Representative for those changes before proceeding with work. Proceeding without written approval is at the Contractor's risk and at the Contractor's expense.
- C. The contractor shall coordinate with the work of various trades when installing interrelated work. Before installation of plumbing items, proper provisions shall be

made to avoid interferences. Changes required in work specified in Division 22 caused by neglect to do so shall be made at no cost to Owner.

- D. Inserts and supports required by Division 22 shall be furnished and installed unless otherwise noted. Furnish sleeves, inserts, supports, and equipment that are an integral part of other Divisions of the Work to those involved in sufficient time to be built into construction as the Work proceeds. Locate these items and see that they are properly installed. Expense resulting from improper location or installation of items above shall be borne under Division 22.

1.13 CUTTING AND PATCHING

- A. The Division 22 Contractor shall be responsible for all cutting and patching required to complete the Division 22 scope of work.
- B. All patching shall be performed such that it matches existing finishes.
- C. The Contractor shall not cut any structural members without first getting approval from the Owner's Representative to do so.
- D. All cutting and patching required to correct defective or otherwise unacceptable work shall be the responsibility of the Division 22 Contractor.

1.14 GUARANTEE (REFER TO DIVISION 01)

- A. All Division 22 systems and equipment shall be guaranteed for a minimum period of one year.
- B. Specific equipment and/or systems requiring warranties beyond one year are indicated in the table at the end of this section.
- C. The guarantee shall begin at the Date of Acceptance, unless written documentation is provided noting otherwise. When more than one Date of Acceptance is indicated for various portions or specific equipment, the guarantee shall begin at the Date of Acceptance independently for each portion of the system or piece of equipment.
- D. Permission to use Division 22 systems or equipment for temporary heating or other contractor use prior to the Date of Acceptance, as outlined elsewhere in these specifications, shall not constitute the beginning of the guarantee period. The contractor shall make any necessary arrangements to extend equipment and/or system warranties sufficient to maintain the designated guarantee period from the Date of Acceptance.
 - 1. Exception: When temporary heating and or other system use is requested by the Owner for the Owner's benefit prior to the Date of Acceptance, the guarantee period for the portions of the system or specific equipment requested for use may begin at the time it is put into service. This can only be assumed to have occurred if written documentation is provided indicating such.

1.15 QUALITY ASSURANCE

- A. Material and Equipment Qualifications
 - 1. Provide materials and equipment that are standard products of manufacturers regularly engaged in the manufacture of such products, which are of a similar material, design and workmanship. Standard products shall have been in satisfactory commercial or industrial use for 2 years prior to bid opening. The 2-year use shall include applications of equipment and materials under similar circumstances and of similar size. The product shall have been for sale on the commercial market through advertisements, manufacturers' catalogs, or brochures during the 2 year period.
 - 2. Alternative Qualifications: Products having less than a two-year field service record will be acceptable if a certified record of satisfactory field operation for not less than 6000 hours, exclusive of the manufacturer's factory or laboratory tests, can be shown.
- B. Service Support: The equipment items shall be supported by service organizations. When requested to gain approval, submit a certified list of qualified permanent service organizations for support of the equipment which includes their addresses and qualifications. These service organizations shall be reasonably convenient to the equipment installation and able to render satisfactory service to the equipment on a regular and emergency basis during the warranty period of the contract.
- C. Manufacturer's Nameplate: Each item of equipment shall have a nameplate bearing the manufacturer's name, address, model number, and serial number securely affixed in a conspicuous place; the nameplate of the distributing agent will not be acceptable.
- D. UL Listings: All equipment shall be provided with a UL or approved equivalent label when labeling is available for that type of equipment.
- E. Fuel-fired equipment shall be labeled by the appropriate nationally recognized label for the fuel type (i.e. AGA).
- F. All control panels shall be UL listed (or equivalent approved label).
- G. Pressure vessels shall be provided in accordance with applicable pressure vessel ordinances.
- H. All mechanical equipment shall have an AIC rating of 100,000 or otherwise specified on electrical one-line diagrams fault current for each piece of equipment.

1.16 SUBSTITUTIONS (REFER TO DIVISION 01)

- A. When multiple manufacturers are listed in these specifications, equipment can be used from those manufacturers providing they can meet the requirements of the specifications and drawings. This shall include meeting capacity requirements, efficiencies, space and weight limitations, electrical provisions, etc. The detailed information in the specifications, scheduled equipment information, additional drawing information and any specific references to a particular manufacturer and/or model of equipment shall be considered the basis of design. Other listed manufacturers, even

when listed in these specifications, will only be allowed if they meet or exceed that basis of design.

- B. Substitutions involving manufacturers not listed in these specifications will not be allowed without written approval. When written approval is requested, information will be reviewed in preliminary fashion for general conformance only. Any approved manufacturers will still be required to meet the requirements of these specifications and the drawings, and final approval during submittal review will only be granted if the equipment meets or exceeds the requirements of the documents.
- C. It is the Contractor's responsibility when utilizing approved substituted equipment to ensure the equipment will fit within the constraints of the project as detailed using the basis of design equipment (space, weight, power, etc.). Any required alterations by Division 22 or any other Division of work to accommodate differences between the substituted equipment and the basis of design equipment shall be the responsibility of the Division 22 Contractor, including the cost of design for the required changes.
- D. If the changes required by substituted equipment cannot be accommodated, the Contractor shall be responsible for replacing the substituted equipment with the basis of design equipment.
- E. Proposed substituted equipment will not be considered equal if it requires an increase of more than 5% in power usage at design conditions.

1.17 PLUMBING COST BREAKDOWN (REFER TO DIVISION 01)

- A. Provide a breakdown of construction costs within 30 days of Notice to Proceed, with separate costs for each of the items listed in the table at the end of this section.

1.18 PAYMENT REQUESTS

- A. Submittals and operation and maintenance data must be received and approved before payment requests will be considered for materials and equipment.

1.19 SUBMITTALS (REFER TO DIVISION 01)

- A. Submittal information shall be provided and approved on all materials and equipment prior to ordering.
- B. Provide indication of which options and accessories are to be included.
- C. Include all scheduled information for equipment listed in schedules on the drawings.
- D. Review will be for general conformance only, and shall not relieve the Contractor for any deviations from the requirements of the documents unless clear written reference is made by the Contractor in the submittal to proposed deviations.
- E. All Division 22 information shall be provided in one complete submittal, indexed by specification section.

1. Exceptions: At the discretion of the Owner's Representative, partial submittals may be provided. If allowed, provide a table indicating submittal status with each submittal, and provide an initial submittal with all required tabs and space for all current and future submittals.
- F. Provide operation and maintenance data for individual equipment after initial submittals have been reviewed.
- G. Efficiency Standards
 1. Units requiring more than a 5% increase in power input beyond the scheduled equipment to meet design capacities will not be considered equal.
 2. Units requiring more than a 5% increase in fan brake horsepower over the scheduled equipment to meet the design flow and external static pressure requirements will not be considered equal and will not be accepted.

1.20 DELIVERY, STORAGE, AND HANDLING

- A. Follow manufacturer's directions in delivery, storage, protection, and installation of equipment and materials.
- B. Promptly notify Owner's Representative in writing of conflicts between requirements of Contract Documents and Manufacturer's directions and obtain written instructions from Owner's Representative before proceeding with work. The Contractor shall bear expenses arising from correcting deficiencies of work that do not comply with manufacturer's directions or such written instructions from Owner's Representative.
- C. Handle, store, and protect equipment and materials to prevent damage before and during installation in accordance with the manufacturer's recommendations, and as approved by the Contracting Officer. Replace damaged or defective items.

1.21 OPERATION AND MAINTENANCE MANUALS

- A. Provide a consolidated Operation and Maintenance Manual for Divisions 21, 22 and 23. Refer to Section 230000 for requirements.

1.22 CERTIFIED FACTORY START-UP

- A. Refer to individual sections of these specifications for specific requirements.
- B. Start-up shall be performed by a certified factory representative. Prior to start-up, certification of factory representative shall be forwarded to the Engineer for review.
- C. Schedule start-up with the Owner. Perform operation and maintenance training at the time of start-up for equipment requiring certified factory start-up.
- D. Certified factory start-up is required for the following equipment:

1.23 OPERATION AND MAINTENANCE TRAINING

- A. Provide consolidated training for Divisions 21, 22 and 23. Refer to Section 230000 for requirements.

1.24 EXTRA MATERIALS

- A. A list of extra materials to be provided under this contract has been included at the end of this section. Refer to individual specification sections for specific requirements of extra materials to be furnished under this contract.
- B. Turn extra materials over to Owner.
 - 1. Provide summarized list of extra materials that have been furnished. List shall include verification by Owner's Representative that parts have been furnished. Incorporate into O&M Manual. Extra materials list shall be similar to that provided at the end of this section.

1.25 CLEANING

- A. Leave all equipment and systems in a clean and new condition at the completion of the project. Clean all piping and ductwork exposed in finished spaces. Remove all stickers from equipment in finished spaces (plumbing fixtures, etc.). Repair all scratched and damaged equipment to new condition, to include touch-up painting.

1.26 RECORD DRAWINGS

- A. Maintain a set of Contract Documents dedicated for record drawings. These documents shall incorporate all clarifications and changes provided by the Owner's Representative, as well as field changes made by the Contractor. All markings shall be neat and legible. Turn over documents to the Owner's Representative at the completion of the project.

1.27 PUNCH LISTS

- A. Notify the Owner's Representative in writing when the project is ready for punch lists.
- B. When all punch list items have been addressed, notify the Owner's Representative in writing that the project is ready for a backcheck of completed punch list items. Include a copy of the original punch list with each completed item initialed and any required notation indicating if something was not completed and why.
- C. If, at the time of the backcheck, items are found that continue to be in nonconformance with the project documents, these items will be forwarded to the Contractor. Completion of these items shall be required to achieve substantial completion. All site visits required beyond the initial punch list and initial back check visits, including visits required to verify completion of these remaining outstanding items, shall be charged to the Contractor at normal billing rates.

1.28 VISITING THE PROJECT SITE

- A. The premises shall be examined and conditions shall be understood which may affect performance of work of this Division before submitting proposals for this work.
- B. No subsequent allowance for time or money will be considered for any consequence related to failure to examine existing site conditions.

1.29 SUMMARY

- A. Section 01 60 01 "Buy America Requirements" for special product requirements.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

PART 4 -

**RESTROOM IMPROVEMENTS
AT FULLERTON PARK AND RIDE**

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1.30 PLUMBING COST BREAKDOWN TABLE

Plumbing Cost Breakdown Table		
Category	Material Cost	Labor / Installation Cost
Mobilization		
Supervision		
Site Utilities		
Plumbing Seismic Restraint		
Plumbing Identification		
Plumbing Insulation		
Domestic Water Rough-In		
Waste and Vent Rough-In		
Fuel Gas Rough-In		
Miscellaneous Rough-In		
Plumbing Equipment (Floor Drains, Roof Drains, Water Hammer Arrestors, Valves, Hot Water Tanks, etc.)		
Water Heaters		
Plumbing Fixtures		
Domestic Water Pump(s)		
Commissioning Assistance		

**RESTROOM IMPROVEMENTS
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1.31 SUBMITTAL TABLE

Submittal Table				
	Submittal Data Included	Submittal Previously Approved	O&M Data Included	O&M Previously Approved
220500 – Basic Plumbing Materials and Methods				
Access Doors				
Dielectric Fittings				
Escutcheons				
Mechanical Sleeve Seals				
Welding Certificates				
220519 – Plumbing Meters and Gauges				
Pressure Gauges (Water Service)				
Thermometers				
Gauge Application Table				
220523 – Plumbing General Duty Valves				
Ball Valves				
Butterfly Valves				
Check Valves – Horizontal Swing				
Check Valves – Lift Disc, Spring Loaded				
220529 – Plumbing Hangers and Supports				
Fastener Systems				
Thermal Hanger Shield Inserts				
Metal Framing Systems				
Welding Certificates				
220548 – Plumbing Vibration and Seismic Controls				
Design Calculations and Details for Each Piece of Equipment to be Restrained.				
Floor Plan Piping and Duct Layouts				
Equipment Seismic Qualification Certification				
220553 – Plumbing Identification				
Access Panel and Door Markers				
Ceiling Tacks				
Nameplates				
Pipe Markers				
Tags				
Valve Schedules - A preliminary chart shall be submitted at submittal time, and shall be updated as part of the as-built documentation process.				
List of all equipment/items to receive nameplates indicating designation to be printed on nameplate.				
220700 – Plumbing Insulation				
Pipe Insulation – Cellular Foam				
Pipe Insulation – Glass Fiber				
Pipe Insulation – Calcium Silicate				
Pipe Insulation – Cellular Glass				
Pipe Jacketing				
Equipment Insulation – Glass Fiber				

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Submittal Table				
	Submittal Data Included	Submittal Previously Approved	O&M Data Included	O&M Previously Approved
Schedule Including Piping Systems, Insulation Type, Insulation Thickness Relative To Pipe Size				
Schedule Including Equipment, Insulation Type, Insulation Thickness				
221100 – Domestic Water Piping Systems				
Water Piping, Buried				
Water Piping, Above Grade				
Air Vents				
Double-Check Backflow Preventers				
Intermediate Atmospheric Vent Backflow Preventers				
Reduced Pressure Backflow Preventers				
Clothes Washer Outlet Box				
Drain Valves				
Flow Control Balancing Valves				
Non-Freeze Ground Hydrants				
Hose Bibbs/Wall Hydrants				
Hose Stations				
Mixing Valves				
Post Hydrants				
Strainers				
Trap-Seal Primer Valves				
Trap-Seal Primer Systems				
Water Hammer Arresters				
Water Meters				
Water Pressure Reducing Valves				
Section 221300 – Sanitary Waste and Vent Piping Systems				
Waste and Vent Piping (Unpressurized), Buried				
Waste and Vent Piping (Unpressurized), Above Grade				
Waste and Vent Piping (Pressurized), Buried				
Flexible, Nonpressure Pipe Couplings				
Shielded Nonpressure Pipe Couplings				
Rigid, Unshielded, Nonpressure Pipe Couplings				
Pressure Pipe Couplings				
Flexible Ball Joints				
Wall Penetration Fittings				
Backwater Valves				
Cleanouts				
Floor Drains				
Trap-Seal Primers				
Grease Interceptors				
Section 223400 – Water Heaters				

**RESTROOM IMPROVEMENTS
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Submittal Table				
	Submittal Data Included	Submittal Previously Approved	O&M Data Included	O&M Previously Approved
Commercial Water Heaters – Electric, Storage, High Efficiency				
Commercial Water Heaters – Electric, Instantaneous, High Efficiency				
224000 - Plumbing Fixtures (Submit by P-Numbers)				
Counter-Mounted Lavatories (Vitreous China)				
Drinking Fountains				
Electric Water Coolers				
Emergency Eye-Wash				
Emergency Showers				
Floor-Mounted Flush Valve Water Closets				
Floor-Mounted Service Sinks				
Floor-Mounted Tank Type Water Closets				
Showers				
Stainless Steel Sinks				
Tubs				
Urinals				
Wall-Mounted Flush Valve Water Closets				
Wall-Mounted Lavatories (Cast Iron)				
Wall-Mounted Lavatories (Vitreous China)				
Wall-Mounted Service Sinks				
Wall-Mounted Tank Type Water Closets				
227100 – Facility Natural Gas Piping Systems				
Gas Piping – Above Grade				
Gas Piping – Below Grade				
Isolation Valves				
Appliance Connection Valves				
Automatic Gas Valves				
Earthquake Valves				

**RESTROOM IMPROVEMENTS
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1.32 EXTRA MATERIALS LIST

Extra Materials List				
Specification Section	Mechanical Equipment	Extra Materials	Verified By	Date
221100	Domestic Water Piping Systems	Two (2) Loose Keys for Frost Proof Wall Hydrants		
224000	Plumbing Fixtures	10% (minimum of two (2)) Sets of Faucet Washers and O-Rings for Each Type/Size Installed		
224000	Plumbing Fixtures	10% (minimum of two (2)) of Each Different Filter Cartridge Type		
224000	Flush Valves	Flush Valve Service Kits		

1.33 EXTENDED WARRANTY LIST

Extended Warranty List		
Specification Section	Plumbing Equipment	Warranty Description
223400	Water Heater	Heat Exchangers: 5 year warranty
223400	Water Heater/Storage Tank	Tanks: 3 year warranty

END OF SECTION.

SECTION 22 05 00

BASIC PLUMBING MATERIALS AND METHODS

PART 1 - GENERAL

1.01 SUMMARY

- A. The definitions of Division 01 and the General Conditions of the specification also apply to the Division 22 contract.
- B. "Contract Documents" constitute the drawings, specifications, general conditions, project manuals, etc. prepared by the engineer (or design professional in association with the engineer) for contractor's bid or contractor's negotiations with the Owner. The Division 22 drawings and specifications prepared by the engineer are not "Construction Documents"
- C. "Construction Documents", "construction drawings", and similar terms for Division 22 work refer to installation diagrams, shop drawings and coordination drawings prepared by the contractor using the design intent indicated on the engineer's contract documents. These specifications detail the contractors responsibility for "Engineering by Contractor" and for the preparation of construction documents.
- D. "(N)" indicates "new" equipment and/or to be provided under this contract.
- E. "(E)" indicates "existing" equipment on site which may or may not need to be relocated as part of this work.
- F. "(R)" indicates existing equipment to be relocated as part of this work.
- G. "Furnish" means to "supply" and usually refer to an item of equipment.
- H. "Install" means to set in place, connect and place in full operational order.
- I. "Provide" means to "furnish and install".
- J. "Equal" or "Equivalent" means "meets the specifications of the referenced product or item in all significant aspects". Significant aspects shall be as determined by the Owner's Representative.
- K. "Work by other(s) divisions", "re _____ Division", and similar expressions means work to be performed under the contract documents, but not necessarily under the division or section of the work on which the note appears. It is the contractor's sole responsibility to coordinate the work of the contract between his/her suppliers, sub-contractors and employees. If clarification is required, consult the Owner's Representative before submitting bid.

- L. By interference, any reference to a “contractor” or “sub-contractor” means the entity, which has contracted with the Owner for the work of the contract documents.
- M. “Engineer” means the design professional firm, which has prepared these contract documents. All questions, submittals, etc. of this division shall be routed to the Engineer (through proper contractual channels).
- N. Section 01 60 01 "Buy America Requirements" for special product requirements.

1.02 DEFINITIONS

- A. Finished Spaces: Spaces other than mechanical and electrical equipment rooms, furred spaces, pipe chases, unheated spaces immediately below roof, spaces above ceilings, unexcavated spaces, crawlspaces, and tunnels.
- B. Exposed, Interior Installations: Exposed to view indoors. Examples include finished occupied spaces and mechanical equipment rooms.
- C. Exposed, Exterior Installations: Exposed to view outdoors or subject to outdoor ambient temperatures and weather conditions. Examples include rooftop locations.
- D. Concealed, Interior Installations: Concealed from view and protected from physical contact by building occupants. Examples include above ceilings and in chases.
- E. Concealed, Exterior Installations: Concealed from view and protected from weather conditions and physical contact by building occupants but subject to outdoor ambient temperatures. Examples include installations within unheated shelters.
- A. The following are industry abbreviations for plastic materials:
 - 1. ABS: Acrylonitrile-butadiene-styrene plastic.
 - 2. CPVC: Chlorinated polyvinyl chloride plastic.
 - 3. PE: Polyethylene plastic.
 - 4. PVC: Polyvinyl chloride plastic.
- F. The following are industry abbreviations for rubber materials:
 - 1. EPDM: Ethylene-propylene-diene terpolymer rubber.
 - 2. NBR: Acrylonitrile-butadiene rubber.

1.03 QUALITY ASSURANCE

- A. Manufacturer's Qualifications: Firms regularly engaged in manufacture of plumbing fixtures of type, style, and configuration required, whose products have been in satisfactory use in similar service for not less than 3 years.
- B. Regulatory Requirements
- C. PDI Compliance: Comply with standards established by PDI pertaining to plumbing fixture supports.

- D. U.L. Compliance: Construct water coolers in accordance with UL 399, and provide UL listing and label.
- E. ASHRAE Compliance: Test and rate water coolers in accordance with ASHRAE 18.
- F. ANSI Standards: Comply with applicable ANSI barrier-free plumbing fixture standards.
- G. Electrical Characteristics for Plumbing Equipment: Equipment of higher electrical characteristics may be furnished provided such proposed equipment is approved in writing and connecting electrical services, circuit breakers, and conduit sizes are appropriately modified. If minimum energy ratings or efficiencies are specified, equipment shall comply with requirements.
- H. All cast iron pipe and fittings shall be marked with the collective trademark of the Cast Iron Soil Pipe Institute (CISPI) and be listed by NSF International.

1.04 DELIVERY, STORAGE, AND HANDLING

- A. Delivery plumbing fixtures individually wrapped in factory-fabricated containers.
- B. Handle plumbing fixtures carefully to prevent breakage, chipping, and scoring fixture finish. Do not install damaged plumbing fixtures; replace damaged units
- C. Deliver pipes and tubes with factory-applied end caps. Maintain end caps through shipping, storage, and handling to prevent pipe end damage and to prevent entrance of dirt, debris, and moisture.
- D. Store plastic pipes protected from direct sunlight. Support to prevent sagging and bending.

1.05 COORDINATION WITHIN DIVISION 22

- A. Contract Documents
 - 1. General: The contract documents are diagrammatic showing certain physical relationships, which must be established within Division 22 work and its interface with other work. Such establishment is the exclusive responsibility of the contractor.
 - 2. Drawings shall not be scaled for the purpose of establishing dimensions, clearances or material quantities.
 - 3. Supplemental Instructions: The exact location for some items in this specification may not be shown on the Drawings. The location of such items may be established by the Owner's Representative during the progress of the work.
 - 4. Discrepancies
 - a. Examine drawings and specifications of all Divisions of the work.
 - b. Report any discrepancies to the Owner's Representative and obtain written instructions before proceeding.
 - c. Should there be a conflict within or between the specifications or drawings, the most stringent or higher quality requirements shall apply.

- d. Items called for either in the specifications or on the drawings shall be required as if called for in both.
- 5. Constructability
 - a. Examine drawings and specifications of all Divisions of the work.
 - b. Report any issues to the Owner's Representative which may prevent installation of Division 22 work in accordance with the Contract Documents and the original construction contract.
- B. Contractor shall be responsible for providing proper documentation of equipment product data and shop drawings to all entities providing services.
- C. Coordination Drawings: Prepare coordination drawings in accordance with Section 01 33 00 – Submittal Procedures to scale of 1/8" = 1'-0" or larger for floor plans and 1/4" = 1'-0" for equipment rooms and restrooms, detailing major elements, components, and systems mechanical equipment (i.e. equipment rooms, and exterior equipment areas) and materials in relationship with other system, installations, and building components. Indicate locations where space is limited for installation and access and where sequencing and coordination of installations are important to the efficient flow of the work, including (but not necessarily limited to) the following:
 - 1. Indicate all major piping (HVC, Plumbing and Fire Protection), electrical equipment and conduits, structural, and architectural elements in the areas as well.
 - 2. Sizes and locations of required concrete pads, piers, curbs and bases.
 - 3. Provide all necessary sections and elements for clarification.
 - 4. Indicate all seismic restraint and support systems to be used for all plumbing equipment throughout the project.
 - 5. Ductwork and piping transitions from rooftop units to shafts or horizontal ducts.
 - 6. Failure to produce or submit coordination drawings does not dismiss the contractor's responsibility for translating the design intent of the contract documents into construction drawings.
- D. CAD Drawings: For the purposes of facilitating the contractor's shop drawings and record drawings electronic files may be purchased from IBE Engineers. Contact the IBE project manager for details.
- E. Existing Conditions
 - 1. Before submitting proposals for this work, each bidder shall be familiar with plans and specifications and shall have examined the premises and understood the conditions under which he/she will be obliged to operate in performing his/her contract.
 - 2. No allowance will be made subsequently in this connection, on behalf of the contractor, for any error through negligence on his/her part.
 - 3. Drawings of existing conditions may be available. Contractor is strongly encouraged to obtain relevant drawings to assist in his/her performance of the contract.
- F. Utility Connections
 - 1. Coordinate the connection of plumbing systems with utilities and services.
 - 2. Comply with regulations of utility suppliers.

3. The contract documents indicate the available information on existing utilities and services, and on new services (if any) to be provided to the project by utility companies and agencies.
 - a. Notify the Owner's Representative immediately if discrepancies are found.
4. Coordinate mechanical utility interruptions one week in advance in writing with the Owner's Representative and the utility company.
 - a. Plan work so that duration of the interruption is kept to a minimum.
- G. Arrange for pipe spaces, chases, slots, and openings in building structure during progress of construction, to allow for plumbing installations.
- H. Coordinate installation of required supporting devices and set sleeves in poured-in-place concrete and other structural components as they are constructed.
- I. Coordinate requirements for access panels and doors for plumbing items requiring access that are concealed behind finished surfaces. Access panels and doors are specified in Section 08 31 13 – Access Doors and Frames.

1.06 COORDINATION WITH OTHER DIVISIONS

- A. General
 1. Coordinate the Division 22 work with the progress of the work of the other trades.
 2. Complete the entire installation as soon as the condition of the building will permit.
 3. Contractor is responsible for coordination of his / her work with Owner's facility staff engaged in building automation, commissioning of systems, fire alarm system, etc.
- B. Coordination with Electrical work: Refer to Section 26 05 00 – Common Work Results for Electrical.
- C. Cutting and patching: Refer to Division 01 Section – Cutting and Patching and Section 02 41 19 – Selective Structure Demolition for general demolition requirements and procedures.
- D. Support Dimensions: Provide dimensions and drawings so that concrete bases and other equipment supports to be provided under other sections of the specifications can be built at the proper time.

1.07 COORDINATION WITH EXISTING OCCUPIED AREAS

- A. Minimize disruptions to operation of existing plumbing systems in occupied areas.
- B. Coordinate any required disruptions with the Owner's Representative, one week in advance, in writing.
- C. Provide temporary connections to prevent long disruptions.

1.08 DEMOLITION AND WORK IN EXISTING AREA

- A. Remove existing equipment and materials as required and as noted.
- B. Verify the size and location of all existing services and utility prior to connection. The Drawings show diagrammatically the approximate location of utilities where information is available, but the drawings are not exact as to quantity, extent or location. Exercise extreme caution during all phases of the work to locate, identify and protect existing services and utilities which are encountered as a result of work under this contract.
- C. Do work in a manner which will not cause inconvenience or danger to the occupants of the building, nor interfere with the other occupants; activities.
- D. Make all necessary alterations and additions to connect the existing with the new work so that when the work is complete, it will be in satisfactory operable condition. Provide all cutting and patching including concrete saw cutting and core drilling as required. Obtain approval from the structural engineer prior to performing concrete sawing or core drilling operations.
- E. All equipment and materials removed shall be legally disposed of or recycled off-site, unless otherwise noted and directed.

1.09 ENGINEERING BY CONTRACTOR

- A. The construction of this building requires the contractor to design several systems or sub systems. All such designs shall the complete responsibility of the contractor.
- B. Systems or sub-systems which require responsibility by the contractor and submitted to the engineer for review include, but are not limited to:
 - 1. Equipment and piping supports.
 - 2. Pipe hangers and anchors not specified in these documents or cataloged by the manufacturer.
 - 3. Vibration Isolation / Seismic Restraint.
 - 4. Underground piping distribution systems.
 - 5. Thermal pipe stress analysis

1.10 REGUALTORY REQUIREMENTS

- A. General
 - 1. Regulatory compliance: Work performed under this Division shall comply with the latest currently adopted editions of Codes and Regulations including, but not limited to those listed below.
 - 2. Minimum requirements: The requirements of the drawings and specifications are the minimum that will be allowed, unless such requirements are exceeded by applicable codes or regulations, in which case the code or regulation requirement shall govern.
 - 3. Code Changes: Should a code change occur during time of proposal and date of permit issue, and the Contractor has unnecessarily delayed the acquisition or

permits, the contractor shall hold the Owner free of additional expense resulting from such code change.

- B. Codes: Comply with currently adopted (at time of contract award) following code:
1. Municipal Code, Ordinances and Regulations.
 2. Fire Department Regulations and Requirements.
 3. National Electrical Code (NEC), Latest Edition.
 4. California Energy Commission, Title 24.
 5. State Elevator Safety Regulations (SESR).
 6. National Fire Protection Association NFPA-101, Life Safety Code, Latest Edition for JCAHO accreditation.
 7. Office of Statewide Health Planning and Development regulations and requirements (OSHDP).
 8. Occupational Safety and Health Administration Regulations and Requirements (OSHA).
 9. California Occupational Safety and Health Administration Regulations and Requirements (CAL-OSHA).
 10. South Coast Air Quality Management District Regulations and Requirements (SCAQMD).
 11. American Disability Act Regulations and Requirements (ADA).
 12. State of California Water Resources Control.
- C. Comply with the latest Editions of Applicable Regulations and Standards, including:
1. National Fire Protection Associations (NFPA).
 2. Underwriters Laboratory, Inc. (UL).
 3. American National Standards Institute (ANSI).
 4. American Society of Testing and Materials (ASTM).
 5. American Society of Mechanical Engineers (ASME).
 6. American Welding Society Code (AWS).
 7. American Water Works Association (AWWA).
 8. Compressed Gas Association (CGA).
 9. Cast Iron Soil Pipe Institute (CISPI).
 10. Manufacturers Standardization Society (MSS).
 11. National Bureau of Standards (NBS).
 12. Plumbing and Drainage Institute (PDI).
 13. Sheet Metal and Air Conditioning Contractors National Association (SMACNA).
- D. Requirements of Local Utility Companies: Comply with rules and regulations of local utility companies. Include in bid the cost of all valves, valve boxes, meter boxes, meters and such accessory equipment, which will be required for the project.
- E. Additional Regulations: Follow additional regulations which appear in individual sections of these specifications.
- F. Contradictions: Where codes are contradictory, follow the most stringent, unless otherwise indicated in plans or specifications. The Owner's Representative shall determine which is most stringent.
- G. Contract Documents Not in Compliance

1. Where it is not noted that the drawings and specifications do not comply with the minimum requirements of the codes, either notify the Owner's Representative in writing during the bidding period of the revisions required to meet code requirements. After entering into the contract, contractor will be held to complete all work necessary to meet Code requirements without additional expense to the Owner.
 2. Follow drawings and specifications where they are superior to code requirements.
- H. Permits
1. Contractor shall pay for and obtain all permits required by authorities and agencies having jurisdiction for the work of this Division.
 2. Post permits as required.
- I. Inspections and Tests
1. Arrange for all required inspections and tests.
 2. Pay all charges.
 3. Notify the Owner's Representative in writing 72 hours before tests.
 4. Submit one copy for Owner's record of permits. Licenses, inspection reports and test reports.

1.11 EQUIVALENTS AND SUBSTITUTIONS

- A. The applicable paragraphs for General Requirements, Division 01 apply herein.
- B. Basis for Design: The Manufacturers Name and product listed on the drawings, or listed first of several names in these specifications, is used as a basis for design to establish space requirements, a standard of quality and performance.
- C. Equivalents: Products of one or more other manufacturers names listed in these specifications following the words "or equal" may be selected, subject to paragraph below titled "Contractors Responsibility for Equivalent and Substitutions".
- D. Other Options
1. For products specified by naming only one manufacturer, refer to paragraph below under "Substitutions".
 2. For products specified only by performance characteristics or reference standards, select any manufacturer meeting the requirements.
- E. Substitutions: Requests for acceptance of a product of manufacturers name not listed in these specifications will be considered if any one of the following conditions is met:
1. The named product is not available because of strike or discontinuance of manufacturer, and the proposed product is equivalent to the named product.
 2. The proposed product is superior to the named product, in the opinion of the Owner's Representative.
 3. The proposed product is equivalent to the named product and its use will be to the advantage to the Owner, by the Owner receiving an equitable credit or cost savings. The Owner's Representative reserves the right to reject any substitution.

4. Submit proposed substitutions with bid along with alternate price, complete descriptive data and a comparison of the substitute Manufacturers product with specified product. Request for acceptance of a product of Manufacturers name not listed in these specifications, is subject to the paragraph titled "Contractors Responsibility Equivalents and Substitutions".
- F. Contractors Responsibility for Equivalents and Substitutions
1. Items submitted as a substitution to the basis of design or listed general equivalents shall be identified as such and shall include a written request for substitution indicating the following:
 - a. Contract Price adjustment.
 - b. Contract time adjustment.
 - c. Item by item breakdown of differences between basis of design and substituted item.
 - d. Operation, maintenance and energy cost difference.
 2. Products of manufacturer must match the features, construction, performance and size of those selected for design. Standard catalogued may require certain modifications to meet specified requirements.
 3. The responsibility for providing that specified requirements have been met remains with the manufacturer and contractor. Should the substituted item fail to perform in accordance with the specifications, replace same with the originally specified item without extra cost to the contract.
 4. When requesting review of an equivalent or substituted product, submit a comparison chart listing features, construction, performance and sizes of named product versus equivalent or substituted product.
 5. Submittals for review of an equivalent or substituted product will be reviewed for acceptability when all the above requirements are met. Contractor shall be responsible for all costs incurred by the architect and engineer for review of equivalency beyond initial review.
 6. Coordinate the installation of the product with all trades.
 7. Contractor shall be responsible for all changes in electric wiring, materials and all other additional costs of construction by all trades involved to accommodate the product to perform same as product used on the "Basis of Design." Coordination of General Equivalents and Substitutions: Where Contract Documents permit selection from general equivalents, or where substitutions are authorized, coordinate clearance and other interface requirements with Mechanical and Electrical and all other trades affected by the this work.
 8. Provide necessary additional items so that selected or substituted item operates equivalent to the Basis of Design and properly fits in the available space allocated for the Basis of Design.
 9. Contractor is responsible for assuring that piping, conduit, duct, flue and other service locations for general equivalents or substitutions do not cause access, service or operational difficulties any greater than would be encountered with the Basis of Design.
 10. Failure to comply with these requirements will result in immediate rejection of the request for substitution.

1.12 GENERAL SUBMITTAL REQUIREMENTS

- A. Refer to Division 01.
- B. Coordination and Sequencing
 - 1. Plumbing products requiring approval by the State of California Dept. of Industry, Labor and Human Relations must be approved or have pending approval at the time of shop drawing submission.
 - 2. Welding certificates and requirements.
 - 3. Steel Support Welding: Qualify processes and operators according to AWS D1.1, "Structural Welding Code--Steel."
 - 4. Steel Pipe Welding: Qualify processes and operators according to ASME Boiler and Pressure Vessel Code: Section IX, "Welding and Brazing Qualifications."
 - 5. Comply with provisions in ASME B31 Series, "Code for Pressure Piping."
 - 6. Certify that each welder has passed AWS qualification tests for welding processes involved and that certification is current.
 - 7. Coordinate submittals 3 weeks (minimum) prior to expected order date so that work will not be delayed by submittals.
 - 8. Do not submit product data, or allow its use on the project until compliance, with requirements of Contract Documents has been confirmed by contractor.
 - 9. Submittal is for information and record, unless otherwise indicated, and is not a change order request.
 - 10. Submitting contractor is responsible for routing reviewed submittals to all parties affected by the work of this contract.
 - 11. Make submittals for group of similar products or materials such as valves, fixtures, pumps, insulation, etc., or area or work complete and at one time, not in piecemeal fashion.
 - 12. Identify submittals with Architects project name and number, with item designation as indicated on drawings, and referenced to applicable paragraphs of the specifications. Submit in brochure form.
 - 13. Submittals of products needed at start or project for its installation, or those requiring a long lead time for assembly or manufacturing, should be submitted before the others.
- C. Preparations of Submittals
 - 1. Refer to Division 01 requirements.
 - 2. Provide permanent marking on each submittal to identify project, date, Contractor, Subcontractor, Supplier, submittal name and similar information to distinguish it from other submittals.
 - 3. Indicate any portions or work, which deviate from the Contract Documents.
 - a. Explain the reasons for the deviations.
 - b. Show how such deviations coordinate with interfacing portions of other work.
 - 4. Show contractors executed review and approval markings.
 - 5. Provide space for the Owners Representative "Action" marking.
 - 6. Submittals, which are received from sources other the contractors office, will be returned "Without Action".
 - 7. Submittals shall be presented in a neat and legible fashion and shall be returned "Without Action" if presented in any other fashion.

- D. Quantities: Unless otherwise indicated in Division 01, submit 6 copies.
1. Refer to Division 01 requirements.
 2. Multiple Systems Items: Where a required submittal relates to an operational item of equipment used in more than one system, increase the number of final copies as necessary to complete the Maintenance Manuals for each system.
 3. General Distribution:
 - a. Provide additional distribution of submittals (not included in foregoing copy submittal requirements) to Subcontractors, Suppliers, Fabricators, Installers, Governing Authorities and others as necessary for proper performance of the work.
 - b. Include such additional copies in transmittal to Owners Representative where required to receive "Action" marking before final distribution.
 - c. Show such distributions on transmittal forms.
- E. Response to Submittals: Where standard product data have been submitted, it is recognized:
1. That the submittal has determined that the products fulfill the specified requirements.
 2. That the submittal is for the Owners Representative information only, but will be returned with appropriate action where observed to be not in compliance with the requirements.
 3. If more than two submittals (either for shop drawings, as-built drawings, or test and balance reports) are made by the contractor due to the incompleteness, non compliance, errors, omissions, etc. the Owner reserves the right to charge the contractor for subsequent reviews by their consultants. Such extra fees shall be deducted from payments by the Owner to the contractor.

1.13 SPECIFIC CATEGORY SUBMITTAL REQUIREMENTS

- A. Manufacturer's Data
1. Where pre-printed data covers more than one distinct product, size, type, material, trim, accessory group or other variation, mark submitted copy with black ink to indicate which of the variations is to be provided.
 2. Delete or mark out significant portions of pre-printed data, which are not applicable.
 3. Where operating ranges are shown, mark data to show portion of range required for project application.
 4. For each product, include the following:
 - a. Sizes.
 - b. Dimensions.
 - c. Weights.
 - d. Speeds.
 - e. Capacities.
 - f. Fixture Color.
 - g. Cabinet Finish.
 - h. Piping and Electrical connection sizes and locations.
 - i. Statements of compliance with the required standards and regulations.
 - j. Performance data.

- k. Manufacturers specifications and installation instructions.
- B. Shop Drawings: Prepare Plumbing Shop Drawings, except diagrams, to accurate scale.
 - 1. Show clearance dimensions at critical locations.
 - 2. Show dimensions of spaces required for operation and maintenance.
 - 3. Show interfaces with other work including structural support.
- C. Test Reports
 - 1. Submit test reports, which have been signed and dated by the firm performing the test.
 - 2. Prepare test reports in the manner specified in the standard or regulation governing the test procedure (if any) as indicated.
- D. Required Equipment and Shop Drawing Submittals
 - 1. Provide a submittal schedule with bid.
 - 2. Provide equipment submittals for each item of equipment specified or scheduled in the Contract Documents.
 - 3. Submittal schedule shall show each item of equipment, applicable section of the specifications where it is described, applicable drawing number and schedule name where it is scheduled, date of contractor's proposed submittal to the Owner's Representative and schedule order date.
 - 4. Provide a plumbing shop drawing schedule for submission to the Owner's Representative with the submittal schedule. Refer to Paragraph 1.05 above.

1.14 CAPABILITY

- A. General: provide products, which are compatible with other products of the Plumbing work, and with other work, requiring interface with the Plumbing work.
- B. Power Characteristics: Where power requirements are not stated in Division 22 Sections, refer to Sections of Division 26 and the electrical drawings for the power characteristics of each power driven item of plumbing equipment. Coordinated available power with electrical contractor before ordering equipment. Plumbing contractor shall be responsible for ordering equipment to meet the available power characteristics. If there is a conflict between Division 22 documents and Division 26 documents, provide a written notification to the Owner's Representative for direction. Do not order equipment prior to determining the proper electrical service. No contract cost adjustment will be allowed for equipment ordered in conflict with the available power characteristics.

1.15 RECORD DRAWINGS

- A. Drawings
 - 1. Record of Project progress: purchase from the architect a complete set of reproducible contract drawings and maintain drawings available at the job site for inspection. Keep an accurate, legible and continuously updated record of installed locations and all project revisions other than revised drawings issued by

- the architect, including source and date of authorization. Utilize only contract drawing symbols for recording the work. Drawing notations to be sufficiently clear in the representation of the work, for utilization by a CADD operator (drafts person) who is not necessarily familiar with the installed work.
2. Record of installation: At the conclusion of the work, deliver 1 set of prints of the progress drawings to the Owner's Representative for review. Following the review, contractor shall have incorporated by a competent CADD operator all of the installed data represented on the project progress drawings.
 3. Include in Record Drawings the Following
 - a. Revisions, including sketches, bulletins, change orders, written addenda and directives, clarifications and responses generated by requests for information (RFI's), regardless of source of the revision.
 - b. Location and configuration of equipment with related housekeeping pads.
 - c. Location of fixtures, drains and appurtenances.
 - d. Physical routing of piping, underground, exposed, and above ceiling with locations of valves and accessories plainly marked and identified.
 - e. Location of piping below building and exterior, valves, manholes, appurtenances and stub outs dimensioned from buildings and permanent structures, both horizontally and vertically.
 - f. Location of wall and ceiling access panels.
- B. Acceptance: As a condition for acceptance of the work, deliver 2 sets of AutoCAD latest version CD's and one set of stamped and dated reproducible drawings to the Owner's Representative and obtain a receipt.

1.16 OPERATION AND MAINTENANCE DATA

- A. Refer to Division 01 Requirements.
- B. Submission
1. Submit 3 typed and bound copies of Operating and Maintenance (O&M) Manuals for each type of fixture and piece of equipment prior to scheduling systems demonstrations for the Owner's Representative, as specified in Division 01.
 2. Bind each Maintenance Manual in one or more vinyl covered, 3-ring binders, with pockets for folded drawings.
 3. Mark the spine of each binder with system identification and volume number.
- C. Required Contents
1. Manuals shall have index with tab dividers for each major equipment section to facilitate locating information on a specific piece of equipment.
 2. Identify data within each section with drawing code numbers as they appear on drawings and specifications. Include as a minimum the following data:
 - a. Alphabetical list of system components, with the name, address and 24-hour telephone number of the company responsible for servicing each item during the first year of operation. Include point of contact for company.
 - b. Operating instructions for complete system including:
 - 1) Emergency procedures for fire and failure of major equipment.
 - 2) Major start, operation and shut down procedures.

- c. Maintenance instructions for each piece of equipment including:
 - 1) Equipment lists.
 - 2) Proper lubricants and lubricating instructions for each piece of equipment.
 - 3) Necessary cleaning, replacement and/or adjustment schedule.
 - 4) Product data.
 - 5) Installation instructions.
 - 6) Parts list.
- d. Marked or changed prints locating concealed parts and variations from the original system design (as-built drawings).
- e. Valve schedule and associated piping schematics, see Section 22 05 53 – Identification for Plumbing Piping and Equipment.
- f. Copies of any extended equipment warranties which are greater than one year.

1.17 WARRANTIES

- A. The warranty period is one year after date of acceptance.
 - 1. During this period, provide labor and materials as required to repair or replace defects in the plumbing system at no additional cost to the Owner. Provide certificate with O&M manual submittal, which guarantees same day service response to Owner's call for all such warranty service.
 - 2. Provide certificate for such items of equipment, which have warranties in excess of one year. Insert copies in O&M Manuals.
 - 3. Provide extended manufacturers warranties to cover one full year from date of acceptance if standard warranty starts anytime time prior to that date.
 - 4. At time of bid, submit additional costs or extended warranties for principle equipment (e.g. domestic water pressure booster, vacuum pump, air compressor etc.).
- B. Refer to Division 01 for additional requirements.

1.18 SPARE PARTS, SPECIAL TOOLS

- A. Deliver spare parts to the Owner's Representative and obtain receipts at the time operating instructions are given to Owner's personnel.
- B. Include the following:
 - 1. V-belts: One complete set of each size.
 - 2. Fuses: Each type used for all equipment utilizing fuses. Quantity 10 percent, but not less than two.
 - 3. Pilot light lamps: each type used on the project. Quantity 10 percent, but not less than two.
 - 4. Special Tools: Furnish special tools required for assembly, adjustment, setting or maintenance of equipment if such tool is not readily available on the commercial tool market.
 - 5. Maintenance Paint: Furnish one can of touch up paint for each different factory finish, which is to be the final finished surface of the product.

6. Alternate Parts: Under the individual plumbing sections, there may be listed spare parts that need to be furnished under a bid alternate. Should the alternate be accepted, such spare parts shall be similarly delivered to the Owner.

1.19 SYSTEM ACCEPTANCE

- A. Acceptance shall be contingent upon completion of final review and correction of all deficiencies. Satisfactory completion of the operational tests, which shall demonstrate compliance with all performance criteria, and the requirements of the contract documents.
- B. Request a final review prior to system acceptance after completion of the following:
 1. Installation of all systems required by contract documents.
 2. Submission and acceptance service manuals.
 3. Identification.
 4. Cleaning.
 5. Satisfactory operation of all systems for a period of one week.

1.20 MANDATORY GOVERNING PROVISION

- A. Omissions of words or phrases, such as "the contractor shall", in conformity with", "shall be", "as noted on the drawings", "according to the drawings", "an", "the", and "all" are intentional.

1.21 OWNER FURNISHED EQUIPMENT

- A. All equipment called out in the specifications or shown on the drawings as "Owner Furnished Equipment" shall be installed and connected under this contract. Provide rough-ins for all future connections indicated unless otherwise specifically indicated on drawings.

1.22 TEMPORARY FACILITIES

- A. Light, heat, power, etc.
 1. Contractor shall be responsible for providing temporary electricity, heat and other facilities as specified in Division 01.
 2. Contractor shall be responsible for maintaining the equipment in an as new condition. Equipment will not be turned over to the Owner until it is brought up to as new condition.

1.23 SAFETY PROVISIONS

- A. Equipment Nameplates: Provide power oriented plumbing equipment with a permanent nameplate attached by the manufacturer, indicating:
 1. The manufacturer.

2. Product name.
 3. Model number.
 4. Serial number.
 5. Speed.
 6. Capacity.
 7. Power characteristics.
 8. Labels of testing, or inspecting agencies.
 9. Other similar data.
- B. Where manufacturer affixed nameplate is not available, contractor shall fabricate and attach nameplate.
- C. Guards
1. Unless equivalent guards are provided integral with the equipment, enclose each belt drive (including sheaves) on both sides in a galvanized, one inch, mesh screen of No. 18 gage steel wire or expanded metal, fastened to an approved, structure steel frame, securely fastened to the equipment or floor.
 2. Provide tachometer holes at shaft centers. Unless equivalent guards are provided integral with the equipment, install a solid guard of No. 20 gage galvanized steel over the coupling of each item of direct driven equipment.
 3. Sides are not required on these guards except to ensure rigidity.

1.24 LEAD FREE PRODUCTS FOR INSTALLATION

- A. On January 1, 2010 Assembly Bill AB-1953 became law which calls for the installation of lead free products in plumbing systems.
- B. The contractor shall install products that comply with the requirements as described in State Assembly Bill AB-1953.
- C. Local Authorities: The contractor shall investigate the local Authorities requirements and include in project submittals.
- D. Submit all lead free products to be installed to the engineer for review.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. In other Part 2 articles where subparagraph titles below introduce lists, the following requirements apply for product selection:
1. Manufacturer's equipment used as "Basis of Design" for this Project is name indicated in Fixture and Equipment Schedule or specified herein for particular type of equipment or application. If no manufacturer is listed, "Basis of Design" is industry standard indicated.

2. Fixture descriptions establish fixture type, quality, materials, features and size. Products of manufacturers determined to be equal by the Architect/Engineer will be accepted:
3. Provide all plumbing fixtures complete with all necessary trim and accessories to insure the specified complete installation and operation of each fixture. Include trim and accessories, not to be limited to, rigid brass, supply pipes, stops, drains, strainers, tailpieces, P-traps, escutcheon plates and bolt caps.

2.02 PIPE, TUBE, AND FITTINGS

- A. Refer to individual Division 22 piping Sections for pipe, tube, and fitting materials and joining methods.
- B. Pipe Threads: ASME B1.20.1 for factory-threaded pipe and pipe fittings.

2.03 JOINING MATERIALS

- A. Refer to individual Division 22 piping Sections for special joining materials not listed below.
- B. Pipe-Flange Gasket Materials: Suitable for chemical and thermal conditions of piping system contents.
 1. ASME B16.21, nonmetallic, flat, asbestos-free, 1/8-inch maximum thickness unless thickness or specific material is indicated.
 - a. Full-Face Type: For flat-face, Class 125, cast-iron and cast-bronze flanges.
 - b. Narrow-Face Type: For raised-face, Class 250, cast-iron and steel flanges.
 2. AWWA C110, rubber, flat face, 1/8-inch thick, unless otherwise indicated; and full-face or ring type, unless otherwise indicated.
- C. Flange Bolts and Nuts: ASME B18.2.1, carbon steel, unless otherwise indicated.
- D. Plastic, Pipe-Flange Gasket, Bolts, and Nuts: Type and material recommended by piping system manufacturer, unless otherwise indicated.
- E. Solder Filler Metals: ASTM B 32, lead-free alloys. Include water-flushable flux according to ASTM B 813.
- F. Brazing Filler Metals: AWS A5.8, BCuP Series, copper-phosphorus alloys for general-duty brazing, unless otherwise indicated; and AWS A5.8, BAg1, silver alloy for refrigerant piping, unless otherwise indicated.
- G. Welding Filler Metals: Comply with AWS D10.12 for welding materials appropriate for wall thickness and chemical analysis of steel pipe being welded.
- H. Solvent Cements for Joining Plastic Piping
 1. ABS Piping: ASTM D 2235.
 2. CPVC Piping: ASTM F 493.
 3. PVC Piping: ASTM D 2564. Include primer according to ASTM F 656.

- 4. PVC to ABS Piping Transition: ASTM D 3138.
- I. Fiberglass Pipe Adhesive: As furnished or recommended by pipe manufacturer.

2.04 TRANSITION FITTINGS

- A. AWWA Transition Couplings: Same size as, and with pressure rating at least equal to and with ends compatible with, piping to be joined.
 - 1. Manufacturers
 - a. Cascade Waterworks Mfg. Co.
 - b. Dresser Industries, Inc.; DMD Div.
 - c. Ford Meter Box Company, Incorporated (The); Pipe Products Div.
 - d. JCM Industries.
 - e. Smith-Blair, Inc.
 - f. Viking Johnson.
 - 2. Underground Piping NPS 1-1/2 and Smaller: Manufactured fitting or coupling.
 - 3. Underground Piping NPS 2 and Larger: AWWA C219, metal sleeve-type coupling.
 - 4. Aboveground Pressure Piping: Pipe fitting.
- B. Plastic-to-Metal Transition Fittings: CPVC one-piece fitting with manufacturer's Schedule 80 equivalent dimensions; one end with threaded brass insert, and one solvent-cement-joint end.
 - 1. Manufacturers
 - a. Eslon Thermoplastics.
- C. Plastic-to-Metal Transition Adaptors: One-piece fitting with manufacturer's SDR 11 equivalent dimensions; one end with threaded brass insert, and one solvent-cement-joint end.
 - 1. Manufacturers
 - a. Thompson Plastics, Inc.
- D. Plastic-to-Metal Transition Unions: MSS SP-107, CPVC four-part union. Include brass end, solvent-cement-joint end, rubber O-ring, and union nut.
 - 1. Manufacturers
 - a. NIBCO INC.
 - b. NIBCO, Inc.; Chemtrol Div.
- E. Flexible Transition Couplings for Underground Nonpressure Drainage Piping: ASTM C 1173 with elastomeric sleeve, ends same size as piping to be joined, and corrosion-resistant metal band on each end.
 - 1. Manufacturers
 - a. Cascade Waterworks Mfg. Co.
 - b. Fernco, Inc.
 - c. Mission Rubber Company.
 - d. Plastic Oddities, Inc.

2.05 DIELECTRIC FITTINGS

- A. Description: Combination fitting of copper alloy and ferrous materials with threaded, solder-joint, plain, or weld-neck end connections that match piping system materials.
- B. Insulating Material: Suitable for system fluid, pressure, and temperature.
- C. Dielectric Unions: Factory-fabricated, union assembly, for 250 psig minimum working pressure at 180 degrees F.
 - 1. Manufacturers
 - a. Capitol Manufacturing Co.
 - b. Central Plastics Company.
 - c. Eclipse, Inc.
 - d. Epco Sales, Inc.
 - e. Hart Industries, International, Inc.
 - f. Watts Industries, Inc.; Water Products Div.
 - g. Zurn Industries, Inc.; Wilkins Div.
- D. Dielectric Flanges: Factory-fabricated, companion-flange assembly, for 150 or 300 psig minimum working pressure as required to suit system pressures.
 - 1. Manufacturers
 - a. Capitol Manufacturing Co.
 - b. Central Plastics Company.
 - c. Epco Sales, Inc.
 - d. Watts Industries, Inc.; Water Products Div.
- E. Dielectric-Flange Kits: Companion-flange assembly for field assembly. Include flanges, full-face- or ring-type neoprene or phenolic gasket, phenolic or polyethylene bolt sleeves, phenolic washers, and steel backing washers.
 - 1. Manufacturers
 - a. Advance Products & Systems, Inc.
 - b. Calpico, Inc.
 - c. Central Plastics Company.
 - d. Pipeline Seal and Insulator, Inc.
 - 2. Separate companion flanges and steel bolts and nuts shall have 150 or 300 psig minimum working pressure where required to suit system pressures.
- F. Dielectric Couplings: Galvanized-steel coupling with inert and noncorrosive, thermoplastic lining; threaded ends; and 300 psig minimum working pressure at 225 degrees F.
 - 1. Manufacturers
 - a. Calpico, Inc.
 - b. Lochinvar Corp.
- G. Dielectric Nipples: Electroplated steel nipple with inert and noncorrosive, thermoplastic lining; plain, threaded, or grooved ends; and 300 psig minimum working pressure at 225 degrees F.
 - 1. Manufacturers
 - a. Perfection Corp.

- b. Precision Plumbing Products, Inc.
- c. Sioux Chief Manufacturing Co., Inc.
- d. Victaulic Co. of America.

2.06 MECHANICAL SLEEVE SEALS

- A. Description: Modular sealing element unit, designed for field assembly, to fill annular space between pipe and sleeve.
 - 1. Manufacturers
 - a. Advance Products & Systems, Inc.
 - b. Calpico, Inc.
 - c. Metraflex Co.
 - d. Pipeline Seal and Insulator, Inc.
 - 2. Sealing Elements: EPDM interlocking links shaped to fit surface of pipe. Include type and number required for pipe material and size of pipe.
 - 3. Pressure Plates: Carbon steel. Include two for each sealing element.
 - 4. Connecting Bolts and Nuts: Carbon steel with corrosion-resistant coating of length required to secure pressure plates to sealing elements. Include one for each sealing element.

2.07 SLEEVES

- A. Galvanized-Steel Sheet: 0.0239-inch minimum thickness; round tube closed with welded longitudinal joint.
- B. Steel Pipe: ASTM A 53, Type E, Grade B, Schedule 40, galvanized, plain ends.
- C. Cast Iron: Cast or fabricated "wall pipe" equivalent to ductile-iron pressure pipe, with plain ends and integral water stop, unless otherwise indicated.
- D. Stack Sleeve Fittings: Manufactured, cast-iron sleeve with integral clamping flange. Include clamping ring and bolts and nuts for membrane flashing.
 - 1. Under deck Clamp: Clamping ring with set screws.
- E. Molded PVC: Permanent, with nailing flange for attaching to wooden forms.

2.08 ESCUTCHEONS

- A. Description: Manufactured wall and ceiling escutcheons and floor plates, with an ID to closely fit around pipe, tube, and insulation of insulated piping and an OD that completely covers opening.
- B. One-Piece, Deep-Pattern Type: Deep-drawn, box-shaped brass with polished chrome-plated finish.
- C. One-Piece, Cast-Brass Type: With set screw.
 - 1. Finish: Polished chrome-plated.

- D. Split-Casting, Cast-Brass Type: With concealed hinge and set screw.
 - 1. Finish: Polished chrome-plated.
- E. One-Piece, Stamped-Steel Type: With set screw and chrome-plated finish.
- F. Split-Plate, Stamped-Steel Type: With concealed hinge, set screw, and chrome-plated finish.
- G. One-Piece, Floor-Plate Type: Cast-iron floor plate.
- H. Split-Casting, Floor-Plate Type: Cast brass with concealed hinge and set screw.

2.09 GROUT

- A. Description: ASTM C 1107, Grade B, non shrink and nonmetallic, dry hydraulic-cement grout.
 - 1. Characteristics: Post-hardening, volume-adjusting, non-staining, noncorrosive, nongaseous, and recommended for interior and exterior applications.
 - 2. Design Mix: 5000 psi, 28-day compressive strength.
 - 3. Packaging: Premixed and factory packaged.

2.10 WALL PENETRATION SYSTEMS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. SIGMA
 - 2. ProSet
 - 3. Or Approved Equal
- B. Description: Wall-sleeve assembly, consisting of housing and gland, gaskets, and pipe sleeve.
 - 1. Carrier-Pipe Deflection: Up to 5 percent without leakage.
 - 2. Housing: Ductile-iron casting with hub, waterstop, anchor ring, and locking devices. Include gland, bolts, and nuts.
 - 3. Housing-to-Sleeve Gasket: EPDM rubber.
 - 4. Housing-to-Carrier-Pipe Gasket: AWWA C111, EPDM rubber.
 - 5. Pipe Sleeve: AWWA C151, ductile-iron pipe or ASTM A 53/A 53M, Schedule 40, zinc-coated steel pipe.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine roughing-in work of potable water and waste piping systems to verify actual locations of piping connections prior to installing fixtures.

- B. Examine floors, substrates, and conditions under which fixture work to be accomplished.
- C. Correct any incorrect locations of piping and other unsatisfactory conditions for installation of plumbing fixtures.
- D. Do not proceed with Work until unsatisfactory conditions corrected.
- E. Do not use new fixtures during construction unless approved in writing by the Owner.

3.02 INSTALLATION GENERAL REQUIREMENTS

- A. Furnish, apply, install, connect, erect, clean, and condition manufactured materials and equipment as recommended in manufacturer's printed directions (maintained on job site during installation).
- B. Provide all attachment devices and materials necessary to secure materials together or to other materials.
- C. Make allowances for ample and normal expansion and contraction for all building components and piping systems that are not subject to such.
- D. Install materials only when conditions of temperature, moisture, humidity and conditions of adjacent building components are conducive to achieving the best installation results.
- E. Erect, install and secure components in a structurally sound and appropriate manner.
- F. Where necessary, temporarily brace, shore, or otherwise support members until final connections are installed.
- G. Leave all temporary bracing, shoring, or other structural supports in place as long as practical for safety and to maintain proper alignment.
- H. Handle materials in a manner to prevent scratching, abrading, distortion, chipping, breaking or other disfigurement.
- I. Conduct work in a manner to avoid injury or damage to previously placed work.
- J. Any work so impaired or damaged shall be replaced at no expense to the Owner.
- K. Fabricate and install materials true to line, plumb and level.
- L. Leave finished surfaces smooth and flat, free from wrinkles, warps, scratches, dents and other imperfections.
- M. Furnish materials in longest practical lengths and largest practical sizes to avoid all unnecessary jointing.

- N. Make all joints secure, tightly fitted, and as inconspicuous as possible by the best, accepted practice in joinery and fabrication.
- O. Consult the Owner's Representative for mounting or position of any unit not specifically indicated or located on drawings or specified in specifications.
- P. Job mixed multi component materials used in the work shall be mixed in such regulated and properly sized batches that materials can be used before it begins to set.
- Q. Mixing of a partially set batch with another batch of fresh materials will not be accepted and entire batch shall be discarded and removed from the site.
- R. Clean all mixing tools and appliances that can be contaminated prior to mixing of fresh materials.
- S. In addition to the above, refer to each section of the specifications for additional installation requirements for the proper completion of the work.

3.03 INSTALLATION OF PLUMBING FIXTURES

- A. General: Install plumbing fixtures of types indicated where shown and at indicated heights, in accordance with fixture manufacturer's written instructions, roughing-in drawings, and recognized industry practices. Ensure plumbing fixtures comply with requirements and serve intended purposes. Comply with applicable requirements of Plumbing Code pertaining to installation of plumbing fixtures.
- B. Installation
 - 1. Set fixtures level and plumb. Secure in place to counters, floors and walls providing solid bearing and secure mounting. Bolt fixture carriers to floor and wall. Secure rough-in fixture piping behind or within wall to prevent movement of exposed piping.
 - 2. Install each fixture with trap easily removable for servicing and cleaning. Install fixture stops in readily accessible location for servicing.
 - 3. Install barrier free fixtures in compliance with ILHR 52 and Federal ADA Accessibility Guidelines. Install barrier free lavatory traps parallel and adjacent to wall and supplies and stops elevated to 27 inches above floor to avoid contact by wheelchair users.
 - 4. Provide unions at water connections to drinking fountains and electric water coolers.
 - 5. Cover pipe penetrations with escutcheons. Exposed traps, piping and escutcheons to be chrome plated brass. Cover exposed water closet bolts with bolt covers.
 - 6. Seal openings between walls, floors and fixtures with mildew-resistant silicone sealant same color as fixture.
 - 7. Protect fixtures during construction. At completion clean plumbing fixtures and trim using manufacturer's recommended cleaning methods and materials.
 - 8. Foodservice Equipment: Provide rough-in piping, traps, tailpieces, indirect waste lines and final connections for foodservice equipment. Install faucets, spray units,

drains, lever drains, vacuum breakers, solenoid valves, check valves, flow control valves, water inlet fittings, filters, strainers, pressure reducing valves and gas valves furnished by foodservice equipment contractor. Provide condensate drain piping from cooler and freezer evaporators.

9. Existing Fixtures: Where existing fixtures and fittings are indicated to be reused or relocated, this contractor is responsible for documenting condition prior to construction and for damages incurred during construction.
10. Laboratory Sinks and Equipment: Rough-in installation, final connections by Laboratory equipment supplier.

3.04 PLUMBING DEMOLITION

- A. Refer to Division 01 Section – Cutting and Patching and Section 02 41 19 – Selective Structure Demolition for general demolition requirements and procedures.
- B. Disconnect, demolish, and remove plumbing systems, equipment, and components indicated to be removed.
 1. Piping to Be Removed: Remove portion of piping indicated to be removed and cap or plug remaining piping with same or compatible piping material.
 2. Piping to Be Abandoned in Place: Drain piping and cap or plug piping with same or compatible piping material.
 3. Equipment to Be Removed: Disconnect and cap services and remove equipment.
 4. Equipment to Be Removed and Reinstalled: Disconnect and cap services and remove, clean, and store equipment; when appropriate, reinstall, reconnect, and make equipment operational.
 5. Equipment to Be Removed and Salvaged: Disconnect and cap services and remove equipment and deliver to Owner.
- C. If pipe, insulation, or equipment to remain is damaged in appearance or is unserviceable, remove damaged or unserviceable portions and replace with new products of equal capacity and quality.

3.05 PIPING SYSTEMS - COMMON REQUIREMENTS

- A. Install piping according to the following requirements and Division 22 Sections specifying piping systems.
- B. Drawing plans, schematics, and diagrams indicate general location and arrangement of piping systems. Indicated locations and arrangements were used to size pipe and calculate friction loss, expansion, pump sizing, and other design considerations. Install piping as indicated unless deviations to layout are approved on Coordination Drawings.
- C. Install piping in concealed locations, unless otherwise indicated and except in equipment rooms and service areas.

- D. Install piping indicated to be exposed and piping in equipment rooms and service areas at right angles or parallel to building walls. Diagonal runs are prohibited unless specifically indicated otherwise.
- E. Install piping above accessible ceilings to allow sufficient space for ceiling panel removal.
- F. Install piping to permit valve servicing.
- G. Install piping at indicated slopes.
- H. Install piping free of sags and bends.
- I. Install fittings for changes in direction and branch connections.
- J. Install piping to allow application of insulation.
- K. Select system components with pressure rating equal to or greater than system operating pressure.
- L. Install escutcheons for penetrations of walls, ceilings, and floors according to the following:
 - 1. New Piping
 - a. Piping with Fitting or Sleeve Protruding from Wall: One-piece, deep-pattern type with polished chrome-plated finish.
 - b. Insulated Piping: One-piece, stamped-steel type with spring clips.
 - c. Bare Piping at Ceilings, Wall and Floor Penetrations in Finished Spaces and equipment and service areas: One-piece, cast-brass type with set screw and polished chrome-plated finish.
 - 2. Existing Piping: Use the following:
 - a. Insulated Piping: Split-plate, stamped-steel type with concealed hinge and spring clips.
 - b. Bare Piping at Ceiling and floor Penetrations in Finished Spaces: Split-plate, stamped-steel type with concealed hinge and set screw with chrome plated finish.
 - c. Bare Piping in Equipment Rooms and Service Spaces: Split-plate, stamped-steel type with set screw or spring clips with chrome plated finish.
- M. Sleeves are not required for core-drilled holes.
- N. Permanent sleeves are not required for holes formed by removable PE sleeves.
- O. Install sleeves for pipes passing through concrete and masonry walls and concrete floor and roof slabs.
- P. Install sleeves for pipes passing through concrete and masonry walls, gypsum-board partitions, and concrete floor and roof slabs.
 - 1. Cut sleeves to length for mounting flush with both surfaces.
 - a. Exception: Extend sleeves installed in floors of mechanical equipment areas or other wet areas 2 inches above finished floor level. Extend cast-

- iron sleeve fittings below floor slab as required to secure clamping ring if ring is specified.
2. Install sleeves in new walls and slabs as new walls and slabs are constructed.
 3. Install sleeves that are large enough to provide 1/4-inch annular clear space between sleeve and pipe or pipe insulation. Use the following sleeve materials:
 - a. Steel Pipe Sleeves: For pipes smaller than NPS 6.
 - b. Steel Sheet Sleeves: For pipes NPS 6 and larger, penetrating gypsum-board partitions.
 - c. Stack Sleeve Fittings: For pipes penetrating floors with membrane waterproofing. Secure flashing between clamping flanges. Install section of cast-iron soil pipe to extend sleeve to 2 inches above finished floor level. Refer to Section 07 62 00 – Sheet Metal Flashing and Trim for flashing.
 - 1) Seal space outside of sleeve fittings with grout.
 4. Except for underground wall penetrations, seal annular space between sleeve and pipe or pipe insulation, using joint sealants appropriate for size, depth, and location of joint. Refer to Section 07 92 00 – Joint Sealants for materials and installation.
- Q. Aboveground, Exterior-Wall Pipe Penetrations: Seal penetrations using sleeves and mechanical sleeve seals. Select sleeve size to allow for 1-inch annular clear space between pipe and sleeve for installing mechanical sleeve seals.
1. Install steel pipe for sleeves smaller than 6 inches in diameter.
 2. Install cast-iron "wall pipes" for sleeves 6 inches and larger in diameter.
 3. Mechanical Sleeve Seal Installation: Select type and number of sealing elements required for pipe material and size. Position pipe in center of sleeve. Assemble mechanical sleeve seals and install in annular space between pipe and sleeve. Tighten bolts against pressure plates that cause sealing elements to expand and make watertight seal.
- R. Underground, Exterior-Wall Pipe Penetrations
1. Install cast-iron "wall pipes" for sleeves. Seal pipe penetrations using mechanical sleeve seals. Select sleeve size to allow for 1-inch annular clear space between pipe and sleeve for installing mechanical sleeve seals.
 2. Mechanical Sleeve Seal Installation: Select type and number of sealing elements required for pipe material and size. Position pipe in center of sleeve. Assemble mechanical sleeve seals and install in annular space between pipe and sleeve. Tighten bolts against pressure plates that cause sealing elements to expand and make watertight seal.
- S. Fire-Barrier Penetrations: Maintain indicated fire rating of walls, partitions, ceilings, and floors at pipe penetrations. Seal pipe penetrations with firestop materials. Refer to Section 07 84 13 – Penetration Firestopping for materials.
- T. Verify final equipment locations for roughing-in.
- U. Refer to equipment specifications in other Sections of these Specifications for roughing-in requirements.

3.06 PIPING JOINT CONSTRUCTION

- A. Join pipe and fittings according to the following requirements and Division 22 Sections specifying piping systems.
- B. Ream ends of pipes and tubes and remove burrs. Bevel plain ends of steel pipe.
- C. Remove scale, slag, dirt, and debris from inside and outside of pipe and fittings before assembly.
- D. Soldered Joints: Apply ASTM B 813, water-flushable flux, unless otherwise indicated, to tube end. Construct joints according to ASTM B 828 or CDA's "Copper Tube Handbook," using lead-free solder alloy complying with ASTM B 32.
- E. Brazed Joints: Construct joints according to AWS's "Brazing Handbook," "Pipe and Tube" Chapter, using copper-phosphorus brazing filler metal complying with AWS A5.8.
- F. Threaded Joints: Thread pipe with tapered pipe threads according to ASME B1.20.1. Cut threads full and clean using sharp dies. Ream threaded pipe ends to remove burrs and restore full ID. Join pipe fittings and valves as follows:
 - 1. Apply appropriate tape or thread compound to external pipe threads unless dry seal threading is specified.
 - 2. Damaged Threads: Do not use pipe or pipe fittings with threads that are corroded or damaged. Do not use pipe sections that have cracked or open welds.
- G. Welded Joints: Construct joints according to AWS D10.12, using qualified processes and welding operators according to Part 1 "Quality Assurance" Article.
- H. Flanged Joints: Select appropriate gasket material, size, type, and thickness for service application. Install gasket concentrically positioned. Use suitable lubricants on bolt threads.
- I. Plastic Piping Solvent-Cement Joints: Clean and dry joining surfaces. Join pipe and fittings according to the following:
 - 1. Comply with ASTM F 402 for safe-handling practice of cleaners, primers, and solvent cements.
 - 2. ABS Piping: Join according to ASTM D 2235 and ASTM D 2661 Appendixes.
 - 3. CPVC Piping: Join according to ASTM D 2846/D 2846M Appendix.
 - 4. PVC Pressure Piping: Join schedule number ASTM D 1785, PVC pipe and PVC socket fittings according to ASTM D 2672. Join other-than-schedule-number PVC pipe and socket fittings according to ASTM D 2855.
 - 5. PVC Nonpressure Piping: Join according to ASTM D 2855.
 - 6. PVC to ABS Nonpressure Transition Fittings: Join according to ASTM D 3138 Appendix.
- J. Plastic Pressure Piping Gasketed Joints: Join according to ASTM D 3139.
- K. PE Piping Heat-Fusion Joints: Clean and dry joining surfaces by wiping with clean cloth or paper towels. Join according to ASTM D 2657.

1. Plain-End Pipe and Fittings: Use butt fusion.
2. Plain-End Pipe and Socket Fittings: Use socket fusion

3.07 PIPING CONNECTIONS

- A. Make connections according to the following, unless otherwise indicated:
 1. Install unions, in piping NPS 2 and smaller, adjacent to each valve and at final connection to each piece of equipment.
 2. Install flanges, in piping NPS 2-1/2 and larger, adjacent to flanged valves and at final connection to each piece of equipment.
 3. Wet Piping Systems: Install dielectric coupling and nipple fittings to connect piping materials of dissimilar metals.

3.08 TRANSITION FITTING INSTALLATION

- A. Install transition couplings at joints of dissimilar piping.
- B. Transition Fittings in Underground Domestic Water Piping
 1. NPS 1-1/2 and Smaller: Fitting-type coupling.
 2. NPS 2 and Larger: Sleeve-type coupling.
- C. Transition Fittings in Aboveground Domestic Water Piping NPS 2 and Smaller: Plastic-to-metal transition fittings or unions.

3.09 DIELECTRIC FITTING INSTALLATION

- A. Install dielectric fittings in piping at connections of dissimilar metal piping and tubing.
- B. Dielectric Fittings for NPS 2 and Smaller: Use dielectric couplings, nipples and unions.
- C. Dielectric Fittings for NPS 2-1/2 to NPS 4: Use dielectric flanges.

3.10 WALL PENETRATION SYSTEM INSTALLATION

- A. Install wall penetration systems in new, exterior concrete walls.
- B. Assemble wall penetration system components with sleeve pipe. Install so that end of sleeve pipe and face of housing are flush with wall. Adjust locking devices to secure sleeve pipe in housing.

3.11 EQUIPMENT INSTALLATION - COMMON REQUIREMENTS

- A. Install equipment to allow maximum possible headroom unless specific mounting heights are not indicated.

- B. Install equipment level and plumb, parallel and perpendicular to other building systems and components in exposed interior spaces, unless otherwise indicated.
- C. Install plumbing equipment to facilitate service, maintenance, and repair or replacement of components. Connect equipment for ease of disconnecting, with minimum interference to other installations. Extend grease fittings to accessible locations.
- D. Install equipment to allow right of way for piping installed at required slope.

3.12 PAINING

- A. Painting of plumbing systems, equipment, and components is specified in Sections 09 91 23 – Interior Painting and 09 91 13 – Exterior Painting.
- B. Damage and Touchup: Repair marred and damaged factory-painted finishes with materials and procedures to match original factory finish.

3.13 CONCRETE BASES

- A. Concrete Bases: Anchor equipment to concrete base according to equipment manufacturer's written instructions and according to seismic codes at Project.
 - 1. Construct concrete bases of dimensions indicated, but not less than 4 inches larger in both directions than supported unit.
 - 2. Install dowel rods to connect concrete base to concrete floor. Unless otherwise indicated, install dowel rods on 18-inch centers around the full perimeter of the base.
 - 3. Install epoxy-coated anchor bolts for supported equipment that extend through concrete base, and anchor into structural concrete floor.
 - 4. Place and secure anchorage devices. Use supported equipment manufacturer's setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
 - 5. Install anchor bolts to elevations required for proper attachment to supported equipment.
 - 6. Install anchor bolts according to anchor-bolt manufacturer's written instructions.
 - 7. Use 3000 psi, 28-day compressive-strength concrete and reinforcement as specified in Section 03 30 00 – Cast-in-Place Concrete.

3.14 FIELD QUALITY CONTROL

- A. Upon completion of installation and after units are water pressurized, test fixtures to demonstrate capability and compliance with requirements. When possible, correct malfunctioning units at size, then retest to demonstrate compliance, or remove and replace with new units and proceed with retesting.

- B. Inspect each installed unit for damage to finish. If feasible, restore and match finish to original at site, or remove fixture and replace with new unit. Feasibility and match to be judged by the Engineer. Remove cracked or dented units and replace with new units.

3.15 ADJUSTING

- A. Test fixtures to demonstrate proper operation. Replace malfunctioning units or components. Adjust self-closing lavatory faucets to 15 second cycle. Adjust shower valve temperature limit stops to 110 degree F maximum outlet temperature.
- B. Adjust water pressure at drinking fountains, faucets, shower valves, and flush valves to provide proper flow stream and specified gpm without splashing, noise or overflow.
- C. Adjust or replace washers to eliminate leaks at faucets or stops.

3.16 CLEANING

- A. Clean plumbing fixtures, trim, and strainers of dirt debris upon completion of installation.

3.17 EXTRA STOCK

- A. Furnish special wrenches and other devices necessary for servicing plumbing fixtures and trim to Owner with receipt. Furnish 1 device for every 10 units.

3.18 ERECTION OF METAL SUPPORTS AND ANCHORAGES

- A. Refer to Section 05 50 00 – Metal Fabrications for structural steel.
- B. Cut, fit, and place miscellaneous metal supports accurately in location, alignment, and elevation to support and anchor plumbing materials and equipment.
- C. Field Welding: Comply with AWS D1.1.

3.19 ERECTION OF WOOD SUPPORTS AND ANCHORAGES

- A. Cut, fit, and place wood grounds, nailers, blocking, and anchorages to support, and anchor plumbing materials and equipment.
- B. Select fastener sizes that will not penetrate members if opposite side will be exposed to view or will receive finish materials. Tighten connections between members. Install fasteners without splitting wood members.
- C. Attach to substrates as required to support applied loads.

3.20 GROUTING

- A. Mix and install grout for plumbing equipment base bearing surfaces, pump and other equipment base plates, and anchors.
- B. Clean surfaces that will come into contact with grout.
- C. Provide forms as required for placement of grout.
- D. Avoid air entrapment during placement of grout.
- E. Place grout, completely filling equipment bases.
- F. Place grout on concrete bases and provide smooth bearing surface for equipment.
- G. Place grout around anchors.
- H. Cure placed grout.

END OF SECTION 22 05 00

SECTION 22 13 19

SANITARY WASTE PIPING SPECIALTIES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- B. Refer to Section 22 05 00 – Common Work Results for Plumbing.

1.02 SUMMARY

- A. This Section includes the following sanitary drainage piping specialties:
 - 1. Floor drains.
 - 2. Floor Sinks.
 - 3. Clean Outs.
 - 4. Through-penetration firestop assemblies.
 - 5. Miscellaneous sanitary drainage piping specialties.
 - 6. Flashing materials.
- B. Related Sections include the following:
 - 1. Section 22 14 23 – Storm Drainage Piping Specialties for trench drains for storm water, channel drainage systems for storm water, roof drains, and catch basins.

1.03 DEFINITIONS

- A. ABS: Acrylonitrile-butadiene-styrene plastic.
- B. FRP: Fiberglass-reinforced plastic.
- C. HDPE: High-density polyethylene plastic.
- D. PE: Polyethylene plastic.
- E. PP: Polypropylene plastic.
- F. PVC: Polyvinyl chloride plastic.

1.04 SUBMITTALS

- A. Product Data: For each type of product indicated. Include rated capacities, operating characteristics, and accessories for the following:
 - 1. Backwater valves.
 - 2. Cleanouts.
 - 3. Floor drains.
 - 4. Trench drains.
 - 5. Air-admittance valves.
 - 6. Roof flashing assemblies.
 - 7. Through-penetration firestop assemblies.
 - 8. Miscellaneous sanitary drainage piping specialties.
 - 9. Flashing materials.
- B. Shop Drawings: Show fabrication and installation details for frost-resistant vent terminals.
 - 1. Wiring Diagrams: Power, signal, and control wiring.
- C. Field quality-control test reports.
- D. Operation and Maintenance Data: For drainage piping specialties to include in emergency, operation, and maintenance manuals.

1.05 QUALITY ASSURANCE

- A. Drainage piping specialties shall bear label, stamp, or other markings of specified testing agency.
- B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- C. Comply with NSF 14, "Plastics Piping Components and Related Materials," for plastic sanitary piping specialty components.

1.06 COORDINATION

- A. Coordinate size and location of concrete bases. Cast anchor-bolt inserts into bases. Concrete, reinforcement, and formwork requirements are specified in Division 03.

- B. Coordinate size and location of roof penetrations.

1.07 EXTRA MATERIALS

- A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

PART 2 - PRODUCTS

2.01 FLOOR DRAINS

- A. Manufacturers: Subject to compliance with requirements, provide scheduled product or equal product by one of the following:
- B. Provide scheduled product or equal product by one of the following:
 - 1. Zurn Industries
 - 2. Josam Company
 - 3. MIFAB, Inc.
 - 4. Commercial Enameling Co.
 - 5. Smith, Jay R. Mfg. Co.
 - 6. Tyler Pipe; Wade Div.
 - 7. Watts Drainage Products Inc.

2.02 FLOOR SINKS

- A. Manufacturers: Subject to compliance with requirements, provide scheduled product or equal product by one of the following:
- B. Provide scheduled product or equal product by one of the following:
 - 1. Commercial Enameling Co.
 - 2. Josam Company
 - 3. MIFAB, Inc.
 - 4. Smith, Jay R. Mfg. Co.
 - 5. Tyler Pipe; Wade Div.
 - 6. Zurn Industries

2.03 CLEANOUTS

- A. Manufacturers: Subject to compliance with requirements, provide Zurn Plumbing Products or equal product by one of the following:
 - 1. Josam Company
 - 2. MIFAB, Inc.
 - 3. Smith, Jay R. Mfg. Co.
 - 4. Tyler Pipe; Wade Div.
 - 5. Watts Drainage Products Inc.
- B. Floor Cleanout:
 - 1. Make and Model: Zurn industries Model Z-1400-NH
 - 2. Description: Dura coated Cast Iron body, adjustable top, no hub connection, round top, brass tapered threaded plug.
 - 3. Pipe size connection as indicated on floor plans.
- C. Wall Cleanout:
 - 1. Make and Model: Zurn industries Model Z-1441-NH
 - 2. Description: Dura coated Cast Iron body, adjustable top, no hub connection, smooth stainless steel cover plate with securing screw and brass tapered threaded plug.
 - 3. Pipe size connection as indicated on floor plans.

2.04 THROUGH-PENETRATION FIRESTOP ASSEMBLIES

- A. Through-Penetration Fire stop Assemblies
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. ProSet Systems Inc.
 - 2. Standard: UL 1479 assembly of sleeve and stack fitting with fire stopping plug.
 - 3. Size: Same as connected soil, waste, or vent stack.
 - 4. Sleeve: Molded PVC plastic, of length to match slab thickness and with integral nailing flange on one end for installation in cast-in-place concrete slabs.

5. Stack Fitting: ASTM A 48/A 48M, gray-iron, hubless-pattern, wye branch with neoprene O-ring at base and gray-iron plug in thermal-release harness. Include PVC protective cap for plug.
6. Special Coating: Corrosion resistant on interior of fittings.

2.05 MISCELLANEOUS SANITARY DRAINAGE PIPING SPECIALTIES

- A. Floor-Drain, Trap-Seal Primer Fittings
 1. Description: Cast iron, with threaded inlet and threaded or spigot outlet, and trap-seal primer valve connection.
 2. Size: Same as floor drain outlet with NPS 1/2 side inlet.
- B. Sleeve Flashing Device
 1. Description: Manufactured, cast-iron fitting, with clamping device, that forms sleeve for pipe floor penetrations of floor membrane. Include galvanized-steel pipe extension in top of fitting that will extend 1 inch above finished floor and galvanized-steel pipe extension in bottom of fitting that will extend through floor slab.
 2. Size: As required for close fit to riser or stack piping.

2.06 FLASHING MATERIALS

- A. Lead Sheet: ASTM B 749, Type L51121, copper bearing, with the following minimum weights and thicknesses, unless otherwise indicated:
 1. General Use: 4.0-lb/sq. ft., 0.0625-inch thickness.
 2. Vent Pipe Flashing: 3.0-lb/sq. ft., 0.0469-inch thickness.
 3. Burning: 6-lb/sq. ft., 0.0938-inch thickness.
- B. Copper Sheet: ASTM B 152/B 152M, of the following minimum weights and thicknesses, unless otherwise indicated:
 1. General Applications: 12 oz./sq. ft..
 2. Vent Pipe Flashing: 8 oz./sq. ft..
- C. Zinc-Coated Steel Sheet: ASTM A 653/A 653M, with 0.20 percent copper content and 0.04-inch minimum thickness, unless otherwise indicated. Include G90 hot-dip galvanized, mill-phosphatized finish for painting if indicated.
- D. Elastic Membrane Sheet: ASTM D 4068, flexible, chlorinated polyethylene, 40 mil minimum thickness.

- E. Fasteners: Metal compatible with material and substrate being fastened.
- F. Metal Accessories: Sheet metal strips, clamps, anchoring devices, and similar accessory units required for installation; matching or compatible with material being installed.
- G. Solder: ASTM B 32, lead-free alloy.
- H. Bituminous Coating: SSPC-Paint 12, solvent-type, bituminous mastic.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Refer to Section 22 05 00 – Common Work Results for Plumbing for piping joining materials, joint construction, and basic installation requirements.
- B. Install cleanouts in aboveground piping and building drain piping according to the following, unless otherwise indicated:
 - 1. Size same as drainage piping up to NPS 4. Use NPS 4 for larger drainage piping unless larger cleanout is indicated.
 - 2. Locate at each change in direction of piping greater than 135 degrees.
 - 3. Locate at minimum intervals of 50 feet for piping NPS 4 and smaller and 100 feet for larger piping.
 - 4. Locate at base of each vertical soil and waste stack.
- C. For floor cleanouts for piping below floors, install cleanout deck plates with top flush with finished floor.
- D. For cleanouts located in concealed piping, install cleanout wall access covers, of types indicated, with frame and cover flush with finished wall.
- E. Install floor drains at low points of surface areas to be drained. Set grates of drains flush with finished floor, unless otherwise indicated.
 - 1. Position floor drains for easy access and maintenance.
 - 2. Set floor drains below elevation of surrounding finished floor to allow floor drainage. Set with grates depressed according to the following drainage area radii:
 - a. Radius, 30 Inches or Less: Equivalent to 1 percent slope, but not less than 1/4-inch total depression.

- b. Radius, 30 to 60 Inches: Equivalent to 1 percent slope.
 - c. Radius, 60 Inches or Larger: Equivalent to 1 percent slope, but not greater than 1 inch total depression.
- 3. Install floor-drain flashing collar or flange so no leakage occurs between drain and adjoining flooring. Maintain integrity of waterproof membranes where penetrated.
- 4. Install individual traps for floor drains connected to sanitary building drain, unless otherwise indicated.
- F. Install trench drains at low points of surface areas to be drained. Set grates of drains flush with finished surface, unless otherwise indicated.
- G. Install fixture air-admittance valves on fixture drain piping.
- H. Install air-admittance-valve wall boxes recessed in wall.
- I. Install roof flashing assemblies on sanitary stack vents and vent stacks that extend through roof.
- J. Install flashing fittings on sanitary stack vents and vent stacks that extend through roof.
- K. Install through-penetration fire stop assemblies for stacks at floor penetrations.
- L. Assemble open drain fittings and install with top of hub 36 inches above floor.
- M. Install floor-drain and floor sink, trap-seal primer fittings on inlet to floor drains and floor sinks that require trap-seal primer connection.
 - 1. Size: Same as floor drain inlet. Refer to floor plans for location.
- N. Install air-gap fittings on draining-type backflow preventers and on indirect-waste piping discharge into sanitary drainage system.
- O. Install sleeve flashing device with each riser and stack passing through floors with waterproof membrane.
- P. Install vent caps on each vent pipe passing through roof.
- Q. Install expansion joints on vertical stacks and conductors. Position expansion joints for easy access and maintenance.

3.02 **CONNECTIONS**

- A. Piping installation requirements are specified in other Division 22 Sections. Drawings indicate general arrangement of piping, fittings, and specialties.
- B. Install piping adjacent to equipment to allow service and maintenance.

- C. Ground equipment according to Section 26 05 26 – Grounding and Bonding for Electrical Systems.
- D. Connect wiring according to Section 26 05 19 – Low Voltage Electrical Power Conductors and Cables.

3.03 FLASHING INSTALLATION

- A. Fabricate flashing from single piece unless large pans, sumps, or other drainage shapes are required. Join flashing according to the following if required:
 - 1. Lead Sheets: Burn joints of lead sheets 6.0-lb/sq. ft., 0.0938-inch thickness or thicker. Solder joints of lead sheets 4.0-lb/sq. ft., 0.0625-inch thickness or thinner.
 - 2. Copper Sheets: Solder joints of copper sheets.
- B. Install sheet flashing on pipes, sleeves, and specialties passing through or embedded in floors and roofs with waterproof membrane.
 - 1. Pipe Flashing: Sleeve type, matching pipe size, with minimum length of 10 inches, and skirt or flange extending at least 8 inches around pipe.
 - 2. Sleeve Flashing: Flat sheet, with skirt or flange extending at least 8 inches around sleeve.
 - 3. Embedded Specialty Flashing: Flat sheet, with skirt or flange extending at least 8 inches around specialty.
- C. Set flashing on floors and roofs in solid coating of bituminous cement.
- D. Secure flashing into sleeve and specialty clamping ring or device.
- E. Install flashing for piping passing through roofs with counter flashing or commercially made flashing fittings, according to Section 07 62 00 – Sheet Metal Flashing and Trim.
- F. Extend flashing up vent pipe passing through roofs and turn down into pipe, or secure flashing into cast-iron sleeve having calking recess.
- G. Fabricate and install flashing and pans, sumps, and other drainage shapes.

3.04 LABELING AND IDENTIFYING

- A. Equipment Nameplates and Signs: Install engraved plastic-laminate equipment nameplate or sign next to equipment.
- B. Distinguish among multiple units, inform operator of operational requirements, indicate safety and emergency precautions, and warn of hazards and improper operations, in

addition to identifying unit. Nameplates and signs are specified in Section 22 05 53 – Identification for Plumbing Piping and Equipment.

3.05 FIELD QUALITY CONTROL

- A. Perform tests and inspections and prepare test reports.
 - 1. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect field-assembled equipment and their installation, including piping and electrical connections, and to assist in testing.
- B. Tests and Inspections
 - 1. Leak Test: After installation, charge system and test for leaks. Repair leaks and retest until no leaks exist.
 - 2. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

3.06 PROTECTION

- A. Protect drains during remainder of construction period to avoid clogging with dirt or debris and to prevent damage from traffic or construction work.
- B. Place plugs in ends of uncompleted piping at end of each day or when work stops.

3.07 DEMONSTRATION

- A. Engage a factory-authorized service representative to train the Owner's maintenance personnel to adjust, operate, and maintain all installed equipment. Refer to Section 01 79 00 – Demonstration and Training.

END OF SECTION 22 13 19

**SECTION 22 40 00
PLUMBING FIXTURES**

PART 1 - GENERAL

1.01 DEFINITIONS

- A. ABS: Acrylonitrile-butadiene-styrene plastic.
- B. Accessible Fixture: Plumbing fixture that can be approached, entered, and used by people with disabilities.
- C. Cast Polymer: Cast-filled-polymer-plastic material. This material includes cultured-marble and solid-surface materials.
- D. Cultured Marble: Cast-filled-polymer-plastic material with surface coating.
- E. Fitting: Device that controls the flow of water into or out of the plumbing fixture. Fittings specified in this Section include supplies and stops, faucets and spouts, shower heads and tub spouts, drains and tailpieces, and traps and waste pipes. Piping and general-duty valves are included where indicated.
- F. FRP: Fiberglass-reinforced plastic.
- G. PMMA: Polymethyl methacrylate (acrylic) plastic.
- H. PVC: Polyvinyl chloride plastic.
- I. Solid Surface: Nonporous, homogeneous, cast-polymer-plastic material with heat-, impact-, scratch-, and stain-resistance qualities.

1.02 SUBMITTALS

- A. Product Data: For each type of plumbing fixture indicated. Include selected fixture and trim, fittings, accessories, appliances, appurtenances, equipment, and supports. Indicate materials and finishes, dimensions, construction details, and flow-control rates.
- B. Shop Drawings: Diagram power, signal, and control wiring.
- C. Operation and Maintenance Data: For plumbing fixtures to include in emergency, operation, and maintenance manuals.
- D. Warranty: Special warranty specified in this Section.

1.03 QUALITY ASSURANCE

- A. Source Limitations
 - 1. Obtain plumbing fixtures, faucets, and other components of each category through one source from a single manufacturer.
 - 2. Exception: If fixtures, faucets, or other components are not available from a single manufacturer, obtain similar products from other manufacturers specified for that category.
- B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- C. Regulatory Requirements: Comply with requirements in ICC A117.1, "Accessible and Usable Buildings and Facilities"; Public Law 90-480, "Architectural Barriers Act"; and Public Law 101-336, "Americans with Disabilities Act"; for plumbing fixtures for people with disabilities.
- D. Regulatory Requirements: Comply with requirements in Public Law 102-486, "Energy Policy Act," about water flow and consumption rates for plumbing fixtures.
- E. NSF Standard: Comply with NSF 61, "Drinking Water System Components--Health Effects," for fixture materials that will be in contact with potable water.
- F. Select combinations of fixtures and trim, faucets, fittings, and other components that are compatible.
- G. Comply with the following applicable standards and other requirements specified for plumbing fixtures:
 - 1. Enameled, Cast-Iron Fixtures: ASME A112.19.1M.
 - 2. Plastic Lavatories: ANSI Z124.3.
 - 3. Plastic Mop-Service Basins: ANSI Z124.6.
 - 4. Plastic Sinks: ANSI Z124.6.
 - 5. Plastic Urinal Fixtures: ANSI Z124.9.
 - 6. Plastic Whirlpool Bathtubs: ANSI Z124.1 and ASME A112.19.7M.
 - 7. Porcelain-Enameled, Formed-Steel Fixtures: ASME A112.19.4M.
 - 8. Solid-Surface-Material Lavatories and Sinks: ANSI/ICPA SS-1.
 - 9. Stainless-Steel Commercial, Handwash Sinks: NSF 2 construction.
 - 10. Vitreous-China Fixtures: ASME A112.19.2M.
 - 11. Water-Closet, Flush Valve, Tank Trim: ASME A112.19.5.
 - 12. Water-Closet, Flushometer Tank Trim: ASSE 1037.
 - 13. Whirlpool Bathtub Fittings: ASME A112.19.8M.
- H. Comply with the following applicable standards and other requirements specified for lavatory and sink faucets:
 - 1. Backflow Protection Devices for Faucets with Side Spray: ASME A112.18.3M.
 - 2. Backflow Protection Devices for Faucets with Hose-Thread Outlet: ASME A112.18.3M.
 - 3. Diverter Valves for Faucets with Hose Spray: ASSE 1025.

4. Faucets: ASME A112.18.1.
 5. Hose-Connection Vacuum Breakers: ASSE 1011.
 6. NSF Potable-Water Materials: NSF 61.
 7. Pipe Threads: ASME B1.20.1.
 8. Sensor-Actuated Faucets and Electrical Devices: UL 1951.
 9. Supply Fittings: ASME A112.18.1.
 10. Brass Waste Fittings: ASME A112.18.2.
- I. Comply with the following applicable standards and other requirements specified for miscellaneous fittings:
1. Atmospheric Vacuum Breakers: ASSE 1001.
 2. Brass and Copper Supplies: ASME A112.18.1.
 3. Dishwasher Air-Gap Fittings: ASSE 1021.
 4. Manual-Operation Flushometers: ASSE 1037.
 5. Plastic Tubular Fittings: ASTM F 409.
 6. Brass Waste Fittings: ASME A112.18.2.
 7. Sensor-Operation Flushometers: ASSE 1037 and UL 1951.
- J. Comply with the following applicable standards and other requirements specified for miscellaneous components:
1. Disposers: ASSE 1008 and UL 430.
 2. Dishwasher Air-Gap Fittings: ASSE 1021.
 3. Flexible Water Connectors: ASME A112.18.6.
 4. Floor Drains: ASME A112.6.3.
 5. Hose-Coupling Threads: ASME B1.20.7.
 6. Hot-Water Dispensers: ASSE 1023 and UL 499.
 7. Off-Floor Fixture Supports: ASME A112.6.1M.
 8. Pipe Threads: ASME B1.20.1.
 9. Plastic Toilet Seats: ANSI Z124.5.
 10. Supply and Drain Protective Shielding Guards: ICC A117.1.
 11. Whirlpool Bathtub Equipment: UL 1795.

1.04 WARRANTY

- A. Special Warranties: Manufacturer's standard form in which manufacturer agrees to repair or replace components of whirlpools that fail in materials or workmanship within specified warranty period.
1. Failures include, but are not limited to, the following:
 - a. Structural failures of unit shell.
 - b. Faulty operation of controls, blowers, pumps, heaters, and timers.
 - c. Deterioration of metals, metal finishes, and other materials beyond normal use.
 2. Warranty Period for Commercial Applications: One year(s) from date of Substantial Completion.
 3. Warranty Period for Residential Applications: Five years from date of Substantial Completion.

1.05 EXTRA MATERIALS

- A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Faucet Washers and O-Rings: Equal to 10 percent of amount of each type and size installed.
 - 2. Faucet Cartridges and O-Rings: Equal to 5 percent of amount of each type and size installed.
 - 3. Flushometer Valve, Repair Kits: Equal to 10 percent of amount of each type installed, but no fewer than 12 of each type.
 - 4. Provide hinged-top wood or metal box, or individual metal boxes, with separate compartments for each type and size of extra materials listed above.
 - 5. Water-Closet Tank, Repair Kits: Equal to 5 percent of amount of each type installed.
 - 6. Toilet Seats: Equal to 5 percent of amount of each type installed.
 - 7. Dry Urinal Trap-Seal Cartridges: Equal to 200 percent of amount of each type installed, but no fewer than 12 of each type.

PART 2 - PRODUCTS

2.01 LAMINAR-FLOW FAUCET-SPOUT OUTLETS

- A. Laminar-Flow Faucet-Spout Outlets:
 - 1. Manufacturers: Subject to compliance with requirements, provide Chronomite Industries Inc. or equal product by one of the following:
 - a. Chicago Faucet
 - b. NEOPERL, Inc.
 - 2. Description: Chrome-plated-brass faucet-spout outlet that produces non-aerating, laminar stream. Include male or female thread that mates with faucet outlet for attachment to faucets where indicated and flow-rate range that includes flow of faucet.

2.02 FLUSHOMETERS

- A. Flushometers: Refer to plumbing fixture schedule for fixture type:
 - 1. Manufacturers: Subject to compliance with requirements, provide Sloan Valve Company or equal product by one of the following:
 - a. Coyne & Delany Co.
 - b. TOTO USA, Inc.
 - c. Zurn Plumbing Products
 - 2. Description: Flushometer for urinal and water-closet-type fixture. Include brass body with corrosion-resistant internal components, non-hold-open feature, control stop with check valve, vacuum breaker, copper or brass tubing, and polished chrome-plated finish on exposed parts.
 - a. Internal Design: Diaphragm operation.

- b. Style: Exposed.
- c. Inlet Size: NPS 3/4 for urinals and NPS 1 for water closets.
- d. Trip Mechanism: Oscillating, lever-handle actuator, Hard-wired, electric-sensor actuator.
- e. Consumption: Refer to plumbing fixture type for model description.

2.03 TOILET SEATS

- A. Toilet Seats
 - 1. Manufacturers: Subject to compliance with requirements, provide Kohler Co. or equal product by one of the following:
 - a. Bemis Manufacturing Company
 - b. Centoco Manufacturing Corp.
 - c. Church Seats
 - d. Eljer
 - e. Olsonite Corp.
 - f. Beneke Div.
 - g. Sperzel
 - 2. Description: Toilet seat for water-closet-type fixture.
 - a. Material: Molded, solid plastic with antimicrobial agent.
 - b. Configuration: Open front without cover.
 - c. Size: Elongated.
 - d. Hinge Type: SS, self-sustaining.
 - e. Class: Heavy-duty commercial.
 - f. Color: White.

2.04 PROTECTIVE SHIELDING GUARDS

- A. Protective Shielding Pipe Covers, Refer to plumbing fixture schedule:
 - 1. Manufacturers: Subject to compliance with requirements, provide TRUBRO Inc or equal product by one of the following:
 - a. Engineered Brass Co.
 - b. Insul-Tect Products Co.; a Subsidiary of MVG Molded Products.
 - c. McGuire Manufacturing Co., Inc.
 - d. Plumberex Specialty Products Inc.
 - e. Zurn Plumbing Products Group; Tubular Brass Plumbing Products Operation.
 - 2. Description: Manufactured plastic wraps for covering plumbing fixture hot-water supply and trap and drain piping. Comply with Americans with Disabilities Act (ADA) requirements.
- B. Protective Shielding Piping Enclosures
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. TRUEBRO, Inc.
 - 2. Description: Manufactured plastic enclosure for covering plumbing fixture hot water supplies and trap and drain piping. Comply with ADA requirements.

2.05 FIXTURE SUPPORTS

- A. Existing Fixture Supports to be reused for installation of new fixtures.

2.06 WATER CLOSETS

- A. Water Closets, Refer to plumbing fixture schedule for fixture type:
 - 1. Manufacturers: Subject to compliance with requirements, provide scheduled product or equal product by one of the following:
 - a. Sloan Valve Company
 - b. Acorn Engineering Company
 - c. Briggs Plumbing Products, Inc.
 - d. Crane Plumbing, L.L.C./Fiat Products
 - e. Commercial Enameling Company
 - f. Eljer
 - g. Kohler Co.
 - h. TOTO USA, Inc.
 - i. American Standard

2.07 URINALS

- A. Urinals, Refer to plumbing fixture schedule for fixture type:
 - 1. Manufacturers: Subject to compliance with requirements, provide scheduled product or equal product by one of the following:
 - a. Zurn Industries
 - b. Briggs Plumbing Products, Inc.
 - c. Crane Plumbing, L.L.C./Fiat Products.
 - d. Commercial Enameling Company
 - e. Eljer.
 - f. Kohler Co.
 - g. TOTO USA, Inc.
- B. Water Free Urinals, Refer to plumbing fixture schedule for fixture type:
 - 1. Manufacturers for water free Urinals: Subject to compliance with requirements, provide Sloan Valve Company or equal product by one of the following:
 - a. Falcon Waterfree Technologies
 - b. Duravit USA, Inc.
 - c. American Standard Inc.

2.08 LAVATORIES

- A. Lavatories, Refer to plumbing fixture schedule for fixture type:
 - 1. Manufacturers: Subject to compliance with requirements, provide scheduled product or equal product by one of the following:
 - a. Acorn Engineering Company
 - b. Corian
 - c. Briggs Plumbing Products, Inc.

- d. Crane Plumbing, L.L.C./Fiat Products
- e. Commercial Enameling Company
- f. Eljer
- g. Kohler Co.
- h. TOTO USA, Inc.
- i. American Standard

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine roughing-in of water supply and sanitary drainage and vent piping systems to verify actual locations of piping connections before plumbing fixture installation.
- B. Examine cabinets, counters, floors, and walls for suitable conditions where fixtures will be installed.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION

- A. Assemble plumbing fixtures, trim, fittings, and other components according to manufacturers' written instructions.
- B. Install back-outlet, wall-mounting fixtures onto waste fitting seals and attach to supports.
- C. Install wall-mounting fixtures with tubular waste piping attached to supports.
- D. Install counter-mounting fixtures in and attached to casework.
- E. Install fixtures level and plumb according to roughing-in drawings.
- F. Install trap and tubular waste piping on drain outlet of each fixture to be directly connected to sanitary drainage system.
- G. Install tubular waste piping on drain outlet of each fixture to be indirectly connected to drainage system.
- H. Install flushometer valves for accessible water closets and urinals with handle mounted on wide side of compartment. Install other actuators in locations that are easy for people with disabilities to reach.
- I. Install toilet seats on water closets.
- J. Install trap-seal liquid in dry urinals.

- K. Install faucet-spout fittings with specified flow rates and patterns in faucet spouts if faucets are not available with required rates and patterns. Include adapters if required.
- L. Install water-supply flow-control fittings with specified flow rates in fixture supplies at stop valves.
- M. Install faucet flow-control fittings with specified flow rates and patterns in faucet spouts if faucets are not available with required rates and patterns. Include adapters if required.
- N. Install traps on fixture outlets.
 - 1. Exception: Omit trap on fixtures with integral traps.
 - 2. Exception: Omit trap on indirect wastes, unless otherwise indicated.
- O. Install escutcheons at piping wall ceiling penetrations in exposed, finished locations and within cabinets and millwork. Use deep-pattern escutcheons if required to conceal protruding fittings. Escutcheons are specified in Section 22 05 00 – Common Work Results for Plumbing.
- P. Seal joints between fixtures and walls, floors, and countertops using sanitary-type, one-part, mildew-resistant silicone sealant. Match sealant color to fixture color. Sealants are specified in Section 07 92 00 – Joint Sealants.

3.03 CONNECTIONS

- A. Piping installation requirements are specified in other Division 22 Sections. Drawings indicate general arrangement of piping, fittings, and specialties.
- B. Connect fixtures with water supplies, stops, and risers, and with traps, soil, waste, and vent piping. Use size fittings required to match fixtures.
- C. Ground equipment according to Section 26 05 26 – Grounding and Bonding for Electrical Systems.
- D. Connect wiring according to Section 26 05 19 – Low Voltage Electrical Power Conductors and Cables.

3.04 FIELD QUALITY CONTROL

- A. Verify that installed plumbing fixtures are categories and types specified for locations where installed.
- B. Check that plumbing fixtures are complete with trim, faucets, fittings, and other specified components.
- C. Inspect installed plumbing fixtures for damage. Replace damaged fixtures and components.

- D. Test installed fixtures after water systems are pressurized for proper operation. Replace malfunctioning fixtures and components, then retest. Repeat procedure until units operate properly.
- E. Install fresh batteries in sensor-operated mechanisms.

3.05 ADJUSTING

- A. Operate and adjust faucets and controls. Replace damaged and malfunctioning fixtures, fittings, and controls.
- B. Operate and adjust disposers hot-water dispensers and controls. Replace damaged and malfunctioning units and controls.
- C. Adjust water pressure at faucets and flushometer valves to produce proper flow and stream.
- D. Replace washers and seals of leaking and dripping faucets and stops.
- E. Install fresh batteries in sensor-operated mechanisms.

3.06 CLEANING

- A. Clean fixtures, faucets, and other fittings with manufacturers' recommended cleaning methods and materials. Do the following:
 - 1. Remove faucet spouts and strainers, remove sediment and debris, and reinstall strainers and spouts.
 - 2. Remove sediment and debris from drains.
- B. After completing installation of exposed, factory-finished fixtures, faucets, and fittings, inspect exposed finishes and repair damaged finishes.

3.07 PROTECTION

- A. Provide protective covering for installed fixtures and fittings.
- B. Do not allow use of plumbing fixtures for temporary facilities unless approved in writing by Owner.

END OF SECTION 22 40 00

**SECTION 23 00 00
GENERAL HVAC REQUIREMENTS**

PART 1 - GENERAL

1.01 SCOPE OF WORK

- A. It is intended for the Division 23 scope of work to include complete and functional mechanical systems - including all required materials, labor, equipment, and services necessary to achieve the desired final product. It is further intended for the Division 23 scope of work to include coordination with Divisions 21 and 22 and all work required by Division 23 for complete Fire Protection and Plumbing systems.

1.02 REVISION TO DIVISION NUMBERING

- A. These documents have been revised to reflect new numbering standards. All Mechanical documents were previously contained within Division 15. These documents have now been divided into Fire Protection, Plumbing and HVAC and renumbered as Divisions 21, 22 and 23, respectively.

1.03 COORDINATION OF DIVISIONS 21, 22 AND 23.

- A. Divisions 21, 22 and 23 are used to communicate the requirements for the total Mechanical scope of work. It is intended for these three Divisions to serve as a single document, communicating the Mechanical scope of work.

1.04 REFERENCES

- A. Division 00 and Division 01 of these specifications shall govern Division 23 work, including Bidding Requirements, Conditions of the Contract, and Supplementary Conditions. It is the Division 23 Contractor's responsibility to be aware of all information and requirements included in these locations, and to include those requirements as part of the Division 23 scope of work.
- B. It shall be understood by the Division 23 Contractor that the Division 23 scope of work is intended to involve a coordinated effort with all other Divisions of work. Refer to other sections of the documents for additional related requirements and to ensure a coordinated effort.
- C. References to industry standards, testing procedures, etc. are noted in individual sections of these specifications. The requirements and standards from the referenced documents shall be considered part of the requirements of these specifications.

- D. This section applies to all Division 23 work. The Division 23 Contractor shall ensure that all Division 23 work described throughout other specification sections and on the drawings is in accordance with this section.
- E. It shall be understood by the Contractor that the Division 21, 22 and 23 information is intended to serve as a single document, and each section of these specifications directly or indirectly relates to all other sections. As such, each section does not attempt to identify every other Division 21, 22 and/or 23 section that is related. Significant references to information outside of Division 21, 22 and 23 are, however, occasionally provided for informational purposes. This information is provided to assist in coordination, but the lack of a reference to another portion of the Contract Documents does not relieve the Contractor of the responsibility for coordination with other sections of Divisions 21, 22 and 23 and all other trades.

1.05 DEFINITIONS

- A. The following definitions shall apply to the use of these words when used in Division 23. These definitions are not intended to define use of these words outside of Division 23.
- B. Acceptance: The Owner's assumption of ownership of the mechanical system.
- C. Concealed, Exterior Installations: Concealed from view and protected from weather conditions and physical contact by building occupants but subject to outdoor ambient temperatures. Examples include installations within unheated shelters.
- D. Concealed, Interior Installations: Concealed from view and protected from physical contact by building occupants. Examples include above ceilings and in duct shafts.
- E. Contractor (The Contractor, This Contractor, Division 23 Contractor, etc.): The contractor responsible for the Division 23 scope of work.
- F. Date of Acceptance: The official date when Acceptance occurs. This will coincide with the granting of Substantial Completion unless noted otherwise by the Owner's Representative. It shall not be assumed that the Date of Acceptance has deviated from Substantial Completion unless written documentation is provided by the Owner's Representative indicating differently.
- G. Exposed, Exterior Installations: Exposed to view outdoors or subject to outdoor ambient temperatures and weather conditions. Examples include rooftop locations.
- H. Exposed, Interior Installations: Exposed to view indoors. Examples include finished occupied spaces and mechanical equipment rooms.
- I. Finished Spaces: Spaces other than mechanical and electrical equipment rooms, furred spaces, pipe and duct shafts, unheated spaces immediately below roof, spaces above ceilings, unexcavated spaces, crawlspace, and tunnels.
- J. Mechanical: Shall be considered interchangeable with "Division 23".

- K. Owner's Representative: The Architect or his designated representative, as outlined in the General Conditions.
- L. Provide: Furnish and install.

1.06 ABBREVIATIONS

- A. The following are industry abbreviations used in these specifications: ABS: Acrylonitrile-butadiene-styrene plastic; ASJ: All-service jacket; BR: Butyl rubber; Buna-N: Nitrile rubber; CPVC: Chlorinated polyvinyl chloride plastic; CR: Chlorosulfonated polyethylene synthetic rubber; CSM: Chlorosulfonyl-polyethylene rubber; CWP: Cold working pressure; DDC: Direct digital control; DOP: Dioctyl phthalate or bis-(2-ethylhexyl) phthalate; EMCS: Energy Management and Control System; EPDM: Ethylene-propylene-diene terpolymer rubber; FOG: Fats, oils, and greases; FRP: Fiberglass-reinforced plastic; FSK: Foil, scrim, kraft paper; FSP: Foil, scrim, polyethylene; HDPE: High-density polyethylene plastic; HEPA: High-efficiency particulate air; I/O: Input/output; LLDPE: Linear, low-density polyethylene plastic; MS/TP: Master slave/token passing; MSS: Manufacturers Standardization Society for The Valve and Fittings Industry Inc; NBR: Acrylonitrile-butadiene rubber; NC: Noise criteria; NR: Natural rubber; NUSIG: National Uniform Seismic Installation Guidelines; PE: Polyethylene plastic; PEX: Crosslinked polyethylene plastic; PC: Personal computer; PID: Proportional plus integral plus derivative; PMMA: Polymethyl methacrylate (acrylic) plastic; PP: Polypropylene plastic; PTFE: Polytetrafluoroethylene plastic; PUR: Polyurethane plastic; PVC: Polyvinyl chloride plastic; PVDC: Polyvinylidene chloride; RC: Room criteria; RTD: Resistance temperature detector; SSL: Self-sealing lap; SWP: Steam working pressure; TFE: Tetrafluoroethylene plastic; TPE: Thermoplastic elastomer; ULPA: Ultra low penetration air.

1.07 APPLICABLE CODES

- A. Division 23 work shall be performed in accordance with applicable codes and standards as adopted by the authorities having jurisdiction including amendments. Following is a listing of major codes and standards, the requirements of which shall be considered part of the scope of this project. This list should not be considered comprehensive, and codes or standards not included in this list should not be considered to be excluded from the scope of the project.
 - 1. Americans with Disabilities Act (ADA)
 - 2. Applicable State and Local Codes and Ordinances
 - 3. National Electrical Code
 - 4. International Building Code
 - 5. International Fire Code
 - 6. International Mechanical Code
 - 7. Uniform Plumbing Code
 - 8. California Code of Regulations, (CCR), Title 24, Latest Edition.
 - 9. California Building Code (CBC), Latest Edition.
 - 10. California Mechanical Code (CMC), Latest Edition.

11. California Plumbing Code (CPC), Latest Edition.

1.08 PERMITS AND FEES

- A. All permits and inspections required to complete the Division 23 scope of work shall be included in the Division 23 bid price. All certifications provided as part of the permit and inspection process shall be provided to the Owner as part of the Division 23 scope of work as specified in these documents.
- B. All fees required by utility providers shall be included in the Division 23 bid price, including water, gas, sanitary sewer, and storm sewer connections. This shall include all charges to the project by these agencies, including but not limited to general fees, equipment charges (meters, vaults, etc.), tap fees, and utility main installation charges.

1.09 ALTERNATES (REFER TO DIVISION 01)

- A. The bid price for the scope of work shall be separated into base bid and alternate values when indicated. Both base bid and alternate bid prices shall reflect a complete and working mechanical system, with specific features and/or portions of the systems designated as base bid or alternate as described.

1.10 SCOPE AND APPROPRIATE USE OF BID DOCUMENTS

- A. These specifications and accompanying drawings are intended to communicate the design concept for this project and outline the scope of work. They should not be viewed as a comprehensive document that details every specific task, item, or piece of equipment required to complete the project. It is understood that industry knowledge and experience is required to establish an accurate and complete scope of work from these documents, and it is assumed that the Division 23 Contractor possesses that knowledge and experience. Work not specifically noted in these specifications or the accompanying drawings, but which is required to complete the project, shall be included by the Division 23 Contractor as part of his scope of work.
- B. These specifications and the accompanying drawings are intended to supplement each other. Information included in either one shall be incorporated into the project as if included in both. In the event of any conflicts, the most stringent requirements shall be considered the governing scope of work until and unless clarification can be obtained by the Contractor.
- C. In the event of dimensional discrepancies between Division 23 documents and other disciplines, Architectural and Structural documents take precedence over Division 23. Refer to this information for sufficient understanding to the extent that it impacts the Division 23 scope of work.
- D. Drawings are intended to indicate the general arrangement of piping, ductwork, equipment and other components of Division 23 systems. They shall be followed as closely as possible but shall be considered diagrammatic in nature. They are not

intended to show every component, fitting, offset, etc. Components, fittings, offsets, etc. as required to meet the intent of the documents and to achieve coordination with other trades shall be included in the Division 23 scope of work. Note that more detailed information about routing may be provided for certain areas of the project where special constraints exist. It is the intent of this detailed information to better communicate the constraints, but these drawings and details shall still be considered diagrammatic in nature as outlined above.

1.11 ROUTING AND LOCATIONS

- A. It is the Contractor's responsibility to coordinate equipment locations and system routing with available space and with all other trades.
- B. It is the Contractor's responsibility to coordinate and verify the exact locations and routing of equipment and systems prior to fabrication and installation. If discrepancies become apparent as part of the verification process, the Contractor shall ask for written clarification/direction. Alteration, removal and/or replacement of work already installed as a result of failure to verify and/or coordinate locations and routing prior to fabrication and/or installation shall be at the Contractor's expense.
- C. Locations of equipment shown on the drawings are approximate unless specifically dimensioned.
- D. All ductwork, piping, tubing, conduit, etc. shall be concealed within building construction unless noted otherwise. Mechanical rooms are considered to be within building construction for the purposes of this requirement.
- E. Existing utilities, piping, and ductwork have been indicated as closely as possible. The Contractor can assume that points of connection to existing utilities have been shown within 10 feet (3 meters) of the actual location. When actual points of connection are more than 10 feet (3 meters) from the location shown on the drawings, the Contractor shall notify the Owner's Representative prior to commencing this portion of the work.
- F. The Contractor is responsible for any remedial work required from failure to locate and preserve underground utilities. This shall include all work necessary to repair any damaged utilities to their original condition.

1.12 SCHEDULING

- A. It is understood that while drawings are to be followed as closely as circumstances permit, the Contractor shall be responsible for installation of systems according to the true intent and meaning of Contract Documents. Anything not clear or in conflict will be explained by making application to Owner's Representative. The Contractor shall familiarize himself with his scope of work as well as the required coordination with other trades and the scheduling of other trades sufficiently to address coordination issues in a timely manner such that they do not result in remedial work for other trades.

- B. Should conditions arise where certain changes would be advisable, secure approval from Owner's Representative for those changes before proceeding with work. Proceeding without written approval is at the Contractor's risk and at the Contractor's expense.
- C. The contractor shall coordinate with the work of various trades when installing interrelated work. Before installation of mechanical items, proper provisions shall be made to avoid interferences. Changes required in work specified in Division 23 caused by neglect to do so shall be made at no cost to Owner.
- D. Inserts and supports required by Division 23 shall be furnished and installed unless otherwise noted. Furnish sleeves, inserts, supports, and equipment that are an integral part of other Divisions of the Work to those involved in sufficient time to be built into construction as the Work proceeds. Locate these items and see that they are properly installed. Expense resulting from improper location or installation of items above shall be borne under Division 23.

1.13 CUTTING AND PATCHING

- A. The Division 23 Contractor shall be responsible for all cutting and patching required to complete the Division 23 scope of work.
- B. All patching shall be performed such that it matches existing finishes.
- C. The Contractor shall not cut any structural members without first getting approval from the Owner's Representative to do so.
- D. All cutting and patching required to correct defective or otherwise unacceptable work shall be the responsibility of the Division 23 Contractor.

1.14 GUARANTEE (REFER TO DIVISION 01)

- A. All Division 23 systems and equipment shall be guaranteed for a minimum period of one year.
- B. Specific equipment and/or systems requiring warranties beyond one year are indicated in the table at the end of this section.
- C. The guarantee shall begin at the Date of Acceptance, unless written documentation is provided noting otherwise. When more than one Date of Acceptance is indicated for various portions or specific equipment, the guarantee shall begin at the Date of Acceptance independently for each portion of the system or piece of equipment.
- D. Permission to use Division 23 systems or equipment for temporary heating or other contractor use prior to the Date of Acceptance, as outlined elsewhere in these specifications, shall not constitute the beginning of the guarantee period. The contractor shall make any necessary arrangements to extend equipment and/or

system warranties sufficient to maintain the designated guarantee period from the Date of Acceptance.

1. Exception: When temporary heating and or other system use is requested by the Owner for the Owner's benefit prior to the Date of Acceptance, the guarantee period for the portions of the system or specific equipment requested for use may begin at the time it is put into service. This can only be assumed to have occurred if written documentation is provided indicating such.

1.15 QUALITY ASSURANCE

- A. Material and Equipment Qualifications
 1. Provide materials and equipment that are standard products of manufacturers regularly engaged in the manufacture of such products, which are of a similar material, design and workmanship. Standard products shall have been in satisfactory commercial or industrial use for 2 years prior to bid opening. The 2-year use shall include applications of equipment and materials under similar circumstances and of similar size. The product shall have been for sale on the commercial market through advertisements, manufacturers' catalogs, or brochures during the 2-year period.
 2. Alternative Qualifications: Products having less than a two-year field service record will be acceptable if a certified record of satisfactory field operation for not less than 6000 hours, exclusive of the manufacturer's factory or laboratory tests, can be shown.
- B. Service Support: The equipment items shall be supported by service organizations. When requested to gain approval, submit a certified list of qualified permanent service organizations for support of the equipment which includes their addresses and qualifications. These service organizations shall be reasonably convenient to the equipment installation and able to render satisfactory service to the equipment on a regular and emergency basis during the warranty period of the contract.
- C. Manufacturer's Nameplate: Each item of equipment shall have a nameplate bearing the manufacturer's name, address, model number, and serial number securely affixed in a conspicuous place; the nameplate of the distributing agent will not be acceptable.
- D. UL Listings: All equipment shall be provided with a UL or approved equivalent label when labeling is available for that type of equipment.
- E. Fuel-fired equipment shall be labeled by the appropriate nationally recognized label for the fuel type (i.e. AGA).
- F. All control panels shall be UL listed (or equivalent approved label).
- G. Pressure vessels shall be provided in accordance with applicable pressure vessel ordinances.
- H. All mechanical equipment shall have an AIC rating of 100,000 or otherwise specified on electrical one-line diagrams fault current for each piece of equipment.

1.16 SUBSTITUTIONS (REFER TO DIVISION 01)

- A. When multiple manufacturers are listed in these specifications, equipment can be used from those manufacturers providing they can meet the requirements of the specifications and drawings. This shall include meeting capacity requirements, efficiencies, space and weight limitations, electrical provisions, etc. The detailed information in the specifications, scheduled equipment information, additional drawing information and any specific references to a particular manufacturer and/or model of equipment shall be considered the basis of design. Other listed manufacturers, even when listed in these specifications, will only be allowed if they meet or exceed that basis of design.
- B. Substitutions involving manufacturers not listed in these specifications will not be allowed without written approval. When written approval is requested, information will be reviewed in preliminary fashion for general conformance only. Any approved manufacturers will still be required to meet the requirements of these specifications and the drawings, and final approval during submittal review will only be granted if the equipment meets or exceeds the requirements of the documents.
- C. It is the Contractor's responsibility when utilizing approved substituted equipment to ensure the equipment will fit within the constraints of the project as detailed using the basis of design equipment (space, weight, power, etc.). Any required alterations by Division 23 or any other Division of work to accommodate differences between the substituted equipment and the basis of design equipment shall be the responsibility of the Division 23 Contractor, including the cost of design for the required changes.
- D. If the changes required by substituted equipment cannot be accommodated, the Contractor shall be responsible for replacing the substituted equipment with the basis of design equipment.
- E. Proposed substituted equipment will not be considered equal if it requires an increase of more than 5% in power usage at design conditions.

1.17 MECHANICAL COST BREAKDOWN (REFER TO DIVISION 01)

- A. Provide a breakdown of construction costs within 30 days of Notice to Proceed, with separate costs for each of the items listed in the table at the end of this section.

1.18 PAYMENT REQUESTS

- A. Submittals and operation and maintenance data must be received and approved before payment requests will be considered for materials and equipment.
- B. EMCS submittals must be received before payment requests will be reviewed for this portion of the work. Only payment requests for programming and submittals will be reviewed until submittals are approved.

- C. Fire sprinkler system submittals, including code-approved shop drawings, must be received before payment requests will be reviewed for this portion of the work. Only payment requests for design and submittals will be reviewed until submittals are approved.

1.19 SUBMITTALS (REFER TO DIVISION 01)

- A. Submittal information shall be provided and approved on all materials and equipment prior to ordering.
- B. Provide indication of which options and accessories are to be included.
- C. Include all scheduled information for equipment listed in schedules on the drawings.
- D. Review will be for general conformance only and shall not relieve the Contractor for any deviations from the requirements of the documents unless clear written reference is made by the Contractor in the submittal to proposed deviations.
- E. All Division 23 information shall be provided in one complete submittal, indexed by specification section.
 - 1. Exceptions: Fire protection and EMCS submittals can be provided separately. At the discretion of the Owner's Representative, partial submittals may be provided. If allowed, provide a table indicating submittal status with each submittal, and provide an initial submittal with all required tabs and space for all current and future submittals.
- F. Provide operation and maintenance data for individual equipment after initial submittals have been reviewed.
- G. Efficiency Standards
 - 1. Units requiring more than a 5% increase in power input beyond the scheduled equipment to meet design capacities will not be considered equal.
 - 2. Units requiring more than a 15% increase in fan brake horsepower over the scheduled equipment to meet the design flow and external static pressure requirements will not be considered equal and will not be accepted.

1.20 DELIVERY, STORAGE, AND HANDLING

- A. Follow manufacturer's directions in delivery, storage, protection, and installation of equipment and materials.
- B. Promptly notify Owner's Representative in writing of conflicts between requirements of Contract Documents and Manufacturer's directions and obtain written instructions from Owner's Representative before proceeding with work. The Contractor shall bear expenses arising from correcting deficiencies of work that do not comply with manufacturer's directions or such written instructions from Owner's Representative.

- C. Handle, store, and protect equipment and materials to prevent damage before and during installation in accordance with the manufacturer's recommendations, and as approved by the Contracting Officer. Replace damaged or defective items.
- D. Store ductwork in a clean, dry location. If the location of storage cannot be protected from moisture, keep ductwork above grade level to protect from standing water.

1.21 OPERATION AND MAINTENANCE MANUALS

- A. Operation and Maintenance Manuals shall be provided in three post binders capable of having materials added or removed. Standard clasp-type binders are not acceptable. Binders with overlapping, telescoping posts shall be used.
- B. Provide a title page at the beginning of the manual with the project title, date, Architect, Engineer, and Contractor. Also provide a master index. The title page and index shall be provided at the beginning of each volume when multiple volumes are required.
- C. Organize the manual into five divisions: Contacts, Equipment, Maintenance Schedule and Extra Materials, Energy Management and Controls System, Warranties and Certifications.
 - 1. Contacts division: Division shall consist of name, address, and phone number of the following parties: Architect, Mechanical Engineer, Electrical Engineer, General Contractor, Mechanical Contractor, Plumbing Contractor, Sheet Metal Contractor, EMCS Contractor, Electrical Contractor and major equipment suppliers.
 - 2. Equipment division: Provide a separate section for each section of the specifications. Each section shall include, at a minimum, the following for each item of Division 23 equipment.
 - a. Performance curves or tables showing the specified operating points and the operating points after final testing and balancing
 - b. Manufacturer's maintenance instructions: Instructions shall include name of vendor, installation instructions, parts numbers and lists, operating instructions for equipment, maintenance and lubrication instructions, troubleshooting guides, and overhaul specifications for major equipment.
 - c. Wiring diagrams
 - d. Step-by-step procedures for putting each piece of mechanical equipment into operation
 - e. Refer to individual specification sections for additional information required to be incorporated into the Operation and Maintenance Manual.
 - 3. Maintenance Summary and Extra Materials division: Division shall include two sections.
 - a. The first section shall consist of a preventative maintenance schedule summary table (or list). The table shall be organized by specification section and include equipment name and designation as it appears on the equipment schedule, equipment location, and type and frequency of preventative maintenance requirements (including lubrication).
 - b. The second section shall consist of a list of extra materials furnished under this contract. The list shall be organized by specification section and

include equipment name and designation as it appears on the equipment schedule, extra material(s) furnished, and verification by an owner's representative that material(s) have been provided. List shall be similar to that included at the end of this section.

4. Energy Management and Controls System division: Division shall be as specified in 230900.
 5. Warranties and Certificates division: Division shall include
 - a. Test and balance reports
 - b. Test records of piping, tanks, ductwork, etc
 - c. Signed checklist of Instruction Period
 - d. Certificate from Health Department indicating acceptance of domestic water quality
 - e. Copies of specific product Warranties
 - f. Copies of certified factory start-up reports
 - g. Valve tag identification schedules
 - h. Fire sprinkler system certification
- D. Prior to binding, submit one copy of Operation and Maintenance Manual to Owner's Representative for review. After this review and final approval of the manuals, prepare two (2) copies of approved manuals for use during the instruction period. Following instruction period, turn over both copies to the Owner.
- E. Manuals may be compiled in multiple volumes if necessary for ease of use.

1.22 OPERATION AND MAINTENANCE TRAINING

- A. General
1. Provide two training sessions for the Owner. The first training session shall occur prior to substantial completion. The second training session shall occur prior to completion of the warranty period. The content below is required for the first training session. The content for the second training session shall be as requested by the Owner, up to and including all information included in the first training session.
 2. Operation and maintenance of mechanical systems utilizing Operation and Maintenance Manual. During the training session, each piece of equipment shall be located, and all information included in the O&M manuals shall be demonstrated to the satisfaction of the Owner's Representative.
 3. Individuals present shall include the mechanical contractors, subcontractors and equipment factory representatives as appropriate. Certified factory representatives shall be present for all equipment requiring certified factory start-up.
 4. Provide a video tape of the training sessions conducted and furnish copies of the tape to the Owner. Video tapes shall be of sufficient quality to allow training of future employees or refresher training of personnel. Turn over to the Owner in DVD format.
 5. The two training sessions shall each occur in one consolidated session for all mechanical equipment.
 - a. Exceptions:

- 1) Training for equipment requiring certified factory start-up shall be conducted at the time of start-up.
- 2) Multiple sessions shall be scheduled as required to maintain a maximum allowable duration of any single session of four hours.
- 3) When separate training sessions are warranted to achieve proper training on all equipment and systems, as determined by the owner's representative, multiple sessions shall be scheduled as required.
- 4) EMCS system training shall occur independently, and shall be in accordance with the requirements of Section 230900.
- 5) Training session shall include all equipment included in the table at the end of this section. A table similar to this one shall be used to verify owner training has been completed on all equipment, and shall be included in the Operation and Maintenance Manual.
6. Extra Materials
 - a. A list of extra materials to be provided under this contract has been included at the end of this section. Refer to individual specification sections for specific requirements of extra materials to be furnished under this contract.
 - b. Turn extra materials over to Owner.
 - 1) Provide summarized list of extra materials that have been furnished. List shall include verification by Owner's Representative that parts have been furnished. Incorporate into O&M Manual. Extra materials list shall be similar to that provided at the end of this section.
7. Cleaning
 - a. Leave all equipment and systems in a clean and new condition at the completion of the project. Clean all piping and ductwork exposed in finished spaces. Remove all stickers from equipment in finished spaces (plumbing fixtures, etc.). Repair all scratched and damaged equipment to new condition, to include touch-up painting.
8. Record Drawings
 - a. Maintain a set of Contract Documents dedicated for record drawings. These documents shall incorporate all clarifications and changes provided by the Owner's Representative, as well as field changes made by the Contractor. All markings shall be neat and legible. Turn over documents to the Owner's Representative at the completion of the project.
9. Punch Lists
 - a. Notify the Owner's Representative in writing when the project is ready for punch lists.
 - b. When all punch list items have been addressed, notify the Owner's Representative in writing that the project is ready for a backcheck of completed punch list items. Include a copy of the original punch list with each completed item initialed and any required notation indicating if something was not completed and why.
 - c. If, at the time of the backcheck, items are found that continue to be in nonconformance with the project documents, these items will be forwarded to the Contractor. Completion of these items shall be required to achieve substantial completion. All site visits required beyond the initial punch list and initial back check visits, including visits required to verify completion of

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these remaining outstanding items, shall be charged to the Contractor at normal billing rates.

10. Visiting the Project Site
 - a. The premises shall be examined and conditions shall be understood which may affect performance of work of this Division before submitting proposals for this work.
 - b. No subsequent allowance for time or money will be considered for any consequence related to failure to examine existing site conditions.

1.23 SUMMARY

- A. Section 01 60 01 "Buy America Requirements" for special product requirements.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

PART 4 - TABLES

4.1 COST BREAKDOWN TABLE

Cost Breakdown Table		
Category	Material Cost	Labor / Installation Cost
Mobilization		
Supervision		
Site Utilities		
HVAC Piping Insulation		
Duct External Insulation		
Air and Water Balance		
EMCS Programming and Submittals		
EMCS Installation		
Hydronic Piping Systems		
Hydronic Pumps		
Refrigerant Piping Systems		
HVAC Water Treatment		
Ductwork Fabrication		
Ductwork Installation		
Power Ventilators		
Air Terminal Units		
Grilles, Registers, and Diffusers		
Intake and Relief Ventilators		
Breechings, Chimneys, and Stacks		
Boilers		
Heat Exchangers		

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Cost Breakdown Table		
Category	Material Cost	Labor / Installation Cost
Condensing Units		
Water Chillers		
Cooling Towers		
Air Handling Units		
Terminal Heat Transfer Units		
Fan Coil Units		
Commissioning Assistance		

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4.2 SUBMITTAL TABLE

Submittal Table				
	Submittal Data Included	Submittal Previously Approved	O&M Data Included	O&M Previously Approved
230500 – Basic HVAC Materials and Methods				
Access Doors				
Dielectric Fittings				
Escutcheons				
Mechanical Sleeve Seals				
Welding Certificates				
230516 – HVAC Pipe Expansion Fittings and Loops				
Externally Pressurized Guided Expansion Joint				
Pipe Alignment Guides				
Pipe Anchors				
Pipe Expansion Loops				
230519 – HVAC Meters and Gauges				
Pressure Gauges (Steam Service)				
Pressure Gauges (Water Service)				
Test Plugs and Kit				
Thermometers				
Thermowells				
230523 – HVAC General Duty Valves				
Ball Valves				
Butterfly Valves				
Check Valves – Lift Disc				
230529 – HVAC Hangers and Supports				
Fastener Systems				
Metal Framing Systems				
Welding Certificates				
230548 – Vibration and Seismic Controls				
Design Calculations and Details for Each Piece of Equipment to be Restrained.				
Floor Plan Piping and Duct Layouts				
Equipment Seismic Qualification Certification				
230553 – Mechanical Identification				
Access Panel and Door Markers				
Ceiling Tacks				
Nameplates				
Pipe Markers				
Tags				
Valve Schedules - A preliminary chart shall be submitted at submittal time, and shall be updated as part of the as-built documentation process.				
List of all equipment/items to receive nameplates indicating designation to be printed on nameplate.				
230593 – HVAC Testing, Adjusting, and Balancing				
Firm Qualifications and Certifications				

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Submittal Table				
	Submittal Data Included	Submittal Previously Approved	O&M Data Included	O&M Previously Approved
Construction Documents Examination Report				
Strategies and Procedures Plan				
Sample Report Forms				
Certified TAB Report				
230700 – HVAC Insulation				
Pipe Insulation – Cellular Foam				
Pipe Insulation – Glass Fiber				
Pipe Insulation – Cellular Glass				
Pipe Jacketing				
Duct Insulation - Glass Fiber, Flexible Blanket (Duct Wrap)				
Duct Insulation - Glass Fiber, Flexible (Duct Liner)				
Duct Insulation - Glass Fiber, Rigid				
Equipment Insulation – Glass Fiber				
Schedule Including Piping Systems, Insulation Type, Insulation Thickness Relative To Pipe Size				
Schedule Including Equipment, Insulation Type, Insulation Thickness				
Schedule Including Duct Systems, Insulation Type, Insulation Thickness				
230900 – Energy Management and Control Systems				
Statement of Conformance				
Statement of Native BACnet Conformance				
Floorplan Interface Submittal Information				
System Interface Submittal Information				
EMCS Software Submittal Information				
Graphical User Interface Submittal Information				
Web Browser Submittal Information				
Interface Wiring Diagram Submittal Information				
Component Submittal Information				
232110 – Hydronic Piping Systems				
Heating Water, Chilled Water, Heat Recovery Water, Condenser Water, Equipment Drain and Overflow Piping, Above Grade				
Chilled Water Piping, Buried				
Grooved and Shouldered Pipe End Couplings				
Air separators				
Air vents				
Automatic cold water fill assembly				
Balancing cocks				

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Submittal Table				
	Submittal Data Included	Submittal Previously Approved	O&M Data Included	O&M Previously Approved
Coil piping packages				
Combination pump discharge valves				
Expansion tanks				
Flow control balancing valves (automatic)				
Flow control balancing valves (manual)				
Reducing valves				
Relief valves				
Strainers				
Venturis				
232120 – Hydronic Pumps				
Base-Mounted Circulating Pumps				
In-Line Circulating Pumps				
232200 – Steam and Condensate Piping Systems				
Low Pressure Steam Piping and Steam Vent Piping				
Medium Pressure Steam and Steam Condensate Piping				
High Pressure Steam and Steam Condensate Piping				
Gaskets				
Gate Valves				
Globe Valves				
Swing Check Valves				
Condensate Return Units				
Steam Pressure Reducing Valves				
Steam Safety Relief Valves				
Steam Traps				
Steam Vacuum Breakers				
Strainers				
Project-Specific Steam Trap Capacity Table				
232220 – Steam Condensate Pumps				
Condensate Return Units				
232300 – Refrigerant Piping Systems				
Copper Tube and Fittings				
Filter-dryer				
Moisture and liquid indicators				
Refrigerant				
Refrigerant piping				
Check valve				
Manual refrigerant shut-off valve				
Solenoid valve				
Access door				
Piping supports and inserts				
233100- Ductwork				
Table indicating sheet metal materials to be used for each system type.				
Low Velocity Ductwork and Fittings				

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Submittal Table				
	Submittal Data Included	Submittal Previously Approved	O&M Data Included	O&M Previously Approved
Medium Velocity Ductwork and Fittings				
Chemical Fume Hood Exhaust Ductwork				
Clothes Dryer Exhaust Ductwork				
Flexible Ducts				
Kitchen Exhaust Ductwork				
Sealants				
233300 – Duct Accessories				
Access Doors				
Backdraft Dampers				
Duct-Mounted Access Doors				
Duct Silencers				
Fire and Smoke Dampers				
Flexible Duct Connectors				
Flexible Ducts				
Turning Vanes				
Volume Balancing Dampers				
233400 - Power Ventilators				
Centrifugal In-Line Fans (Belt Drive)				
Centrifugal In-Line Fans (Direct Drive)				
Downblast Centrifugal Roof Exhausters (Belt Drive)				
Downblast Centrifugal Roof Exhausters (Direct Drive)				
Upblast Centrifugal Roof Exhausters (Belt Drive)				
Upblast Centrifugal Roof Exhausters (Direct Drive)				
Centrifugal Wall Exhausters (Belt Drive)				
Centrifugal Wall Exhausters (Direct Drive)				
Upblast Centrifugal Roof Exhausters for Grease Laden Service (Belt Drive)				
Centrifugal Wall Exhausters for Grease Laden Service (Belt Drive)				
Ceiling Exhaust Fans (Direct Drive)				
Utility Set Fans (Belt Drive)				
Utility Set Fans for Grease Laden Service (Belt Drive)				
Wall-Mounted Propeller Fans (Belt Drive)				
233600 – Air Terminal Units				
Shutoff Single-Duct Air Terminal Units				
233710 – Grilles, Registers, and Diffusers				
Round Ceiling Diffusers (Horizontal Pattern)				
Round Ceiling Diffusers (Vertical to Horizontal Adjustable Pattern)				

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Submittal Table				
	Submittal Data Included	Submittal Previously Approved	O&M Data Included	O&M Previously Approved
Round Ceiling Diffusers (Vertical to Horizontal Adjustable Pattern - Heavy Duty)				
Rectangular Ceiling Diffusers (Horizontal Pattern)				
Rectangular Ceiling Diffusers (Vertical to Horizontal Adjustable Pattern)				
Perforated Face Ceiling Diffusers				
Perforated Face Return Grilles				
Sidewall Supply Grilles (Double Deflection)				
Return Grilles				
Modular Core Ceiling Diffusers				
Linear Bar Floor Grilles				
Laminar Flow Diffusers (Radial Air Diffusion)				
Maximum Security Grilles				
Maximum Security Slot Diffusers				
Minimum Security Supply Diffusers				
Minimum Security Sidewall Supply Grilles				
Minimum Security Return Grilles				
Slot Supply Diffusers				
Slot Return Grilles				
233720 – Intake and Relief Ventilators				
Goosenecks				
Louver Penthouse				
Louvers				
Roof Cows				
234100 – Air Filters				
Disposable Panel Filters				
Extended-Surface Disposable Panel Filters				
High-Efficiency Particulate Air (HEPA) Filters				
High-Efficiency Filters				
Filter Frames				
235100 – Breechings, Chimneys, and Stacks				
Guying and Bracing Materials				
Type B Vents				
235200 – Boilers and Accessories				
Copper fin Water Tube Boilers				
235700 – Heat Exchangers				
Shell-and-Tube Heat Exchangers – Steam to Water				
236200 – Condensing Units				
Condensing Units, 6 to 120 Tons, Air Cooled				
237400 - Air Handling Units				

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Submittal Table				
	Submittal Data Included	Submittal Previously Approved	O&M Data Included	O&M Previously Approved
Custom Air Handling Units				
Modular Air Handling Units				
238200 – Terminal Heat Transfer Units				
Propeller Unit Heaters				

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4.3 OPERATION AND MAINTENANCE TRAINING TABLE

Operation and Maintenance Training Table	
System	O&M Training Complete
230900 – Energy Management and Control System	
232100 – Hydronic Piping Systems	
232120 – Hydronic Pumps	
232200 – Steam and Condensate Piping Systems	
232220 – Steam Condensate Pumps	
232300 – Refrigerant Piping Systems	
232500 – HVAC Water Treatment	
233400 – Power Ventilators	
233600 – Air Terminal Units	
234100 – Air Filters	
235200 – Boilers and Accessories	
235700 – Heat Exchangers	
236200 – Condensing Units	
236400 – Water Chillers	
236500 – Cooling Towers	
237400 – Air Handling Units	
237400 – Terminal Heat Transfer Units	
The Contractor, associated factory representatives and subcontractors, have started each system and the total system and have proved their normal operation to the Owner's representative and have instructed him in the operation and maintenance thereof.	
_____	_____
Owner's Representative	Contractor

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4.4 EXTRA MATERIALS LIST

Extra Materials List				
Specification Section	Mechanical Equipment	Extra Materials	Verified By	Date
230519	HVAC Meters and Guages	Test Kit		
232120	Hydronic Pumps	One (1) Set of Mechanical Seals for Each Pump		
233400	Power Ventilators	One (1) Set of Fan Belts for Each Fan		
237400	Air Handling Units	One (1) Set of Fan Belts for Each Different Size and/or Type of Belt		
237400	Air Handling Units	One (1) Fan Bearing For Each Different Size and/or Type of Bearing		
237400	Air Handling Units	One (1) Set of Filters for Each Air Handling Unit		
233300	Duct Accessories	Fusible Links Equal to 10% of the Amount Installed		
233400	Power Ventilators	One (1) Spare Set of Belts and Bearings for Each Belt Driven Unit		
234100	Air Filters	One (1) Complete Set of Filters for Each Filter Bank		
234100	Air Filters	One (1) Container of Red Oil for Inclined Manometer Filter Guage		

4.5 EXTENDED WARRANTY LIST

Extended Warranty List		
Specification Section	Mechanical Equipment	Warranty Description
230900	Actuators	3 year unlimited warranty
232115	Ground Loop Piping	50 Year Limited Warranty
235200	Boilers	Heat Exchangers: 10 year warranty

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4.6 PRE-BALANCE CHECKLIST

Pre-Balance Checklist	
Item	Complete
General Contractor	
All doors and closures, windows and ceiling tile shall be installed	
96-hour run test complete	
Plumbing Contractor	
All valves, flow meters, temperature/pressure taps installed correctly, functional and accessible.	
Strainers and piping, clean, flushed, and free of debris	
Construction strainer baskets replaced with permanent baskets	
System filled to proper level and pressure reducing valve set	
Automatic and manual air vents properly installed and functional	
All air purged from system	
Water in expansion tanks at proper level	
All coils piped correctly and accessible	
Correct pump rotation	
Pumps properly aligned, grouted, and anchored	
Vibration isolators properly installed and adjusted	
Service and balance valves are open	
Sheet Metal Contractor	
Ductwork is intact and properly sealed	
Ductwork leak tested and repaired as required	
Access doors installed and properly secured	
Ductwork end caps installed	
Ductwork installed according to drawings and specifications	
Ductwork is free of debris	
All dampers, fire, volume, mixing, splitters are installed, accessible and open	
All terminal boxes, reheat coils, operators and dampers are installed, accessible and operable	
Return air has unobstructed path from each conditioned space back to the unit	
All grilles, registers, diffusers and other devices are installed and functional	
Filters are clean and correctly installed	
Filter frames correctly installed and sealed	
Coils clean, properly installed and sealed	
Drive components installed	
Sheaves properly aligned and tight on their shaft	
Belts adjusted for correct tension	
Belt guard properly installed	
Automatic control dampers installed and functional	
Fan rotation correct	
Fan housing installed and sealed	
All flex connections and vibration isolators are installed correctly	
Fan wheel aligned with adequate clearance	
Fan bearings lubricated	
Controls Contractor	
Controls complete and functional	
Thermostats and sensors calibrated	
Program correct and functional	

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Pre-Balance Checklist	
Item	Complete
Electrical Contractor	
Motors wired and energized	
Proper starter and overload protection installed	
Correct fuses installed	
Motor secured to frame	
Motor bearings lubricated	
Fire alarms and duct smoke detectors are fully operational	
General Contractor Sign-Off: _____ Date: _____	
Plumbing Contractor Sign-Off: _____ Date: _____	
Sheet Metal Contractor Sign-Off: _____ Date: _____	
Controls Contractor Sign-Off: _____ Date: _____	
Electrical Contractor Sign-Off: _____ Date: _____	

END OF SECTION 23 00 00

SECTION 23 05 00

BASIC HVAC MATERIALS AND METHODS

PART 1 - GENERAL

1.01 SUBMITTALS

- A. General
 - 1. Product data for specified materials.
 - 2. Welding certificates

1.02 QUALITY ASSURANCE

- A. Steel Support Welding: Qualify processes and operators according to AWS D1.1, "Structural Welding Code--Steel."
- B. Steel Pipe Welding: Qualify processes and operators according to ASME Boiler and Pressure Vessel Code: Section IX, "Welding and Brazing Qualifications."
 - 1. Comply with provisions in ASME B31 Series, "Code for Pressure Piping."
 - 2. Certify that each welder has passed AWS qualification tests for welding processes involved and that certification is current.
- C. Electrical Characteristics for Mechanical Equipment: Equipment of higher electrical characteristics may be furnished provided such proposed equipment is approved in writing and connecting electrical services, circuit breakers, and conduit sizes are appropriately modified. If minimum energy ratings or efficiencies are specified, equipment shall comply with requirements.

1.03 DELIVERY, STORAGE, AND HANDLING

- A. Deliver pipes and tubes with factory-applied end caps. Maintain end caps through shipping, storage, and handling to prevent pipe end damage and to prevent entrance of dirt, debris, and moisture.
- B. Store plastic pipes protected from direct sunlight. Support to prevent sagging and bending.

1.04 COORDINATION

- A. Arrange for pipe spaces, chases, slots, and openings in building structure during progress of construction, to allow for mechanical installations.
- B. Coordinate installation of required supporting devices and set sleeves in poured-in-place concrete and other structural components as they are constructed.

- C. Coordinate requirements for access panels and doors for mechanical items requiring access that are concealed behind finished surfaces. Access panels and doors shall be provided as required for Division 23 systems and equipment by Division 23 in accordance with Division 08.

1.05 SUMMARY

- A. Section 01 60 01 "Buy America Requirements" for special product requirements.

PART 2 - PRODUCTS

2.01 ACCESS DOORS

- A. Access doors shall be provided by Division 23 when serving Division 23 systems and equipment in accordance with the requirements of Division 08.

2.02 DIELECTRIC FITTINGS

- A. Description: Combination fitting of copper alloy and ferrous materials with threaded, solder-joint, plain, or weld-neck end connections that match piping system materials.

2.03 ESCUTCHEONS

- A. Description: Chrome plated steel manufactured wall and ceiling escutcheons and floor plates, with an ID to closely fit around pipe, tube, and insulation of insulated piping and an OD that completely covers opening.

2.04 HOUSEKEEPING PADS

- A. Housekeeping pads shall be provided by Division 23 when serving Division 23 systems and equipment and shall be made of concrete in accordance with the requirements of Division 03.

2.05 JOINING MATERIALS

- A. Refer to individual Division 23 piping Sections for special joining materials not listed below. Joining material requirements listed in individual Sections shall supersede the requirements in this section.
- B. Pipe-Flange Gasket Materials: Suitable for chemical and thermal conditions of piping system contents.

1. ASME B16.21, nonmetallic, flat, asbestos-free, 1/8-inch (3.2-mm) maximum thickness unless thickness or specific material is indicated.
 - a. Full-Face Type: For flat-face, Class 125, cast-iron and cast-bronze flanges.
 - b. Narrow-Face Type: For raised-face, Class 250, cast-iron and steel flanges.
 2. AWWA C110, rubber, flat face, 1/8 inch (3.2 mm) thick, unless otherwise indicated; full-face or ring type, unless otherwise indicated.
- C. Flange Bolts and Nuts: ASME B18.2.1, carbon steel, unless otherwise indicated.
- D. Plastic, Pipe-Flange Gasket, Bolts, and Nuts: Type and material recommended by piping system manufacturer, unless otherwise indicated.
- E. Solder Filler Metals: ASTM B 32, lead-free alloys. Include water-flushable flux according to ASTM B 813.
- F. Brazing Filler Metals: AWS A5.8, BCuP Series, copper-phosphorus alloys for general-duty brazing, unless otherwise indicated; AWS A5.8, BAg1, silver alloy for refrigerant piping, unless otherwise indicated.
- G. Welding Filler Metals: Comply with AWS D10.12 for welding materials appropriate for wall thickness and chemical analysis of steel pipe being welded.
- H. Solvent Cements for Joining Plastic Piping
 1. ABS Piping: ASTM D 2235.
 2. CPVC Piping: ASTM F 493.
 3. PVC Piping: ASTM D 2564. Include primer according to ASTM F 656.
 4. PVC to ABS Piping Transition: ASTM D 3138.
- I. Fiberglass Pipe Adhesive: As furnished or recommended by pipe manufacturer.

2.06 MECHANICAL SLEEVE SEALS

- A. Manufacturers:
 1. Advance Products & Systems, Inc.
 2. Calpico, Inc.
 3. Metraflex Co.
 4. Pipeline Seal and Insulator, Inc.
- B. Description: Modular sealing element unit, designed for field assembly, to fill annular space between pipe and sleeve.
- C. Construction: Sealing element - EPDM interlocking links shaped to fit surface of pipe, type and number required for pipe material and size of pipe; pressure plates - stainless steel, include two for each sealing element; connecting bolts and nuts - stainless steel of length required to secure pressure plates to sealing elements, include one for each sealing element.

2.07 PAINT

- A. When painting is noted in Division 22 as required, paint shall be provided by Division 22 in accordance with the requirements of Division 09.

2.08 SLEEVES

- A. Sleeves for Pipes Through Non-fire Rated Floors: 18 gauge (1.2 mm) thick galvanized steel.
- B. Sleeves for Pipes Through Non-fire Rated Beams, Walls, Footings, and Potentially Wet Floors: Steel pipe or 18 gauge (1.2 mm) thick galvanized steel.
- C. Sleeves for Pipes Through Fire Rated and Fire Resistive Floors and Walls, and Fire Proofing: Prefabricated fire rated sleeves including seals, UL listed, refer to Section 07270.
- D. Sleeves for below grade piping passing under footings: Class 52; ductile iron.
- E. Sleeves for below grade piping passing through exterior walls - Mechanical Sleeve Seals.
- F. Sleeves for Ductwork: Galvanized steel.
- G. Miscellaneous
 - 1. Stuffing Insulation: Glass fiber type; non-combustible; 3 lb. density.
 - 2. Fire Safeing Sealant: Intumescent material capable of expanding up to 8 to 10 times when exposed to temperatures beginning at 250°F. It shall have ICBO, BOCA I approved ratings to 3 hours per ASTM E814 (UL 1479). 3M Fire Barrier Caulk, Putty, strip and sheet forms.

2.09 SUPPORTS AND ANCHORAGES

- A. Metal supports for Division 23 systems and equipment shall be provided in accordance with the requirements of Division 05.

PART 3 - EXECUTION

3.01 GENERAL

- A. Mechanical Demolition
 - 1. Refer to Division 1 and Section 220000 for general demolition requirements and procedures.
 - 2. Disconnect, demolish, and remove mechanical systems, equipment, and components indicated to be removed.

- a. Piping to Be Removed: Remove portion of piping indicated to be removed and cap or plug remaining piping with same or compatible piping material.
 - b. Piping to Be Abandoned in Place: Drain piping and cap or plug piping with same or compatible piping material.
 - c. Ducts to Be Removed: Remove portion of ducts indicated to be removed and cap and seal remaining ducts with same or compatible ductwork material.
 - d. Ducts to Be Abandoned in Place: Cap and seal ducts with same or compatible ductwork material. Provide duct supports as required to ensure proper support of abandoned ducts.
 - e. Equipment to Be Removed: Disconnect and cap services and remove equipment.
 - f. Equipment to Be Removed and Reinstalled: Disconnect and cap services and remove, clean, and store equipment; when appropriate, reinstall, reconnect, and make equipment operational.
 - g. Equipment to Be Removed and Salvaged: Disconnect and cap services and remove equipment and deliver to Owner.
 3. If pipe, duct, insulation, or equipment to remain is damaged in appearance or is unserviceable, remove damaged or unserviceable portions and replace with new products of equal capacity and quality.
 4. Patch all building penetrations for systems and equipment that are removed.
- B. Cutting And Patching
1. All cutting and patching of new and existing construction required for the installation of systems and equipment specified in Division 23 shall be the responsibility of the Division 23 Contractor. All cutting shall be accomplished with masonry saws, drills or similar equipment to provide neat uniform openings.
 2. Patch and repair walls, floors, ceilings and roof with materials of same quality and appearance as adjacent surfaces unless otherwise shown. Surface finishes shall exactly match existing finishes of same materials. All patching shall meet the approval of the Owner's Representative.
 3. All cutting and patching made necessary to repair defective equipment, defective workmanship or be neglect of this Contractor to properly anticipate his requirements shall be included in Division 23.
 4. Cut carefully to minimize necessity for repairs to existing work. Do not cut beams, columns, or trusses or other structural members without the Owner Representative's written approval.
 5. Cutting, patching, repairing, and replacing pavement, sidewalks, roads, and curbs to permit installation of work specified or indicated under this Division is responsibility of Division 23.
- C. Piping Systems - Common Requirements
1. Install piping according to the following requirements and Division 23 Sections specifying piping systems.
 2. Install piping in concealed locations, unless otherwise indicated and except in equipment rooms and service areas.
 3. Install piping indicated to be exposed and piping in equipment rooms and service areas at right angles or parallel to building walls. Diagonal runs are prohibited unless specifically indicated otherwise.

4. Install piping above accessible ceilings to allow sufficient space for ceiling panel removal.
5. Install piping to permit valve servicing.
6. Install piping at indicated slopes.
7. Install piping free of sags and bends.
8. Install piping to allow application of insulation.
9. Select system components with pressure rating equal to or greater than system operating pressure.
10. Fire-Barrier Penetrations: Maintain indicated fire rating of walls, partitions, ceilings, and floors at pipe penetrations. Seal pipe penetrations with firestop materials. Refer to Division 7 Section "Through-Penetration Firestop Systems" for materials.
11. Verify final equipment locations for roughing-in.
12. Refer to equipment specifications in other Sections of these Specifications for roughing-in requirements.

D. Piping Connections

1. Make connections according to the following, unless otherwise indicated:
 - a. Install unions, in piping NPS 2 (DN 50) and smaller, adjacent to each valve and at final connection to each piece of equipment.
 - b. Install flanges, in piping NPS 2-1/2 (DN 65) and larger, adjacent to flanged valves and at final connection to each piece of equipment.

E. Equipment Installation - Common Requirements

1. Install equipment to allow maximum possible headroom unless specific mounting heights are not indicated.
2. Install equipment level and plumb, parallel and perpendicular to other building systems and components in exposed interior spaces, unless otherwise indicated.
3. Install mechanical equipment to facilitate service, maintenance, and repair or replacement of components. Connect equipment for ease of disconnecting, with minimum interference to other installations. Extend grease fittings to accessible locations.
4. Install equipment to allow right of way for piping installed at required slope.

3.02 ACCESS DOORS

- A. Provide access doors where specialties are not exposed unless indicated to be provided under other Divisions. Access doors shall comply with Division 08. Coordinate size and location with access requirements.
- B. Access door locations may occasionally be shown on the drawings, to indicate specific location and/or installation requirements in certain instances. This shall not be construed to indicate that all required access doors have been shown on the drawings. It is the Contractor's responsibility to provide access doors as required.

3.03 DIELECTRIC FITTINGS

- A. Provide dielectric fittings whenever connecting piping of dissimilar metals.

3.04 ESCUTCHEONS

- A. Install escutcheons for penetrations of walls, ceilings, and floors in finished spaces.

3.05 HOUSEKEEPING PADS

- A. Refer to individual specification Sections for equipment requiring housekeeping pads.
- B. Construct housekeeping pads of dimensions not less than 4 inches (100 mm) larger in both directions than supported unit. Also ensure minimum concrete coverage around anchor bolts is maintained to meet both anchor bolt manufacturer's requirements and seismic codes.
- C. Install dowel rods to connect concrete base to concrete floor. Unless otherwise indicated, install dowel rods on 18-inch (450-mm) centers around the full perimeter of the base.
- D. Anchor equipment to concrete base according to equipment manufacturer's written instructions and according to seismic codes.
- E. Anchor Bolts
 - 1. Install anchor bolts according to anchor-bolt manufacturer's written instructions and according to seismic codes.
 - 2. Extend anchor bolts through concrete base, and anchor into structural concrete floor.
 - 3. Install anchor bolts to elevations required for proper attachment to supported equipment.

3.06 MECHANICAL SLEEVE SEALS

- A. Provide mechanical sleeve seals at the following locations:
 - 1. Below grade wall piping penetrations
 - 2. Slab on grade floor and basement floor piping penetrations.
 - 3. Penetrations of all separations where separation serves as a moisture barrier.

3.07 PAINTING

- A. Damage and Touchup: Repair marred and damaged factory-painted finishes with materials and procedures to match original factory finish.
- B. Refer to individual specifications Sections for additional paint scope requirements.

3.08 SLEEVES

- A. Provide sleeves for above grade duct and piping penetrations of walls, roofs and floors.
 - 1. Exception: Sleeves are not required for core drilled holes.

- B. Set sleeves in position in formwork. Provide reinforcing around sleeves.
- C. Size sleeves large enough to allow for movement due to expansion and contraction. Provide for continuous insulation wrapping, where duct or pipe is to be insulated.
- D. Where piping or ductwork penetrates a roof, floor or wall, close off space between pipe or duct and sleeve with fiberglass insulation and sealant (air tight). This applies to all roofs, walls or floors regardless of fire rating. Refer to Division 07 for additional information. Note: 3 lb. insulation not required at roof penetrations. Use fire safeing sealant at penetrations of fire rated floors and walls.
- E. Furnish and install waterproof sleeves on all piping and duct penetrations through the floor slabs in mechanical room and any area where pipes and ducts pass through slabs where water spillage could cause damage to ceilings below. Top of sleeve shall extend 2" (51 mm) above floor.

3.09 SUPPORTS AND ANCHORAGES

- A. Metal
 - 1. Cut, fit, and place miscellaneous metal supports accurately in location, alignment, and elevation to support and anchor mechanical materials and equipment.
 - 2. Field Welding: Comply with AWS D1.1.
- B. Wood
 - 1. Cut, fit, and place wood grounds, nailers, blocking, and anchorages to support, and anchor mechanical materials and equipment.
 - 2. Select fastener sizes that will not penetrate members if opposite side will be exposed to view or will receive finish materials. Tighten connections between members. Install fasteners without splitting wood members.
 - 3. Attach to substrates as required to support applied loads.

END OF SECTION 23 05 00

SECTION 23 05 13

MOTOR REQUIREMENTS FOR HVAC EQUIPMENT

PART 1 - GENERAL

1.01 SUMMARY

- A. Section includes basic requirements for factory-installed motors provided with equipment specified in other sections of Division 23.

1.02 REFERENCES

- A. AFBMA 9 - Load Ratings and Fatigue Life for Ball Bearings
- B. NEMA MG 1 - Motors and Generators
- C. NFPA 70 - National Electrical Code
- D. UL 674 - UL Standard for Safety Electric Motors and Generators for Use in Division 1 Hazardous (Classified) Locations
- E. UL 1836 - UL Standard for Safety for Electric Motors for Use in Class I, Division 2 and Class II, Division 2 Hazardous (Classified) Locations

1.03 SUBMITTALS

- A. Submit motor features and characteristics as part of submittals for Division 23 equipment having motors larger than ½ HP.
- B. See Submittal Table in Section 2300000 for items to be submitted. Or:
- C. Product Data: Motor features and characteristics for motors larger than ½ HP.

1.04 QUALITY ASSURANCE

- A. Testing Agency Qualifications: An independent agency, with the experience and capability to conduct the testing indicated, that is a member company of the InterNational Electrical Testing Association or is a nationally recognized testing laboratory (NRTL) as defined by OSHA in 29 CFR 1910.7, and that is acceptable to authorities having jurisdiction.
- B. Testing Agency's Field Supervisor: Person currently certified by the InterNational Electrical Testing Association or the National Institute for Certification in Engineering Technologies to supervise on-site testing specified in Part 3.

RESTROOM IMPROVEMENTS AT FULLERTON PARK AND RIDE

**C-2-2409
EXHIBIT B**

- C. Source Limitations: Obtain field-installed motors through one source from a single manufacturer.
- D. Product Options for Field-Installed Motors: Drawings indicate size, profiles, and dimensional requirements of motors and are based on the specific system indicated. Refer to Division 1 Section "Product Requirements."
- E. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- F. Comply with latest published edition of NFPA 70.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Subject to compliance with requirements, provide the product indicated on Drawings or a comparable product by one of the following:
 - 1. Reliance
 - 2. Baldor
 - 3. Marathon
 - 4. US Motors
 - 5. General Electric
 - 6. Siemens

2.02 GENERAL REQUIREMENTS

- A. Motors 1/2 HP and Larger: Three phase.
- B. Motors Smaller Than 1/2 HP: Single phase.
- C. Frequency Rating: 60 Hz.
- D. Voltage Rating: NEMA standard voltage selected to operate on nominal circuit voltage to which motor is connected. Motor shall be capable of normal operation with voltage variations of plus or minus 10% of nameplate rating.
- E. Frequency Rating: 60 Hz.
- F. Efficiency: Premium efficiency as defined by NEMA MG1, unless otherwise indicated.
- G. Duty: Continuous duty at ambient temperature of 105 deg F (40 deg C) and at altitude of 3300 feet (1005 m) above sea level
- H. Capacity and Torque Characteristics: Sufficient to start, accelerate, and operate connected loads at designated speeds, at installed altitude and environment, with

indicated operating sequence, and without exceeding nameplate ratings or considering service factor.

- I. Enclosure Type:
 - 1. Indoor Service: Totally Enclosed Fan Cooled (TEFC) or Open Drip-Proof (ODP); provide ODP unless otherwise indicated. Provide drain plugs at the lowest part of the motor housing.
 - 2. Outdoor Service: Totally Enclosed Fan Cooled (TEFC) or Totally Enclosed Air Over (TEAO); provide TEFC unless otherwise indicated. Furnish with drain and breather plugs. Refer to individual sections for enclosure type.
 - 3. Hazardous Environment Duty: Explosion-proof motors where indicated. Furnish with drain and breather plugs.
- J. Orientation: Motors used in vertical configuration shall be specifically designed to operate in vertical installation. Universal position motors are not acceptable. Thrust bearing rating shall be compatible with the loads imposed by the driven equipment.
- K. Finish: Coat parts with zinc-rich primer prior to final coats of epoxy enamel.
- L. Enclosure: Cast iron for motors 7.5 hp and larger; rolled steel for motors smaller than 7.5 hp.

2.03 POLYPHASE MOTORS

- A. Description: NEMA MG 1, Design B, medium induction motor.
- B. Stator: Copper windings, unless otherwise indicated; multispeed motors shall have separate winding for each speed.
- C. Rotor: Squirrel cage, unless otherwise indicated.
- D. Bearings: Regreasable, shielded, antifriction ball bearings suitable for radial and thrust loading. Rated for minimum AFBMA 9, L-10 life of 50,000 hours. Calculate bearing load with NEMA minimum V- belt pulley with belt center line at end of NEMA standard shaft extension. Stamp bearing sizes on nameplate. Temperature Rise: Class B, unless otherwise indicated.
- E. Insulation: Class F, unless otherwise indicated.
- F. Starting Torque: Between one and one and one-half times full load torque.
- G. Starting Current: Six times full load current or more.
- H. Multispeed Motors: Separate winding for each speed.
- I. Lubrication: Motors shall be grease lubricated, unless otherwise indicated. Bearings shall be externally regreasable via accessible grease fittings without having to disassemble the motor; provide for the elimination of the purged grease through fittings. Provide seals to prevent grease from entering the motor interior. Vertical motor lubrication shall conform to the motor manufacturer's recommendations.

RESTROOM IMPROVEMENTS AT FULLERTON PARK AND RIDE

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- J. Vibration: Test motor vibration at bearing housing and shaft in accordance with NEMA MG 1, Section I, Part 7. Maximum allowable vibration velocity is 0.08 inches per second (resiliently mounted).
- K. Winding Over-Temperature Protection: Imbedded (normally closed contact) thermostats, one per winding, shall be provided for an external thermal alarm or motor cut-out for all motors 15 hp and above, unless indicated otherwise. Thermostat automatically resets when the motor temperature returns to normal range. Thermal cutout leads shall be brought out to the motor terminal connection box.
- L. Noise Control: Comply with NEMA MG 1, Section I, Part 9.
- M. Lifting lugs: Provide lifting lugs on motors weighing over 100 lbs. Drilled and tapped holes for lugs shall not penetrate motor enclosure.
- N. Weatherproof Epoxy Sealed Motors: Epoxy seal windings using vacuum and pressure coat windings with rotor and starter surfaces protected with epoxy enamel. Bearings shall be double shielded with waterproof non-washing grease.
- O. Code Letter Designation:
 - 1. Motors 15 HP and Larger: NEMA starting Code F or Code G.
 - 2. Motors Smaller Than 15 HP: Manufacturer's standard starting characteristic.

2.04 POLYPHASE MOTORS WITH ADDITIONAL REQUIREMENTS

- A. Motors Used with Reduced-Inrush Controllers: Match wiring connection requirements for controller with required motor leads; Provide terminals in motor terminal box, suited to control method.
- B. Motors Used with Variable Frequency Drives
 - 1. Ratings, characteristics, and features coordinated with and approved by drive manufacturer.
 - 2. Designed with critical vibration frequencies outside operating range of controller output.
 - 3. Temperature Rise: Class B.
 - 4. Insulation: Class H.
 - 5. Thermal Protection: Comply with NEMA MG 1 requirements for thermally protected motors.
 - 6. Maximum Rated Motor Speed: Motor nameplates shall indicate that motors are inverter duty motors capable of operation up to 200% nameplate speed.
 - 7. Shaft Grounding System: Motor shall have shaft grounding system to discharge electrical shaft currents within the motor and/or its bearings. The system shall use conductive micro-fiber shaft grounding rings and shall be designed to reduce shaft voltage levels to less than 2 volts peak-to-peak. On motors up to 100 hp, one grounding ring shall be provided on either the drive or non-drive end of the motor; on motors over 100 hp, provide grounding rings on both the drive and non-drive side of the motor.
- C. Rugged-Duty Motors

RESTROOM IMPROVEMENTS AT FULLERTON PARK AND RIDE

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1. Totally enclosed, with 1.25 minimum service factor, greased bearings, integral condensate drains, and capped relief vents.
2. Windings insulated with non-hygroscopic material.
3. Finish: Chemical-resistant paint over corrosion-resistant primer.

2.05 SINGLE-PHASE MOTORS

- A. MotorType:
 1. Motors larger than 1/20 HP: To suit starting torque and requirements of specific motor application use one of the following: permanent-split capacitor; split-phase start, capacitor run or capacitor start, capacitor run.
 2. Motors 1/20 hp and smaller: Shaded-pole.
 3. Multispeed Motors: Variable-torque, permanent-split-capacitor type
- B. Thermal Protection: Internal protection to automatically open power supply circuit to motor when winding temperature exceeds a safe value calibrated to temperature rating of motor insulation. Thermal-protection device shall automatically reset when motor temperature returns to normal range.
- C. Insulation: NEMA Class B insulation, unless otherwise indicated.
- D. Bearings: Ball type for belt-connected motors and other motors with high radial forces on motor shaft; sealed, prelubricated-sleeve type for other single-phase motors.

PART 3 - EXECUTION

3.01 APPLICATION

- A. Requirements for explosion proof motor enclosures need to be added where applicable.
- B. Motors located inside the building or in exterior equipment that is weather-proof: Open Drip Proof (ODP), unless otherwise indicated.
- C. Motors located in exterior locations: Totally enclosed fan cooled (TEFC) with weatherproof epoxy-sealed type, unless otherwise indicated.
- D. Motors located in air streams: Totally enclosed fan cooled (TEFC).
- E. Motors located in wet air streams: Totally enclosed air over (TEAO) with weatherproof epoxy-treated type.
- F. Motors drawing less than 250 Watts and intended for intermittent service may be standard of equipment manufacturer and need not conform to these specifications.
- G. Single phase motors for centrifugal pumps: split phase type.
- H. Single phase motors for shaft mounted fans or blowers: permanent split capacitor type.

3.02 GENERAL

- A. Refer to individual specification sections for equipment with motors for execution requirements.
- B. Motors for Variable Speed Drives: Install shaft grounding system according to manufacturer's recommendations.

END OF SECTION 23 05 13

SECTION 23 05 93

TESTING, ADJUSTING AND BALANCING FOR HVAC

PART 1 - GENERAL

1.01 REFERENCES

- A. General
 - 1. AABC - National Standards for Total System Balance
 - 2. ADC - Test Code for Grilles, Registers, and Diffusers
 - 3. ASHRAE 111 - Practices for Measurement, Testing, Adjusting, and Balancing of Building Heating, Ventilation, Air-conditioning, and Refrigeration Systems
 - 4. NEBB - Procedural Standards for Testing, Adjusting, and Balancing of Environmental Systems
 - 5. SMACNA - HVAC Systems Testing, Adjusting, and Balancing

1.02 SUBMITTALS

- A. Contract Documents Examination Report: Submit copies of the Contract Documents review report as specified in Part 3.
- B. Strategies and Procedures Plan: Submit copies of TAB strategies and step-by-step procedures as specified in Part 3 "Preparation" Article. Include a complete set of report forms intended for use on this Project.
- C. Certified TAB Reports: Submit two copies of reports prepared, as specified in this Section, on approved forms certified by TAB firm.
- D. Sample Report Forms: Submit two sets of sample TAB report forms.
- E. Warranties specified in this Section.

1.03 QUALITY ASSURANCE

- A. TAB Firm Qualifications: Engage a TAB firm certified by AABC or NEBB.
- B. TAB Conference: Meet with Owner's and Architect's representatives on approval of TAB strategies and procedures plan to develop a mutual understanding of the details. Ensure the participation of TAB team members, equipment manufacturers' authorized service representatives, HVAC controls installers, and other support personnel. Provide seven days' advance notice of scheduled meeting time and location.
 - 1. Agenda Items: Include at least the following:
 - a. Submittal distribution requirements.
 - b. The Contract Documents examination report.
 - c. TAB plan.

- d. Work schedule and Project-site access requirements.
 - e. Coordination and cooperation of trades and subcontractors.
 - f. Coordination of documentation and communication flow.
- C. Certification of TAB Reports: Certify TAB field data reports. This certification includes the following:
 - 1. Review field data reports to validate accuracy of data and to prepare certified TAB reports.
 - 2. Certify that TAB team complied with approved TAB plan and the procedures specified and referenced in this Specification.
- D. TAB Report Forms: Use standard forms NEBB's "Procedural Standards for Testing, Adjusting, and Balancing of Environmental Systems."
- E. Instrumentation Type, Quantity, and Accuracy: As described in NEBB's "Procedural Standards for Testing, Adjusting, and Balancing of Environmental Systems," Section II, "Required Instrumentation for NEBB Certification."
- F. Instrumentation Calibration: Calibrate instruments at least every six months or more frequently if required by instrument manufacturer.
 - 1. Keep an updated record of instrument calibration that indicates date of calibration and the name of party performing instrument calibration.

1.04 PROJECT CONDITIONS

- A. Full Owner Occupancy: Owner will occupy the site and existing building during entire TAB period. Cooperate with Owner during TAB operations to minimize conflicts with Owner's operations.
- B. Partial Owner Occupancy: Owner may occupy completed areas of building before Substantial Completion. Cooperate with Owner during TAB operations to minimize conflicts with Owner's operations.

1.05 COORDINATION

- A. Coordinate the efforts of factory-authorized service representatives for systems and equipment, HVAC controls installers, and other mechanics to operate HVAC systems and equipment to support and assist TAB activities.
- B. Notice: Provide seven days' advance notice for each test. Include scheduled test dates and times.
- C. Perform TAB after leakage and pressure tests on air and water distribution systems have been satisfactorily completed.

1.06 **SUMMARY**

- A. Section 01 60 01 "Buy America Requirements" for special product requirements.

PART 2 - PRODUCTS (NOT APPLICABLE)

PART 3 - EXECUTION

3.01 **TAB SPECIALISTS**

- A. Approved TAB Specialists
 - 1. Neodorfer Engineers

3.02 **EXAMINATION**

- A. General
 - 1. Verify that systems are complete and operable before commencing work. Ensure that the items on the pre-balance checklist are completed.
 - 2. Examine the Contract Documents to become familiar with Project requirements and to discover conditions in systems' designs that may preclude proper TAB of systems and equipment.
 - 3. Examine systems for installed balancing devices, such as test ports, gage cocks, thermometer wells, flow-control devices, balancing valves and fittings, and manual volume dampers. Verify that locations of these balancing devices are accessible.
 - 4. Examine the approved submittals for HVAC systems and equipment.
 - 5. Examine design data including HVAC system descriptions, statements of design assumptions for environmental conditions and systems' output, and statements of philosophies and assumptions about HVAC system and equipment controls.
 - 6. When used for HVAC distribution, examine ceiling plenums and underfloor air plenums used for supply, return, or relief air to verify that they meet the leakage class of connected ducts as specified in Section 233100 and are properly separated from adjacent areas. Verify that penetrations in plenum walls are sealed and fire-stopped if required.
 - 7. Examine equipment performance data including fan and pump curves.
 - a. Relate performance data to Project conditions and requirements, including system effects that can create undesired or unpredicted conditions that cause reduced capacities in all or part of a system.
 - b. Calculate system-effect factors to reduce performance ratings of HVAC equipment when installed under conditions different from the conditions used to rate equipment performance. To calculate system effects for air systems, use tables and charts found in AMCA 201, "Fans and Systems," or in SMACNA's "HVAC Systems - Duct Design." Compare results with the design data and installed conditions.

8. Examine system and equipment installations and verify that field quality-control testing, cleaning, and adjusting specified in individual Sections have been performed.
9. Examine test reports specified in individual system and equipment Sections.
10. Examine HVAC equipment and filters and verify that bearings are greased, belts are aligned and tight, and equipment with functioning controls is ready for operation.
11. Examine terminal units, such as variable-air-volume boxes, and verify that they are accessible and their controls are connected and functioning.
12. Examine strainers. Verify that startup screens are replaced by permanent screens with indicated perforations.
13. When used, examine three-way valves for proper installation for their intended function of diverting or mixing fluid flows.
14. Examine heat-transfer coils for correct piping connections and for clean and straight fins.
15. Examine system pumps to ensure absence of entrained air in the suction piping.
16. Examine operating safety interlocks and controls on HVAC equipment.
17. Report deficiencies discovered before and during performance of TAB procedures. Observe and record system reactions to changes in conditions. Record default set points if different from indicated values.

B. Test and Verification of Control System

1. The Air Balance and Testing Agency, with the aid of the Control Contractor, shall verify that the control systems are performing in accordance to the specified criteria.
2. Operation of all components and system sequence shall be verified. Letter of certification shall be forwarded to the Owner's Representative with copies enclosed in the O&M Manual.
3. This procedure shall not relieve the control contractor of any responsibilities. This paragraph is intended to insure that the control system is completely operational and adjusted at the time the air systems testing and balancing is being accomplished.

3.03 PREPARATION

- A. Prepare a TAB plan that includes strategies and step-by-step procedures.
- B. Complete system-readiness checks and prepare reports. Verify the following:
 1. Permanent electrical-power wiring is complete.
 2. Hydronic systems are filled, clean, and free of air.
 3. Automatic temperature-control systems are operational.
 4. Equipment and duct access doors are securely closed.
 5. Balance, smoke, and fire dampers are open.
 6. Isolating and balancing valves are open and control valves are operational.
 7. Ceilings are installed in critical areas where air-pattern adjustments are required and access to balancing devices is provided.
 8. Windows and doors can be closed so indicated conditions for system operations can be met.

- C. Provide instruments required for testing, adjusting, and balancing operations.

3.04 PROCEDURES

A. General

1. All procedures shall be in accordance with and meet all the requirements of either AABC or NEBB procedural standards for all equipment and systems included in the project. The requirements listed in this section are intended to be supplementary to the requirements of these standards.
2. Comply with requirements in ASHRAE 62.1-2004, Section 7.2.2, "Air Balancing."
3. Cut insulation, ducts, pipes, and equipment cabinets for installation of test probes to the minimum extent necessary for TAB procedures.
 - a. After testing and balancing, patch probe holes in ducts with same material and thickness as used to construct ducts.
 - b. Install and join new insulation that matches removed materials. Restore insulation, coverings, vapor barrier, and finish according to Division 23 Section "HVAC Insulation."
4. Mark equipment and balancing devices, including damper-control positions, valve position indicators, fan-speed-control levers, and similar controls and devices, with paint or other suitable, permanent identification material to show final settings.
5. Take and report testing and balancing measurements in inch-pound (IP) units.

B. Air Systems

1. General
 - a. Prepare test reports for both fans and outlets. Obtain manufacturer's outlet factors and recommended testing procedures. Crosscheck the summation of required outlet volumes with required fan volumes.
 - b. Prepare schematic diagrams of systems' "as-built" duct layouts.
 - c. For variable-air-volume systems, develop a plan to simulate diversity.
 - d. Determine the best locations in main and branch ducts for accurate duct-airflow measurements.
 - e. Check airflow patterns from the outdoor-air louvers and dampers and the return- and exhaust-air dampers through the supply-fan discharge and mixing dampers.
 - f. Locate start-stop and disconnect switches, electrical interlocks, and motor starters.
 - g. Verify that motor starters are equipped with properly sized thermal protection.
 - h. Check dampers for proper position to achieve desired airflow path.
 - i. Check for airflow blockages.
 - j. Check condensate drains for proper connections and functioning.
 - k. Check for proper sealing of air-handling-unit components.
 - l. Verify that air duct system is sealed as specified in Division 23 Section "Metal Ducts."
2. Constant Volume Systems
 - a. Adjust fans to deliver total indicated airflows within the maximum allowable fan speed listed by fan manufacturer.

- b. Measure total airflow.
 - 1) Where sufficient space in ducts is unavailable for Pitot-tube traverse measurements, measure airflow at terminal outlets and inlets and calculate the total airflow.
 - c. Measure fan static pressures as follows to determine actual static pressure:
 - 1) Measure outlet static pressure as far downstream from the fan as practical and upstream from restrictions in ducts such as elbows and transitions.
 - 2) Measure static pressure directly at the fan outlet or through the flexible connection.
 - 3) Measure inlet static pressure of single-inlet fans in the inlet duct as near the fan as possible, upstream from the flexible connection, and downstream from duct restrictions.
 - 4) Measure inlet static pressure of double-inlet fans through the wall of the plenum that houses the fan.
 - d. Measure static pressure across each component that makes up an air-handling unit, rooftop unit, and other air-handling and -treating equipment.
 - 1) Report the cleanliness status of filters and the time static pressures are measured.
 - e. Measure static pressures entering and leaving other devices, such as sound traps, heat-recovery equipment, and air washers, under final balanced conditions.
 - f. Review Record Documents to determine variations in design static pressures versus actual static pressures. Calculate actual system-effect factors.
 - g. Make required fan speed adjustments. Make all required system alterations to achieve fan speed adjustments, including sheave adjustment and replacement.
 - 1) Do not make fan-speed adjustments that result in motor overload. Consult equipment manufacturers about fan-speed safety factors. Modulate dampers and measure fan-motor amperage to ensure that no overload will occur. Measure amperage in full-cooling, full-heating, economizer, and any other operating mode to determine the maximum required brake horsepower.
 - h. Adjust volume dampers for main duct, submain ducts, and major branch ducts to indicated airflows within specified tolerances.
 - i. Measure airflow of submain and branch ducts.
 - 1) Where sufficient space in submain and branch ducts is unavailable for Pitot-tube traverse measurements, measure airflow at terminal outlets and inlets and calculate the total airflow for that zone.
 - j. Measure static pressure at a point downstream from the balancing damper, and adjust volume dampers until the proper static pressure is achieved.
 - k. Remeasure each submain and branch duct after all have been adjusted. Continue to adjust submain and branch ducts to indicated airflows within specified tolerances.
3. Measure air outlets and inlets without making adjustments.
- a. Measure terminal outlets using a direct-reading hood or outlet manufacturer's written instructions and calculating factors.

4. Adjust air outlets and inlets for each space to indicated airflows within specified tolerances of indicated values. Make adjustments using branch volume dampers rather than extractors and the dampers at air terminals.
 - a. Adjust each outlet in same room or space to within specified tolerances of indicated quantities without generating noise levels above the limitations prescribed by the Contract Documents.
 - b. Adjust patterns of adjustable outlets for proper distribution without drafts.
- C. Equipment
 1. Motors
 - a. Motors, 1/2 HP and Larger: Test at final balanced conditions and record the following data:
 - 1) Manufacturer's name, model number, and serial number.
 - 2) Motor horsepower rating.
 - 3) Motor rpm.
 - 4) Efficiency rating.
 - 5) Nameplate and measured voltage, each phase.
 - 6) Nameplate and measured amperage, each phase.
 - 7) Starter thermal-protection-element rating.
 - b. Motors Driven by Variable-Frequency Controllers: Test for proper operation at speeds varying from minimum to maximum. Test the manual bypass of the controller to prove proper operation. Record observations including name of controller manufacturer, model number, serial number, and nameplate data.

3.05 **TOLERANCES**

- A. Balance all systems to within plus or minus 10% of design parameters. When system performance (available fan and pump flow and pressure, etc.) allows, balance systems so that total system flows are at a minimum of 100% of design parameters, without causing any individual flow location to be more than 10% in excess of design parameters.

3.06 **REPORTING**

- A. Initial Construction-Phase Report
 1. Based on examination of the Contract Documents as specified in "Examination" Article, prepare a report on the adequacy of design for systems' balancing devices. Recommend changes and additions to systems' balancing devices to facilitate proper performance measuring and balancing. Recommend changes and additions to HVAC systems and general construction to allow access for performance measuring and balancing devices.
- B. Final Report
 1. General: Prepare a certified written report; tabulate and divide the report into separate sections for tested systems and balanced systems.

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- a. Include a certification sheet at the front of the report's binder, signed and sealed by the certified testing and balancing engineer.
 - b. Include a list of instruments used for procedures, along with proof of calibration.
2. Final Report Contents: In addition to certified field-report data, include the following:
 - a. Pump curves.
 - b. Fan curves.
 - c. Manufacturers' test data.
 - d. Field test reports prepared by system and equipment installers.
 - e. Other information relative to equipment performance; do not include Shop Drawings and product data.
3. General Report Data: In addition to form titles and entries, include the following data:
 - a. Title page.
 - b. Name and address of the TAB contractor.
 - c. Project name.
 - d. Project location.
 - e. Architect's name and address.
 - f. Engineer's name and address.
 - g. Contractor's name and address.
 - h. Report date.
 - i. Signature of TAB supervisor who certifies the report.
 - j. Table of Contents with the total number of pages defined for each section of the report. Number each page in the report.
 - k. Summary of contents including the following:
 - 1) Indicated versus final performance.
 - 2) Notable characteristics of systems.
 - 3) Description of system operation sequence if it varies from the Contract Documents.
 - l. Nomenclature sheets for each item of equipment.
 - m. Data for terminal units, including manufacturer's name, type, size, and fittings.
 - n. Notes to explain why certain final data in the body of reports vary from indicated values.
 - o. Test conditions for fans and pump performance forms including the following:
 - 1) Settings for outdoor-, return-, and exhaust-air dampers.
 - 2) Conditions of filters.
 - 3) Cooling coil, wet- and dry-bulb conditions.
 - 4) Face and bypass damper settings at coils.
 - 5) Fan drive settings including settings and percentage of maximum pitch diameter.
 - 6) Inlet vane settings for variable-air-volume systems.
 - 7) Settings for supply-air, static-pressure controller.
 - 8) Other system operating conditions that affect performance.
4. Fan Test Reports: For supply, return, and exhaust fans, include the following:
 - a. Fan Data:
 - 1) System identification.

- 2) Location.
 - 3) Make and type.
 - 4) Model number and size.
 - 5) Manufacturer's serial number.
 - 6) Arrangement and class.
 - 7) Sheave make, size in inches (mm), and bore.
 - 8) Center-to-center dimensions of sheave, and amount of adjustments in inches (mm).
 - b. Motor Data:
 - 1) Motor make, and frame type and size.
 - 2) Horsepower and rpm.
 - 3) Volts, phase, and hertz.
 - 4) Full-load amperage and service factor.
 - 5) Sheave make, size in inches (mm), and bore.
 - 6) Center-to-center dimensions of sheave, and amount of adjustments in inches (mm).
 - 7) Number, make, and size of belts.
 - c. Test Data (Indicated and Actual Values):
 - 1) Total airflow rate in cfm (L/s).
 - 2) Total system static pressure in inches wg (Pa).
 - 3) Fan rpm.
 - 4) Discharge static pressure in inches wg (Pa).
 - 5) Suction static pressure in inches wg (Pa).
5. Round, Flat-Oval, and Rectangular Duct Traverse Reports: Include a diagram with a grid representing the duct cross-section and record the following:
 - a. Report Data:
 - 1) System and air-handling-unit number.
 - 2) Location and zone.
 - 3) Traverse air temperature in deg F (deg C).
 - 4) Duct static pressure in inches wg (Pa).
 - 5) Duct size in inches (mm).
 - 6) Duct area in sq. ft. (sq. m).
 - 7) Indicated air flow rate in cfm (L/s).
 - 8) Indicated velocity in fpm (m/s).
 - 9) Actual air flow rate in cfm (L/s).
 - 10) Actual average velocity in fpm (m/s).
 - 11) Barometric pressure in psig (Pa).
6. Instrument Calibration Reports:
 - a. Report Data:
 - 1) Instrument type and make.
 - 2) Serial number.
 - 3) Application.
 - 4) Dates of use.
 - 5) Dates of calibration.

3.07 **INSPECTIONS**

- A. Initial Inspection:

1. After testing and balancing are complete, operate each system and randomly check measurements to verify that the system is operating according to the final test and balance readings documented in the final report.
- B. Final Inspection:
 1. After initial inspection is complete and documentation by random checks verifies that testing and balancing are complete and accurately documented in the final report, request that a final inspection be made.
 2. The TAB contractor's test and balance engineer shall conduct the inspection in the presence of the designated Owner's Representative.
 3. The Owner's Representative shall randomly select measurements, documented in the final report, to be rechecked. Rechecking shall be limited to either 10 percent of the total measurements recorded or the extent of measurements that can be accomplished in a normal 8-hour business day.
 4. If rechecks yield measurements that differ from the measurements documented in the final report by more than the tolerances allowed, the measurements shall be noted as "FAILED."
 5. If the number of "FAILED" measurements is greater than 10 percent of the total measurements checked during the final inspection, the testing and balancing shall be considered incomplete and shall be rejected.
- C. TAB Work will be considered defective if it does not pass final inspections. If TAB Work fails, proceed as follows:
 1. Recheck all measurements and make adjustments. Revise the final report and balancing device settings to include all changes; resubmit the final report and request a second final inspection.
 2. If the second final inspection also fails, Owner may contract the services of another TAB contractor to complete TAB Work according to the Contract Documents and deduct the cost of the services from the original TAB contractor's final payment.
- D. Prepare test and inspection reports.

END OF SECTION 23 05 93

SECTION 23 31 00

METAL DUCTS

PART 1 - GENERAL

1.01 REFERENCES

- A. General
 - 1. ASTM A 36 - Structural Steel
 - 2. ASTM A 90 - Weight of Coating on Zinc-Coated (Galvanized) Iron or Steel Articles
 - 3. ASTM A 366 - Steel, Sheet, Carbon, Cold Rolled, Commercial Quality
 - 4. ASTM A 525 - General Requirements for Steel Sheet, Zinc- Coated (Galvanized) by the Hot-Dip Process
 - 5. ASTM A 527 - Steel Sheet, Zinc-Coated (Galvanized) by Hot-Dip Process, Lock Forming Quality
 - 6. ASTM E 84 - Standard Test Method for Surface Burning Characteristics of Building Material
 - 7. NFPA 90A - Installation of Air Conditioning and Ventilating systems
 - 8. SMACNA - HVAC Air Duct Leakage Test Manual
 - 9. SMACNA - HVAC Duct Construction Standards - Metal and Flexible
 - 10. UL 181 - Factory-Made Air Ducts and Connectors

1.02 SUBMITTALS

- A. General
 - 1. Welding certificates.
 - 2. Field quality-control test reports.

1.03 QUALITY ASSURANCE

- A. Construct ductwork to the 1997 Uniform Mechanical Code, and SMACNA, HVAC Duct Construction Standards - Metal and Flexible, Latest Edition
- B. In addition to the above standards, construct kitchen ductwork serving type I hoods to NFPA 96 and 1997 UMC standards.
- C. In addition to the above standards, construct ductwork from product conveying exhaust systems to NFPA 91 standards.
- D. Where more than one standard is referenced, the most restrictive shall apply.
- E. Welding: Qualify procedures and personnel according to AWS D1.1, "Structural Welding Code--Steel," for hangers and supports, AWS D1.2, "Structural Welding

Code--Aluminum," for aluminum supporting members and AWS D9.1, "Sheet Metal Welding Code," for duct joint and seam welding.

- F. NFPA Compliance:
 - 1. NFPA 90A, "Installation of Air Conditioning and Ventilating Systems."
 - 2. NFPA 90B, "Installation of Warm Air Heating and Air Conditioning Systems."
- G. Comply with NFPA 96, "Ventilation Control and Fire Protection of Commercial Cooking Operations," Ch. 3, "Duct System," for range hood ducts, unless otherwise indicated.

1.04 SUMMARY

- A. Section 01 60 01 "Buy America Requirements" for special product requirements

PART 2 - PRODUCTS

2.01 SHEET METAL MATERIALS

- A. Comply with SMACNA's "HVAC Duct Construction Standards--Metal and Flexible" for acceptable materials, material thicknesses, and duct construction methods, unless otherwise indicated. Sheet metal materials shall be free of pitting, seam marks, roller marks, stains, discolorations, and other imperfections.
- B. Galvanized Sheet Steel: Lock-forming quality; complying with ASTM A 653/A 653M and having G60 (Z180) coating designation; ducts shall have mill-phosphatized finish for surfaces exposed to view.
- C. Stainless Steel: ASTM A 480/A 480M, Type 316 or 304, as specified (use type 316 if not otherwise specified) and having a No. 2D finish.
- D. Aluminum Sheets: ASTM B 209 (ASTM B 209M), alloy 3003, temper H14; with mill finish for concealed ducts and standard, 1-side bright finish for exposed ducts.
- E. Reinforcement Shapes and Plates: Galvanized-steel reinforcement where installed on galvanized sheet metal ducts.
- F. Tie Rods: Galvanized steel, 1/4-inch (6-mm) minimum diameter for lengths 36 inches (900 mm) or less; 3/8-inch (10-mm) minimum diameter for lengths longer than 36 inches (900 mm).

2.02 LOW VELOCITY DUCTWORK AND FITTINGS

- A. General
 - 1. Low velocity ductwork shall be defined as all ductwork not specifically defined as medium velocity ductwork.

2. Fabricate, install, and support in accordance with SMACNA HVAC Duct Construction Standards - Metal and Flexible, the Uniform Mechanical Code, and as indicated. Provide duct material, gages, reinforcing, and sealing for operating pressures indicated.
 3. Construct T's, bends, and elbows with radius of not less than 1-1/2 times width of duct on centerline. Provide turning vanes in all rectangular elbows greater than 45 degrees (unless utilized for return duct stub-outs into return air plenums - no vanes required).
 4. Increase duct sizes gradually, not exceeding 15 degrees divergence wherever possible; maximum 30 degrees divergence upstream of equipment and 45 degrees convergence downstream.
- B. Rectangular Duct and Fitting Fabrication
1. Fabricate ducts, elbows, transitions, offsets, branch connections, and other construction according to SMACNA's "HVAC Duct Construction Standards--Metal and Flexible" and complying with requirements for metal thickness, reinforcing types and intervals, tie-rod applications, and joint types and intervals.
 - a. Lengths: Fabricate rectangular ducts in lengths appropriate to reinforcement and rigidity class required for pressure class.
 - b. Deflection: Duct systems shall not exceed deflection limits according to SMACNA's "HVAC Duct Construction Standards--Metal and Flexible."
 2. Transverse Joints: Prefabricated slide-on joints and components constructed using manufacturer's guidelines for material thickness, reinforcement size and spacing, and joint reinforcement.
 3. Formed-On Flanges: Construct according to SMACNA's "HVAC Duct Construction Standards--Metal and Flexible," Figure 1-4, using corner, bolt, cleat, and gasket details.
 - a. Duct Size: Maximum 30 inches (750 mm) wide and up to 2-inch wg (500-Pa) pressure class.
 - b. Longitudinal Seams: Pittsburgh lock sealed with noncuring polymer sealant.
 4. Cross Breaking or Cross Beading: Cross break or cross bead duct sides 19 inches (480 mm) and larger and 0.0359 inch (0.9 mm) thick or less, with more than 10 sq. ft. (0.93 sq. m) of nonbraced panel area unless ducts are lined.

2.03 MEDIUM VELOCITY DUCTWORK AND FITTINGS

- A. General
1. Manufacturers:
 - a. United McGill Corp.
 - b. Ventline
 - c. Metco
 2. Basis of Design
 - a. United McGill Corp., Model Uni-Seal (un-lined).
 - b. United McGill Corp., Model K-27 (lined with insulation)
 3. Medium velocity ductwork shall be defined as all ductwork between the air handling unit or main system fan and the terminal supply boxes (or exhaust).

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4. Fabricate, install, and support in accordance with SMACNA HVAC Duct Construction Standards - Metal and Flexible, the Uniform Mechanical Code, and as indicated. Provide duct material, gages, reinforcing, and sealing for operating pressures.
5. Spiral lockseam construction (no standing ribs).
6. Fittings shall be full-bodies, all welded construction with machine formed entrances to branch fittings. All welding of fittings shall be of the continuous seam fusion type. All welded seams shall be covered with one coat of rust inhibiting paint, Rust-Oleum or approved equal, applied to both interior and exterior of duct or fittings.
7. Centerline radius of elbows shall be 1.5 times the cross section diameter unless the drawings indicate a mitered 90 degree elbow with vanes. Elbows shall be constructed with five pieces for turns greater than 60 degrees, three pieces for turns between 60 degrees and 30 degrees, and two pieces for turns thirty degrees and less.

B. Round ducts

1. Duct Gauge: In accordance with the following tables.

Duct Size Inches (mm)	U.S. Duct Gauge
Up to 8 (203)	26
9 to 14 (228 to 355)	26
15 to 26 (381 to 660)	24
27 to 36 (685 to 914)	22
37 to 50 (940 to 1270)	20
Over 51 (1295)	18

Fitting Size Inches (mm)	U.S. Duct Gauge
Up to 26 (660)	22
27 to 50 (685 to 1270)	20
52 to 60 (1320 to 1524)	18

2. Fittings shall be equal to United McGill Corp. as follows:
 - a. Elbows: SRHE5-90, SRHE3-60, SRHE3-45, SRHE2-30
 - b. Tees: SRHTC, SRHTCR, SRHTXC, SRHTXCR
 - c. Laterals: SRHLC, SRHLCR
 - d. Concentric reducer: SRHR
 - e. Eccentric reducer: SRHRE
3. Joints in ducts and fittings up to and including 36 inch (914 mm) in diameter shall be made with couplings (2 inch (50 mm) insertion depth with stophead). Larger

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ducts and fittings shall be joined with companion flanges. Couplings and flanges shall be supplied by the duct manufacturer.

C. Flat Oval Ducts

1. Duct Gauge: In accordance with the following tables.

Duct Size (Major axis) Inches (mm)	U.S. Duct Gauge
Up to 24 (610)	24
25 to 48 (635 to 1220)	22
49 to 60 (1245 to 1524)	20

Fitting Size Inches (mm)	U.S. Duct Gauge
Up to 36 (915)	20
37 to 60 (940 to 1524)	18

2. Fittings shall be equal to United McGill Corp. as follows:
- Elbows: SRSEH5-90, SOSEE5-90, SOSEH3-45, SOSEE3-45
 - Tees: SOSTC, SOSTXC
 - Laterals: SOSLC
 - Concentric transition: SOSR-10, SOSR-30
 - Eccentric transition: SOSR-11, SOSR-12, SOSR-131, SOSR-132, SOSR31, SOSR32, SOSR331, SOSR332
3. Joints in ducts and fittings up to and including 41 inches (1041 mm) wide and 26 (660 mm) inches high shall be made with couplings. Larger ducts and fittings shall be joined with companion flanges. Couplings and flanges shall be supplied by the duct manufacturer.

D. Lined Round and Flat Oval Ducts:

- Machine made from round or flat oval spiral lockseam duct, galvanized steel outer wall, 1 inch (25 mm) thick fiberglass insulation, perforated galvanized steel inner wall; fittings manufactured with solid inner wall.
- Outer Shell: Base metal thickness on outer-shell dimensions.
- Insulation: Fibrous glass; thickness as indicated at the end of this section unless specified to be thicker on the drawings.
 - Thermal Conductivity (k-Value): 0.26 at 75 deg F (0.037 at 24 deg C) mean temperature.
- Perforated Inner Ducts and Fittings: Fabricate with 0.028-inch-0.7-mm- thick sheet metal having 3/32-inch- (2.4-mm-) diameter perforations, with overall open area of 23 percent.
- Maintain concentricity of inner duct to outer shell by mechanical means. Prevent dislocation of insulation by mechanical means.

2.04 HANGERS AND SUPPORTS

- A. Hanger Materials: Galvanized sheet steel or threaded steel rod at the Contractor's option, with the following limitations:
 - 1. Hangers Exposed in Finished Areas: Use threaded rod.
 - 2. Hangers for Medium Pressure Ductwork: Use threaded rod.
 - 3. Hangers for Low Pressure Ductwork greater than 12" diameter round or rectangular with either side greater than 16" in length: Use threaded rod.
 - 4. Hangers Installed in Corrosive Atmospheres: Electrogalvanized, all-thread rods or galvanized rods with threads painted with zinc-chromate primer after installation.
 - 5. Strap and Rod Sizes: Comply with SMACNA's "HVAC Duct Construction Standards--Metal and Flexible" for steel sheet width and thickness and for steel rod diameters.
 - 6. Galvanized-steel straps attached to aluminum ducts shall have contact surfaces painted with zinc-chromate primer.
- B. Duct Attachments: Sheet metal screws, blind rivets, or self-tapping metal screws; compatible with duct materials.
- C. Trapeze and Riser Supports: Steel shapes complying with ASTM A 36/A 36M.
 - 1. Supports for Galvanized-Steel Ducts: Galvanized-steel shapes and plates.
 - 2. Supports for Stainless-Steel Ducts: Stainless-steel support materials.
 - 3. Supports for Aluminum Ducts: Aluminum support materials unless materials are electrolytically separated from ducts.

2.05 SEALANT MATERIALS

- A. Joint and Seam Sealants, General: The term "sealant" is not limited to materials of adhesive or mastic nature but includes tapes and combinations of open-weave fabric strips and mastics.
- B. Water-Based Joint and Seam Sealant: Flexible, adhesive sealant, resistant to UV light when cured, UL 723 listed, and complying with NFPA requirements for Class 1 ducts.
- C. Solvent-Based Joint and Seam Sealant: One-part, nonsag, solvent-release-curing, polymerized butyl sealant formulated with a minimum of 75 percent solids.
- D. Flanged Joint Mastic: One-part, acid-curing, silicone, elastomeric joint sealant complying with ASTM C 920, Type S, Grade NS, Class 25, Use O.
- E. Flange Gaskets: Butyl rubber or EPDM polymer with polyisobutylene plasticizer.

PART 3 - EXECUTION

3.01 DUCT APPLICATIONS

- A. Static-Pressure Classes: Unless otherwise indicated, construct ducts according to the following. Medium velocity ducts shall include all supply ductwork between fans and VAV boxes. Medium velocity ductwork shall also include exhaust systems systems with velocities in excess of 1800 fpm.
 - 1. Low Velocity Ducts: 2-inch wg (500 Pa) or 1.5 times the listed external pressure of the fan serving the duct system, whichever is higher.
 - 2. Medium Velocity Ducts: 6-inch wg (1500 Pa) or 1.5 times the listed external pressure of the fan serving the duct system, whichever is higher.
- B. All ducts shall be galvanized steel except as follows:
 - 1. Range Hood Exhaust Ducts: Comply with NFPA 96.
 - a. Concealed: Carbon-steel sheet.
 - b. Exposed: Type 304, stainless steel with finish to match kitchen equipment and range hood.
 - c. Continuously weld seams and joints.
 - d. Dishwasher Hood Exhaust Ducts:
 - e. Type 304, stainless steel with finish to match kitchen equipment and range hood. Continuously weld seams and joints.
 - f. Aluminum, with seams and laps arranged on top of duct.
 - 2. Acid-Resistant (Fume-Handling) Ducts: Type 316 stainless-steel. Continuously weld joints.
 - 3. Underground Ducts: Concrete-encased galvanized steel or PVC-coated galvanized steel with thicker coating on duct exterior.

3.02 DUCT INSTALLATION

- A. Construct and install ducts according to SMACNA's "HVAC Duct Construction Standards--Metal and Flexible," unless otherwise indicated.
- B. Install round and flat-oval ducts in lengths not less than 12 feet (3.7 m) unless interrupted by fittings.
- C. Install ducts with fewest possible joints.
- D. Install fabricated fittings for changes in directions, size, and shape and for connections.
- E. Install couplings tight to duct wall surface with a minimum of projections into duct. Secure couplings with sheet metal screws. Install screws at intervals of 12 inches (300 mm), with a minimum of 3 screws in each coupling.
- F. Install ducts, unless otherwise indicated, vertically and horizontally and parallel and perpendicular to building lines; avoid diagonal runs.

- G. Install ducts close to walls, overhead construction, columns, and other structural and permanent enclosure elements of building.
- H. Install ducts with a clearance of 1 inch (25 mm), plus allowance for insulation thickness.
- I. Conceal ducts from view in finished spaces. Do not encase horizontal runs in solid partitions unless specifically indicated.
- J. Coordinate layout with suspended ceiling, fire- and smoke-control dampers, lighting layouts, and similar finished work.
- K. Seal all joints and seams. Apply sealant to male end connectors before insertion, and afterward to cover entire joint and sheet metal screws.
- L. Electrical Equipment Spaces: Route ducts to avoid passing through transformer vaults and electrical equipment spaces and enclosures.
- M. Non-Fire-Rated Partition Penetrations: Where ducts pass through interior partitions and exterior walls and are exposed to view, conceal spaces between construction openings and ducts or duct insulation with sheet metal flanges of same metal thickness as ducts. Overlap openings on 4 sides by at least 1-1/2 inches (38 mm).
- N. Fire-Rated Partition Penetrations: Where ducts pass through interior partitions and exterior walls, install appropriately rated fire or fire/smoke dampers, sleeves, and firestopping sealant. Fire and smoke dampers are specified in Division 23 Section "Duct Accessories." Firestopping materials and installation methods are specified in Division 7 Section "Through-Penetration Firestop Systems."
- O. Install ducts with hangers and braces designed to withstand, without damage to equipment, seismic force required by applicable building codes. Refer to SMACNA's "Seismic Restraint Manual: Guidelines for Mechanical Systems."
- P. Protect duct interiors from the elements and foreign materials until building is enclosed. Follow SMACNA's "Duct Cleanliness for New Construction."
- Q. Paint interiors of metal ducts, that do not have duct liner, for 24 inches (600 mm) upstream of registers and grilles. Apply one coat of flat, black, latex finish coat over a compatible galvanized-steel primer. Paint materials and application requirements are specified in Division 9 painting Sections.

3.03 SEAM AND JOINT SEALING

- A. Seal duct seams and joints according to SMACNA's "HVAC Duct Construction Standards--Metal and Flexible" for duct pressure class indicated.
 - 1. For pressure classes lower than 2-inch wg (500 Pa), seal transverse joints.
- B. Seal ducts before external insulation is applied.

3.04 HANGING AND SUPPORTING

- A. Support horizontal ducts within 24 inches (600 mm) of each elbow and within 48 inches (1200 mm) of each branch intersection.
- B. Support vertical ducts at maximum intervals of 16 feet (5 m) and at each floor.
- C. Install upper attachments to structures with an allowable load not exceeding one-fourth of failure (proof-test) load.
- D. Install concrete inserts before placing concrete.

3.05 FIELD QUALITY CONTROL

- A. Perform the following field tests and inspections according to SMACNA's "HVAC Air Duct Leakage Test Manual" and prepare test reports:
 - 1. Disassemble, reassemble, and seal segments of systems to accommodate leakage testing and for compliance with test requirements.
 - 2. Conduct tests at static pressures equal to maximum design pressure of system or section being tested. If pressure classes are not indicated, test entire system at maximum system design pressure. Do not pressurize systems above maximum design operating pressure. Give seven days' advance notice for testing.
 - 3. Maximum Allowable Leakage: Comply with requirements for Leakage Class 3 for round and flat-oval ducts, Leakage Class 12 for rectangular ducts in pressure classes lower than and equal to 2-inch wg (500 Pa) (both positive and negative pressures), and Leakage Class 6 for pressure classes from 2- to 10-inch wg (500 to 2500 Pa).
 - 4. Remake leaking joints and retest until leakage is equal to or less than maximum allowable.
- B. The entire duct system is required to be tested. At the contractor's option, portions of the system may be tested. In these cases, the sum of leakages shall be added to determine the entire system leakage for verification that the entire system is within acceptable leakage limits. No portion of the system shall be made inaccessible until the entire system has been tested.
 - 1. Exceptions
 - a. In zoned systems, zone ductwork may be covered when the zone has been determined to be within acceptable limits.
 - b. The Contractor may obtain written approval from the Owner's Representative to cover portions of a system prior to complete system testing. In such cases, the Contractor shall demonstrate that tested portions of the system are such that, when considered in aggregate with the remaining portions of the system, acceptable leakage rates will be achieved assuming remaining test results are similar to those obtained in the area to be covered.

3.06 CLEANING NEW SYSTEMS

- A. Mark position of dampers and air-directional mechanical devices before cleaning, and perform cleaning before air balancing.
- B. Use service openings, as required, for physical and mechanical entry and for inspection.
 - 1. Create other openings to comply with duct standards.
 - 2. Disconnect flexible ducts as needed for cleaning and inspection.
 - 3. Remove and reinstall ceiling sections to gain access during the cleaning process.
- C. Vent vacuuming system to the outside. Include filtration to contain debris removed from HVAC systems, and locate exhaust down wind and away from air intakes and other points of entry into building.
- D. Clean the following metal duct systems by removing surface contaminants and deposits:
 - 1. Air outlets and inlets (registers, grilles, and diffusers).
 - 2. Supply, return, and exhaust fans including fan housings, plenums (except ceiling supply and return plenums), scrolls, blades or vanes, shafts, baffles, dampers, and drive assemblies.
 - 3. Air-handling unit internal surfaces and components including mixing box, coil section, air wash systems, spray eliminators, condensate drain pans, humidifiers and dehumidifiers, filters and filter sections, and condensate collectors and drains.
 - 4. Coils and related components.
 - 5. Return-air ducts, dampers, and actuators except in ceiling plenums and mechanical equipment rooms.
 - 6. Supply-air ducts, dampers, actuators, and turning vanes.
- E. Mechanical Cleaning Methodology:
 - 1. Clean metal duct systems using mechanical cleaning methods that extract contaminants from within duct systems and remove contaminants from building.
 - 2. Use vacuum-collection devices that are operated continuously during cleaning. Connect vacuum device to downstream end of duct sections so areas being cleaned are under negative pressure.
 - 3. Use mechanical agitation to dislodge debris adhered to interior duct surfaces without damaging integrity of metal ducts, duct liner, or duct accessories.
 - 4. Clean fibrous-glass duct liner with HEPA vacuuming equipment; do not permit duct liner to get wet.
 - 5. Clean coils and coil drain pans according to NADCA 1992. Keep drain pan operational. Rinse coils with clean water to remove latent residues and cleaning materials; comb and straighten fins.
- F. Cleanliness Verification:
 - 1. Visually inspect metal ducts for contaminants.
 - 2. Where contaminants are discovered, re-clean and reinspect ducts.

END OF SECTION 23 31 00

SECTION 23 33 00

DUCT ACCESSORIES

PART 1 - GENERAL

1.01 REFERENCES

- A. General
 - 1. NFPA 90A - Installation of Air Conditioning and Ventilating Systems
 - 2. NFPA 92A - Smoke Control Systems
 - 3. NFPA 96 - Installation of Equipment for the Removal of Smoke and Grease Laden Vapors for Commercial Cooking Equipment
 - 4. SMACNA - HVAC Duct Construction Standards - Metal and Flexible
 - 5. UL 33 - Heat Responsive Links for Fire-Protection Service
 - 6. UL 555 - Fire Dampers and Ceiling Dampers
 - 7. UL 555S - Leakage Rated Dampers for Use in Smoke Control Systems

1.02 SUBMITTALS

- A. General
 - 1. Product data for specified materials.

1.03 QUALITY ASSURANCE

- A. Comply with NFPA 90A, "Installation of Air Conditioning and Ventilating Systems," and NFPA 90B, "Installation of Warm Air Heating and Air Conditioning Systems."

1.04 EXTRA MATERIALS

- A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
- B. Fire and Fire/Smoke Dampers
 - 1. Fusible Links: Furnish quantity equal to 10% of amount installed for each temperature rating.

1.05 DRAWING SCHEDULES

- A. Refer to equipment schedules on drawings for additional information.

1.06 SUMMARY

- A. Section 01 60 01 "Buy America Requirements" for special product requirements.

PART 2 - PRODUCTS

2.01 BACKDRAFT DAMPERS

- A. Manufacturers
 - 1. Air Control Products
 - 2. American Warming and Ventilation
 - 3. Greenheck
 - 4. Pottorff
 - 5. Ruskin
- B. Description: Multiple-blade; parallel action; gravity balanced; center-pivoted blades of maximum 6-inch (150-mm) width; sealed edges; assembled in rattle-free manner with 90-degree stop; steel ball bearings and axles; adjustment device to permit setting for varying differential static pressure.
- C. Construction: 0.063-inch- (1.6-mm-) thick extruded aluminum frame with welded corners and mounting flange; 0.050-inch- (1.2-mm-) thick aluminum sheet blades; neoprene blade seals; galvanized steel blade axles; aluminum tie bars and brackets; adjustable tension return spring.

2.02 DUCT ACCESSORY HARDWARE

- A. Instrument Test Holes: Cast iron or cast aluminum to suit duct material, including screw cap and gasket. Size to allow insertion of pitot tube and other testing instruments and of length to suit duct insulation thickness.
- B. Adhesives: High strength, quick setting, neoprene based, waterproof, and resistant to gasoline and grease.

2.03 DUCT-MOUNTING ACCESS DOORS

- A. Manufacturers
 - 1. CESCO Products
 - 2. Ductmate Industries, Inc.
 - 3. Elmdor
 - 4. Greenheck
 - 5. McGill AirFlow Corporation
 - 6. Nailor Industries Inc
 - 7. Pottorff
 - 8. Ventfabrics, Inc.

9. Durodyne

- B. General Description: Fabricate doors airtight and suitable for duct pressure class.
- C. Standard Access Door: Double wall; duct mounting; fabricated of galvanized sheet metal with insulation fill and thickness as indicated for duct pressure class; 1-by-1-inch (25-by-25-mm) butt or piano hinge, and cam latches; galvanized sheet steel frame with bend-over tabs and foam gaskets.
 - 1. Provide number of hinges and locks as follows:
 - a. Less Than 12 Inches (300 mm) Square: Secure with two sash locks.
 - b. Up to 18 Inches (450 mm) Square: Two hinges and two sash locks.
 - c. Up to 24 by 48 Inches (600 by 1200 mm): Three hinges and two compression latches.
 - d. Sizes 24 by 48 Inches (600 by 1200 mm) and Larger: One additional hinge.
- D. Pressure Relief Access Door: Double wall and duct mounting; fabricated of galvanized sheet metal with insulation fill and thickness as indicated for duct pressure class; latches and retaining chain; galvanized sheet steel frame with bend-over tabs and foam gaskets; seal around frame attachment to duct and door to frame with neoprene or foam rubber; 1-inch- (25-mm-) thick, fibrous-glass or polystyrene-foam board when used on insulated duct.

2.04 SHEET METAL MATERIALS

- A. Comply with SMACNA's "HVAC Duct Construction Standards--Metal and Flexible" for acceptable materials, material thicknesses, and duct construction methods, unless otherwise indicated.
- B. Galvanized Sheet Steel: Lock-forming quality; complying with ASTM A 653/A 653M and having G60 (Z180) coating designation; ducts shall have mill-phosphatized finish for surfaces exposed to view.
- C. Stainless Steel: ASTM A 480/A 480M.
- D. Aluminum Sheets: ASTM B 209 (ASTM B 209M), alloy 3003, temper H14; with mill finish for concealed ducts and standard, 1-side bright finish for exposed ducts.
- E. Extruded Aluminum: ASTM B 221 (ASTM B 221M), alloy 6063, temper T6.
- F. Reinforcement Shapes and Plates: Galvanized-steel reinforcement where installed on galvanized sheet metal ducts; compatible materials for aluminum and stainless-steel ducts.
- G. Tie Rods: Galvanized steel, 1/4-inch (6-mm) minimum diameter for lengths 36 inches (900 mm) or less; 3/8-inch (10-mm) minimum diameter for lengths longer than 36 inches (900 mm).

PART 3 - EXECUTION

3.01 GENERAL

- A. Install duct accessories according to applicable details in SMACNA's "HVAC Duct Construction Standards--Metal and Flexible".

3.02 ACCESS DOORS

- A. Application
 - 1. Provide access doors (in building walls, ceilings, etc.) as required to access all system components that require maintenance. While Division 08 has been referenced for material specifications, doors shall be furnished and installed by Division 23. It is the Contractor's responsibility to determine required quantities and locations of access doors based on the as-installed conditions and coordination with other trades.

3.03 BACKDRAFT DAMPERS

- A. Application
 - 1. Provide backdraft dampers at all outside air intake and exhaust air outlet locations including, but not limited to, louvers, cowls, goosenecks and fans discharging to the outdoors.
 - a. When equipment at point of termination (louver, fan, cowl, etc.) has been indicated to be provided with backdraft dampers, supplemental backdraft dampers are not required unless specifically noted.
 - b. When equipment at point of termination (louver, fan, cowl, etc.) has not been indicated to be provided with backdraft dampers, provide backdraft dampers in accordance with this section in the ductwork connecting to the equipment at the point of termination. Damper shall be located as close to the equipment as possible.

3.04 DUCT ACCESSORY HARDWARE

- A. Application
 - 1. Provide duct accessories of materials suited to duct materials. Use galvanized-steel accessories in galvanized-steel duct systems, stainless-steel accessories in stainless-steel duct systems, and aluminum accessories in aluminum duct systems.
 - 2. Provide test holes at fan inlets and outlets and elsewhere as indicated.

3.05 DUCT-MOUNTING ACCESS DOORS

- A. General
 - 1. Label access doors according to Division 23 Section "HVAC Identification."

- B. Application
 - 1. Standard Access Door
 - a. Provide where required for testing and balancing purposes.
 - b. Provide where required to provide access to all system components that require maintenance.
 - c. At a minimum, provide at the following locations:
 - 1) On both sides of duct coils, filters, and in-line fans.
 - 2) Adjacent to motorized control dampers.
 - 3) Adjacent to fire, fire/smoke, and smoke dampers, providing access to reset or reinstall fusible links.
 - 4) Downstream of all duct-mounted equipment
 - 5) To interior of ducts for cleaning; before and after each change in direction, at maximum 50-foot (15-m) spacing.
 - 2. Pressure Relief Access Door
 - a. Provide downstream of all fire, fire/smoke and smoke dampers in medium pressure duct systems.

END OF SECTION 23 33 00

SECTION 23 34 00

HVAC FANS

PART 1 - GENERAL

1.01 REFERENCES

- A. General
 - 1. ABMA 9-90 – Load Ratings and Fatigue Life for Ball Bearings
 - 2. AMCA 99-98 - Standards Handbook
 - 3. AMCA 210-99 - Laboratory Methods of Testing Fans for Aerodynamic Performance Rating (ANSI)
 - 4. AMCA 300-96 – Reverberant Room Method for Sound Testing of Fans
 - 5. AMCA 301-90 – Methods for Calculating Fan Sound Ratings from Laboratory Test Data
 - 6. NFPA 70-02 – National Electrical Code
 - 7. UL 705-99 - Power Ventilators

1.02 SUBMITTALS

- A. General
 - 1. Product Data: Include rated capacities, furnished specialties, and accessories for each type of product indicated and include the following:
 - a. Certified fan performance curves with system operating conditions indicated.
 - b. Certified fan sound-power ratings.
 - c. Motor ratings and electrical characteristics, plus motor and electrical accessories.
 - d. Material thickness and finishes, including color charts.
 - e. Dampers, including housings, linkages, and operators.
 - f. Roof curbs.
 - g. Fan speed controllers.
 - 2. Shop Drawings: Detail equipment assemblies and indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
 - a. Wiring Diagrams: Power, signal, and control wiring.
 - b. Design Calculations: Calculate requirements for selecting vibration isolators and seismic restraints and for designing vibration isolation bases.
 - c. Vibration Isolation Base Details: Detail fabrication, including anchorages and attachments to structure and to supported equipment. Include auxiliary motor slides and rails, and base weights.

1.03 OPERATION AND MAINTENANCE MATERIALS

- A. General: Product data for specified items.

1.04 QUALITY ASSURANCE

- A. General
 - 1. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
 - 2. AMCA Compliance: Products shall comply with performance requirements and shall be licensed to use the AMCA-Certified Ratings Seal.
 - 3. NEMA Compliance: Motors and electrical accessories shall comply with NEMA standards.
 - 4. UL Standard: Power ventilators shall comply with UL 705.

1.05 COORDINATION

- A. Coordinate size and location of structural-steel support members.
- B. Coordinate size and location of concrete bases. Cast anchor-bolt inserts into bases. Concrete, reinforcement, and formwork requirements are specified in Division 3.
- C. Coordinate installation of roof curbs, equipment supports, and roof penetrations. These items are specified in Division 7 Section "Roof Accessories."

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Deliver fans as factory-assembled unit, to the extent allowable by shipping limitations, with protective crating and covering.
- B. Disassemble and reassemble units, as required for moving to final location, according to manufacturer's written instructions.
- C. Lift and support units with manufacturer's designated lifting or supporting points.

1.07 EXTRA MATERIALS

- A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Belts: One set(s) for each belt-driven unit.

1.08 DRAWING SCHEDULES

- A. Refer to equipment schedules on drawings for additional information.

1.09 SUMMARY

- A. Section 01 60 01 "Buy America Requirements" for special product requirements.

PART 2 - PRODUCTS

2.01 GENERAL

- A. Manufacturers
 - 1. Acme
 - 2. Briedert
 - 3. Cook
 - 4. Greenheck
 - 5. Penn Ventilation
- B. Fans shall be statically and dynamically balanced.
- C. Consult drawings for sizes, model numbers, capacities, electrical characteristics, and accessories.
- D. All mechanical equipment shall have an AIC rating of 100,000 or otherwise specified on electrical one-line diagrams fault current for each piece of equipment.

2.02 UPBLAST ROOF EXHAUSTERS (DIRECT DRIVE)

- A. Construction: Heavy gauge spun aluminum housing and hood; two-piece top cap with quick release latches for access to the motor compartment; vented motor compartment; rigid internal support structure; aluminum base with continuously welded curb cap corners; integral conduit chase through the curb cap and into the motor compartment to facilitate wiring connections; open drip-proof motor enclosure; motor shall be enclosed in a weather-tight compartment and shall be separated from the airstream.
- B. Wheel: Centrifugal, backward inclined, aluminum fan wheel; precision cast aluminum hub; aerodynamic aluminum inlet cone designed to provide maximum performance and efficiency.
- C. Roof Curb: Galvanized steel construction; 1½ inch (38 mm) thick 3 pound density insulation; continuously welded corners; wood nailer; 14 inch (350 mm) height unless specified otherwise on the drawings; suitable for roof construction and slope.
- D. Motorized Backdraft Damper: Extruded aluminum construction; brass bushings; see drawings for motor voltage; voltage shall be verified with 230900 and Division 26 prior to ordering.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Install power ventilators level and plumb.
- B. Support units using restrained spring isolators having a static deflection of 1 inch (25 mm). Vibration- and seismic-control devices are specified in Division 23 Section "HVAC Vibration and Seismic Controls."
 - 1. Secure vibration and seismic controls to concrete bases using anchor bolts cast in concrete base.
- C. Install units with clearances for service and maintenance.
- D. Label units according to requirements specified in Division 23 Section "HVAC Identification."

3.02 CONNECTIONS

- A. Duct installation and connection requirements are specified in other Division 23 Sections. Drawings indicate general arrangement of ducts and duct accessories. Make final duct connections with flexible connectors.
- B. Install ducts adjacent to power ventilators to allow service and maintenance.

3.03 FIELD QUALITY CONTROL

- A. Perform the following field tests and inspections and prepare test reports:
 - 1. Verify that shipping, blocking, and bracing are removed.
 - 2. Verify that unit is secure on mountings and supporting devices and that connections to ducts and electrical components are complete. Verify that proper thermal-overload protection is installed in motors, starters, and disconnect switches.
 - 3. Verify that cleaning and adjusting are complete.
 - 4. Disconnect fan drive from motor, verify proper motor rotation direction, and verify fan wheel free rotation and smooth bearing operation. Reconnect fan drive system, align and adjust belts, and install belt guards.
 - 5. Adjust belt tension.
 - 6. Adjust damper linkages for proper damper operation.
 - 7. Verify lubrication for bearings and other moving parts.
 - 8. Verify that manual and automatic volume control and fire and smoke dampers in connected ductwork systems are in fully open position.
 - 9. Disable automatic temperature-control operators, energize motor and adjust fan to indicated rpm, and measure and record motor voltage and amperage.
 - 10. Shut unit down and reconnect automatic temperature-control operators.
 - 11. Remove and replace malfunctioning units and retest as specified above.

**RESTROOM IMPROVEMENTS
AT FULLERTON PARK AND RIDE**

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EXHIBIT B**

- B. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
- C. Adjusting
- D. Adjust damper linkages for proper damper operation.
- E. Adjust belt tension.
- F. Refer to Division 23 Section "HVAC Testing, Adjusting, and Balancing" for testing, adjusting, and balancing procedures.
- G. Replace fan and motor pulleys as required to achieve design airflow.
- H. Lubricate bearings.

END OF SECTION 23 34 00

SECTION 23 37 10

GRILLES, REGISTERS AND DIFFUSES

PART 1 - GENERAL

1.01 REFERENCES

- A. General
 - 1. AAMA 605.2 - Voluntary Specification for High Performance Organic Coatings on Architectural Extrusions and Panels
 - 2. ADC 1062 - Certification, Rating and Test Manual
 - 3. AMCA 500 - Test Method for Louvers, Dampers and Shutters
 - 4. SMACNA - HVAC Duct Construction Standard - Metal and Flexible
- B. Air Inlets/Outlets
 - 1. ARI 650 - Air Outlets and Inlets
 - 2. ASHRAE 70 - Method of Testing for Rating the Air Flow Performance of Outlets and Inlets

1.02 SUBMITTALS

- A. General
 - 1. Product Data: For each product indicated, include the following:
 - a. Data Sheet: Indicate materials of construction, finish, and mounting details; and performance data including throw and drop, static-pressure drop, and noise ratings.
- B. Grilles, Registers, and Diffusers Schedule
 - 1. Indicate Drawing designation, room location, quantity, model number, size, and accessories furnished.

1.03 QUALITY ASSURANCE

- A. Test and rate air outlet and inlet performance in accordance with ADC Equipment Test Code 1062 and ASHRAE 70.

1.04 DRAWING SCHEDULES

- A. Refer to drawings for specific capacities, dimensions, accessories, and other requirements supplemental to these specifications.

1.05 SUMMARY

- A. Section 01 60 01 "Buy America Requirements" for special product requirements.

PART 2 - PRODUCTS

2.01 GENERAL

- A. Dampers: Provided as an accessory to GRD's when scheduled on the drawings. Dampers shall be opposed blade, heavy gauge steel, and shall be adjustable from the face of the inlet or outlet.
- B. Frame types and mounting hardware: Coordinated with ceiling types. Architectural plans shall take precedence when referencing ceiling types, and Contractor shall reference the architectural plans for verification of ceiling type prior to ordering.
- C. Finish: White unless noted otherwise on the drawings.

2.02 GENERAL GRILLES, REGISTERS, AND DIFFUSERS

- A. Manufacturers
 - 1. Nailor
 - 2. Anemostat
 - 3. Krueger
 - 4. Pottorff
 - 5. Price
 - 6. Titus
 - 7. Tuttle & Bailey
- B. Perforated Face Grilles: Steel or aluminum construction as scheduled on the drawings; perforated face with 51 percent minimum free area; flush or dropped face as scheduled on the drawings; one piece stamped heavy gauge steel back pan.
 - 1. Basis of design: Nailor SH-LM

PART 3 - EXECUTION

3.01 GENERAL

- A. Examination
 - 1. Examine areas where diffusers, registers, and grilles are to be installed for compliance with requirements for installation tolerances and other conditions affecting performance of equipment.
 - 2. Proceed with installation only after unsatisfactory conditions have been corrected.

3. Check locations and make necessary adjustments in position to conform with architectural features, symmetry, and lighting arrangement. Locate in accordance with architectural reflected ceiling plan when indicated.

B. Installation

1. Check locations and make necessary adjustments in position to conform with architectural features, symmetry, and lighting arrangement. Locate in accordance with architectural reflected ceiling plan when indicated.
2. Install diffusers, registers, and grilles level and plumb.
3. Install diffusers, registers, and grilles with airtight connections to ducts and to allow service and maintenance of dampers, air extractors, and fire and fire/smoke dampers.
4. Paint ductwork visible behind GRD's matte black in accordance with the requirements of Division 09.
5. Fasten all pan and lay-in style diffusers in lay-in ceilings with earthquake tabs.
6. Provide volume balancing dampers for each GRD in the ductwork serving that GRD, whether indicated on the drawings or not. Optional register dampers provided as an accessory to GRD's are not an acceptable alternative, unless such accessory dampers are scheduled on the drawings and supplementary balancing dampers are not shown on the floor plan drawings.

C. Adjusting

1. After installation, adjust diffusers, registers, and grilles to air patterns indicated, or as directed, before starting air balancing.

END OF SECTION 23 37 10

**SECTION 26 05 10
EXISTING SYSTEMS**

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 and Division 02 Specification Sections, apply to this Section.

1.2 RELATED WORK

- A. Same as in Section 260500 - Common Work Results For Electrical.

1.3 REFERENCE DOCUMENTS

- A. The contractor shall assess the accuracy of these documents during pre-bid walk through and adjust his bid to accommodate discrepancies between the documents and actual conditions.

1.4 INDICATED EXISTING SYSTEMS

- A. The electrical drawings show portions of the existing electrical systems which are to remain, be removed or be modified. The existing information is derived from record drawings and other data obtained from or with the permission of the owner. Where indicated, concealed systems are also derived from record drawings and the Engineer's best judgment of the configuration.
- B. The Contractor shall inspect the existing installation prior to bidding and shall judge the work required. Inspection shall include areas within and adjacent to the work of any discipline or trade performing work for the contract.
- C. The complete extent of the existing systems could not be verified during creation of the construction documents. Unless the contractor's inspection of the existing system determines a greater amount, the contractor shall assume there is 20% more existing electrical systems than what is indicated on the contract drawings.

PART 2 - PRODUCTS

2.1 EXISTING MATERIALS

- A. All materials which are a part of the building shall remain the property of the Owner.

2.2 EXISTING MATERIALS TO BE REINSTALLED

- A. Existing materials and equipment (except interior, undamaged raceways) that are removed as a part of the work or stored in surplus shall not be reinstalled as a part of the new systems unless specifically noted or authorized in writing by the Owner. Forward a copy of the authorization to the Engineer. The requirements of the specifications (i.e., condition, installation, testing, etc.) shall apply as if the materials were new, furnished by the Contractor.

2.3 EXISTING MATERIALS NOT TO BE REINSTALLED

- A. In coordination with the Architect, these materials shall be made available for his inspection and decision as to whether the Owner will retain possession. Items selected for retention shall be turned over to the Owner. These items shall be delivered to a location on the premises selected by the Owner. Take reasonable care to avoid damage to this material. If the Contractor fails to conform to this requirement, he shall purchase and turn over to the Owner replacement material of like kind and quantity.
- B. All material not selected for retention by the Owner and debris shall be legally disposed of by the Contractor.

PART 3 - EXECUTION

3.1 EXISTING CONDITIONS

- A. Examine the structure, building, and conditions under which electrical work is to be installed for conditions detrimental to proper and timely completion of electrical work. Do not proceed with work until deficiencies or detrimental conditions have been corrected. Report deficiencies or detrimental conditions of existing electrical work which might be unsuitable to connect with or receive other work. Failure to so report shall constitute acceptance of other work as being fit and proper for the reception of electrical work.
- B. Field trace all existing circuitry affected by the project to determine:
 - 1. Source of supply or information collection point within the project area
 - 2. Load or termination within the project area

3. Load or termination outside the project area, but supplied from or connected to equipment within the project area
4. Loads supplied from and located outside of the project area, but have circuitry within the project area.

3.2 REMOVAL

- A. All removal work required under this contract is not shown on the electrical drawings. Refer to work of other divisions for contract work that may affect existing electrical systems. Coordinate work between trades prior to bid.
- B. Switchboards, panelboards, signaling and communication systems, other electrical equipment free standing or surface mounted, raceway (exposed) and conductors; which are not presently in service or will not be in service as a result of this contract shall be removed.
- C. Unused raceways and wire shall be removed back to source if accessible, otherwise cut flush at ceiling, floor or wall and fill with grout.
- D. If Contractor questions whether a particular device is to be removed notify the Architect noting type and location of device. If so directed the Contractor shall maintain the existing device in service without any change in contract price.

3.3 EXISTING SYSTEMS MAINTAINED

- A. Maintain existing systems not identified for demolition. Maintaining existing systems includes relocating the systems to coordinate with work of this contract, when work of this contract cannot be done while the existing system is in its present location.
- B. Any existing wiring serving devices to remain in service and which may be affected by work performed under this contract shall be rerouted to maintain circuit continuity. Contractor shall assume the risk of maintaining existing systems, except relocation of wiring of #2 AWG and above shall be considered an additional cost if not shown to be relocated. If such wiring is found the Contractor shall notify Architect Owner of wiring location, reason it must be removed and cost of relocation and receive the Owner's approval before proceeding with the work.
- C. Examine drawings of all disciplines to determine where work of other trades will or is likely to require relocation of existing systems. Remove and relocate electrical equipment in the way of work of other trades. Exact relocation requirement of existing systems to remain to be based on detailed coordination with other trades. Contractor to provide proposed locations of relocated devices to Owner for approval prior to commencement of work.
- D. Relocation of any system shall be permanent.

- E. Re-route existing circuits that are affected as a result of this contract that serve devices to remain in service.
 - 1. Power Circuits (Including removal or relocation of existing panelboards).
 - a. Prior to demolition work trace out and identify each branch circuit and feeder circuit that serves loads in occupied areas.
 - b. Provide temporary wiring, schedule outage and reconnect loads to temporary wiring.
 - c. Provide new wiring in new location.
 - d. Schedule outage, disconnect temporary wiring, and connect loads to new wiring. Remove temporary wiring.
 - e. Outage for each circuit shall not be more than 20 minutes.
 - 2. Signal and Communication Systems
 - a. Prior to demolition trace out and identify device and systems being served.
 - b. Provide temporary wiring to maintain operation of system throughout facility.
 - c. Schedule outage and connect to temporary wiring and test system.
 - d. Provide new wiring on new location.
 - e. Schedule outage, disconnect temporary wiring, and reconnect to new wiring. Remove temporary wiring.
 - f. Outage for each system shall not be more than 20 minutes.

3.4 EXISTING SYSTEMS UPGRADED

- A. Provide new raceway support system for all existing raceways that are to be maintained in the project area in accordance with Section 260533 - Raceways and Boxes for Electrical Systems and Section 260548 -Seismic Controls for Electrical Systems.
- B. Provide an allowance of 40 strap supports to be used to support any existing unsupported Division 26, Division 27 or Division 28 system. Provide report at weekly construction meetings indicating the number of strap supports installed the previous week.

3.5 NEW DEVICES IN REMODEL AREAS

- A. Provide flush mounting for devices in existing walls. Fish conduit in wall. Where existing boxes are indicated to be reused, extend box as necessary and provide new devices and plates.

END OF SECTION 26 05 10

SECTION 26 05 19

LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUBMITTALS

- A. Product Data: For each type of product.
- B. Field quality-control reports.

PART 2 - PRODUCTS

2.1 CONDUCTORS AND CABLES

- A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - 1. Alcan Products Corporation; Alcan Cable Division.
 - 2. Alpha Wire.
 - 3. Belden Inc.
 - 4. Encore Wire Corporation.
 - 5. General Cable Technologies Corporation.
 - 6. Southwire Incorporated.
- B. Copper Conductors: Comply with NEMA WC 70/ICEA S-95-658.
- C. Conductor Insulation: Comply with NEMA WC 70/ICEA S-95-658 for Type THHN-THWN Type XHHW-2 and Type SO.

2.2 CONNECTORS AND SPLICES

- A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. AFC Cable Systems, Inc.
 2. Gardner Bender.
 3. Hubbell Power Systems, Inc.
 4. Ideal Industries, Inc.
 5. IlSCO; a branch of Bardes Corporation.
 6. NSi Industries LLC.
 7. O-Z/Gedney; a brand of the EGS Electrical Group.
 8. 3M; Electrical Markets Division.
 9. Tyco Electronics.
- B. Description: UL listed, factory-fabricated connectors and splices of size, ampacity rating, material, type, and class for application and service indicated.
- C. For #14 through #10 AWG wire sizes, provide insulated spring wire connectors or insulated compression connectors.
- D. For #8 AWG wire, use solderless pressure connectors with insulating sleeves.
- E. For #6 AWG and through #2, optional use split bolt connectors with manufactured insulation covers or tape sufficient to provide 150% insulation level.
- F. For #6 and larger: Compression connectors using compression dies designed for the exact connector being terminated. Provide insulating sleeves manufactured specifically for the connector being used. Mechanical termination integral to overcurrent protective devices are also acceptable.

2.3 SYSTEM DESCRIPTION

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- B. Comply with NFPA 70.

PART 3 - EXECUTION

3.1 CONDUCTOR MATERIAL APPLICATIONS

- A. Feeders: Copper. Solid for No. 10 AWG and smaller; stranded for No. 8 AWG and larger.
- B. Branch Circuits: Copper. Solid for No. 12 AWG and smaller; stranded for No. 8 AWG and larger, except VFC cable, which shall be extra flexible stranded.

**3.2 CONDUCTOR INSULATION AND MULTICONDUCTOR CABLE
APPLICATIONS AND WIRING METHODS**

- A. Service Entrance: Type THHN-THWN, single conductors in raceway.
- B. Exposed Feeders and Branch Circuits: Type THHN-THWN, single conductors in raceway.
- C. Feeders and Branch Circuits Concealed in Ceilings, Walls, Partitions, and Crawlspace: Type THHN-THWN, single conductors in raceway.
- D. Feeders and Branch Circuits Concealed in below grade concrete walls, below Slabs-on-Grade, and Underground: Type XHHW-2, single conductors in raceway.
- E. Feeder and Branch Circuits exposed above roofing: XHHW-2.
- F. Cord Drops and Portable Appliance Connections: Type SO, hard service cord with stainless-steel, wire-mesh, strain relief device at terminations to suit application.
- G. Variable Frequency Controller Output Circuits: Type XHHW-2 in metal conduit.

3.3 INSTALLATION OF CONDUCTORS AND CABLES

- A. Conceal cables in finished walls, ceilings, and floors unless otherwise indicated.
- B. Complete raceway installation between conductor and cable termination points according to Section 260533 "Raceways and Boxes for Electrical Systems" prior to pulling conductors and cables.
- C. Use manufacturer-approved pulling compound or lubricant where necessary; compound used must not deteriorate conductor or insulation. Do not exceed manufacturer's recommended maximum pulling tensions and sidewall pressure values.
- D. Use pulling means, including fish tape, cable, rope, and basket-weave wire/cable grips, that will not damage cables or raceway.
- E. Install exposed cables parallel and perpendicular to surfaces of exposed structural members, and follow surface contours where possible.
- F. Support cables according to Section 260529 "Hangers and Supports for Electrical Systems."

3.4 CONNECTIONS

- A. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A-486B.
- B. Make splices, terminations, and taps that are compatible with conductor material and that possess equivalent or better mechanical strength and insulation ratings than unspliced conductors.
- C. Wiring at Outlets: Install conductor at each outlet, with at least 6 inches (150 mm) of slack.

3.5 IDENTIFICATION

- A. Identify and color-code conductors and cables according to Section 260553 "Identification for Electrical Systems."
- B. Identify each spare conductor at each end with identity number and location of other end of conductor, and identify as spare conductor.

3.6 PENETRATIONS

- A. Penetrate fire barriers, smoke barriers, vapor barriers, roofing materials and other rated architectural elements in a manner that preserves the rating of the architectural element.
- B. Apply firestopping to electrical penetrations of fire-rated floor and wall assemblies to restore original fire-resistance rating of assembly according to Section 078413 "Penetration Firestopping."

3.7 FIELD QUALITY CONTROL

- A. Perform the following tests and inspections:
 - 1. Perform each visual and mechanical inspection and electrical test stated in NETA Acceptance Testing Specification. Certify compliance with test parameters.
- B. Test and Inspection Reports: Prepare a written report to record the following:
 - 1. Procedures used.
 - 2. Results that comply with requirements.
 - 3. Results that do not comply with requirements and corrective action taken to achieve compliance with requirements.
- C. Cables will be considered defective if they do not pass tests and inspections.
- D. Remove and replace malfunctioning cables and retest as specified above.

END OF SECTION 26 05 19

SECTION 26 05 26

GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUBMITTALS

- A. Product Data: For each type of product indicated.

PART 2 - PRODUCTS

2.1 GENERAL

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- B. Comply with UL 467 for grounding and bonding materials and equipment.

2.2 CONDUCTORS

- A. Insulated Conductors: Copper wire or cable insulated for 600 V unless otherwise required by applicable Code or authorities having jurisdiction.
- B. Bare Copper Conductors:
 - 1. Solid Conductors: ASTM B 3.
 - 2. Stranded Conductors: ASTM B 8.
 - 3. Tinned Conductors: ASTM B 33.

2.3 CONNECTORS

- A. Listed and labeled by an NRTL acceptable to authorities having jurisdiction for applications in which used and for specific types, sizes, and combinations of conductors and other items connected.

- B. Bolted Connectors for Conductors and Pipes: Copper or copper alloy, pressure type with at least two bolts.
 - 1. Pipe Connectors: Clamp type, sized for pipe.
- C. Welded Connectors: Exothermic-welding kits of types recommended by kit manufacturer for materials being joined and installation conditions.
- D. Bus-bar Connectors: Mechanical type, cast silicon bronze, solder less compression-type wire terminals, and long-barrel, two-bolt connection to ground bus bar.

PART 3 - EXECUTION

3.1 APPLICATIONS

- A. Provide grounding and bonding required by NFPA 70, as adopted by the local authority having jurisdiction. Detailed aspects of code requirements for grounding and bonding may not be indicated within the contract documents, however, all aspects of code compliance are the responsibility of the contractor.
- B. Conductors: Install solid conductor for No.10 AWG and smaller, and stranded conductors for larger unless otherwise indicated.
- C. Conductor Terminations and Connections:
 - 1. Pipe and Equipment Grounding Conductor Terminations: Bolted connectors.

3.2 EQUIPMENT GROUNDING

- A. Install insulated equipment grounding conductors with all feeders and branch circuits.

3.3 INSTALLATION

- A. Grounding Conductors: Route along shortest and straightest paths possible unless otherwise indicated or required by Code. Avoid obstructing access or placing conductors where they may be subjected to strain, impact, or damage.
- B. Bonding Straps and Jumpers: Install in locations accessible for inspection and maintenance except where routed through short lengths of conduit.
 - 1. Bonding to Structure: Bond straps directly to basic structure, taking care not to penetrate any adjacent parts.
 - 2. Bonding to Equipment Mounted on Vibration Isolation Hangers and Supports: Install bonding so vibration is not transmitted to rigidly mounted equipment.

3. Use exothermic-welded connectors for outdoor locations; if a disconnect-type connection is required, use a bolted clamp.

3.4 LABELING

- A. Comply with requirements in Division 26 Section "Identification for Electrical Systems" Article for instruction signs. The label or its text shall be green.
- B. Install labels at the telecommunications bonding conductor and grounding equalizer and at the grounding electrode conductor where exposed.
 1. Label Text: "If this connector or cable is loose or if it must be removed for any reason, notify the facility manager."

3.5 SIZE OF GROUND WIRE

- A. As required by National Electric Code. Where ground wire is exposed to physical damage protect with rigid non-ferrous conduit as permitted by applicable code.

3.6 CONNECTION TO THE POWER GROUND BUS

- A. Furnish and install connections in accordance with the codes; including but not limited to:
 1. Raceway system
 2. Switchboard
 3. Service neutral
 4. "Separately derived system" (transformer or emergency power supply)
 5. Electrically operated equipment and devices.
- B. No device or equipment shall be connected for electrical service which has a neutral conductor connected to a grounding conductor or to the frame within the device or equipment.

3.7 METHOD OF CONNECTIONS

- A. Make all ground connections and ground cable splices by thermal welding or copper compression set type connectors U.L. listed for grounding purposes. Grounding lugs, where provided as standard manufacturer's items on equipment furnished, may be used.

3.8 EXPANSION FITTINGS

- A. In conduit runs requiring an expansion fitting, a bonding jumper shall be installed around the fitting to maintain continuous ground continuity. Jumper shall allow for maximum movement of the fitting.

3.9 GROUND CABLE CROSSING EXPANSION JOINTS

- A. Ground cables crossing expansion joints or similar separations in structures or paved areas shall be protected from damage by means of suitable approved devices or methods of installation which will provide the necessary slack in the cable across the joint to permit movement. Stranded or other approved flexible copper run or jumper shall be used across such separations.

3.10 GROUNDING FOR FEEDERS

- A. Provide a grounding bushing with ground conductor sized in accordance with NEC table 250.122 to the grounding bus in the panelboard and switchboards.

END OF SECTION 26 05 26

**SECTION 26 05 33
RACEWAYS AND BOXES**

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 DEFINITIONS

- A. AASHTO American Association of State Highway and Transportation Officials
- B. ARC: Aluminum rigid conduit.
- C. EMT: Electrical metallic tubing.
- D. EPDM: Ethylene-propylene-diene terpolymer rubber.
- E. FMC: Flexible metal conduit
- F. GRC: Galvanized rigid steel conduit.
- G. IMC: Intermediate metal conduit.
- H. LFMC: Liquid tight flexible metal conduit.
- I.
- J. LFNC: Liquidtight flexible nonmetallic conduit.
- K. NBR: Acrylonitrile-butadiene rubber.
- L. RNC: Rigid nonmetallic conduit.
- M. SCTE Society of Cable Telecommunications Engineers

1.3 SUBMITTALS

- A. Product Data: For surface raceways, wireways and fittings, floor boxes, hinged-cover enclosures, cabinets, and handholes.

PART 2 - PRODUCTS

2.1 GENERAL

- A. Listing and Labeling: Products shall be listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- B. Comply with NFPA 70 requirements.
- C. Minimum Raceway Size: 1/2-inch (16-mm) trade size.

2.2 METAL CONDUITS, TUBING, AND FITTINGS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following
 1. AFC Cable Systems, Inc.
 2. Alflec Inc.
 3. Allied Tube & Conduit; a Tyco International Ltd. Co.
 4. Anamet Electrical, Inc.; Anaconda Metal Hose.
 5. Electri-Flex Company.
 6. Eaton
 7. Maverick Tube Corporation.
 8. O-Z/Gedney – Emerson
 9. Western Tube and Conduit Corporation.
 10. Wheatland Tube Company; a division of John Maneely Company.
- B. Conduit
 1. GRC: Comply with ANSI C80.1 and UL 6. Hot dipped zinc galvanized.
 2. ARC: Comply with ANSI C80.5 and UL 6A.
 3. IMC: Comply with ANSI C80.6 and UL 1242.
 4. FMC: Comply with UL 1; zinc-coated steel or aluminum.
 5. LPMC: Flexible steel conduit with PVC jacket and complying with UL 360.
 6. Fittings: Comply with NEMA FB 1 and UL 514B.
 - a. Hazardous (Classified) Locations: Comply with UL 886 and NFPA 70.
 - b. Material: Match conduit material.
 - c. Type: Threaded, compression.
 7. Joint Compound: Approved, as defined in NFPA 70, by authorities having jurisdiction for use in conduit assemblies, and compounded for use to lu-

bricate and protect threaded conduit joints from corrosion and to enhance their conductivity.

- C. EMT: Comply with ANSI C80.3 and UL 797.
 - 1. Couplings: Setscrew. Steel. May be constructed integral with tubing.
 - 2. Indentor, Tap On, and Die Cast fittings are not acceptable.
- D. Deflection/Expansion Fittings: Comply with UL 651, rated for environmental conditions where installed, and including flexible internal or external bonding jumper.

2.3 NONMETALLIC CONDUIT AND FITTINGS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following
 - 1. AFC Cable Systems, Inc.
 - 2. Anamet Electrical, Inc.
 - 3. Arnco Corporation.
 - 4. Carlon
 - 5. CANTEX Inc.
 - 6. CertainTeed Corp.
 - 7. Condux International, Inc.
 - 8. ElecSYS, Inc.
 - 9. Electri-Flex Company.
 - 10. Lamson & Sessions; Carlon Electrical Products.
 - 11. Manhattan/CDT/Cole-Flex.
 - 12. RACO; a Hubbell company.
 - 13. Thomas & Betts Corporation.
- B. RNC
 - 1. Complying with NEMA TC 2 and UL 651. Type EPC-40-PVC.
 - 2. Fittings: Comply with NEMA TC 3; match to conduit or tubing type and material. Couplings may be constructed integral to raceway.
- C. LFNC: Comply with UL 1660. Fittings shall comply with UL 514B
- D. ENT: Comply with NEMA TC 13 and UL 1653.
 - 1. Sizes up to 1 inch maximum.
 - 2. Transition adapters for interfacing with other systems.

2.4 METAL WIREWAYS AND AUXILIARY GUTTERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following
 - 1. Eaton-Cooper B-Line, Inc.
 - 2. Hoffman; a Pentair company.
 - 3. Husky
 - 4. Schneider Electric.

- B. Construction:
 - 1. Sheet metal: sized and shaped as indicated,
 - 2. Indoors: NEMA 250, Type 1, hinged cover.
 - 3. Outdoors and unheated spaces: NEMA 250 Type 3R, Flanged and gasketed cover.
 - 4. Stainless steel Type 4X in kitchens, sterilization rooms, laundry, wash-down, and similar environments. Flanged and gasketed cover.
- C. Fittings and Accessories: Include couplings, offsets, elbows, expansion joints, adapters, hold-down straps, end caps, and other fittings to match and mate with wireways as required for complete system.
- D. Finish: Manufacturer's standard enamel finish.

2.5 SURFACE RACEWAYS

- A. Surface Metal Raceways: Galvanized steel with snap-on covers complying with UL 5. Manufacturer's standard enamel finish and color.
- B. Manufacturers: Subject to compliance with requirements, provide products by one of the following
 - 1. Thomas & Betts Corporation.
 - 2. Walker Systems, Inc.; Wiremold Company (The).
 - 3. Wiremold Company (The); Electrical Sales Division.

2.6 BOXES, CABINETS, ENCLOSURES

- A. Suitable and listed for the environment in which they are installed per UL 50 and NEMA 250.
 - 1. Indoors: NEMA 250, Type 1.
 - 2. Outdoors: NEMA 250 Type 3R, Flanged and gasketed cover.
 - 3. Stainless steel Type 4X in kitchens, sterilization rooms, laundry, wash-down, and similar environments. Flanged and gasketed cover.
- B. Manufacturers: Subject to compliance with requirements, provide products by one of the following
 - 1. Eaton.
 - 2. EGS/Appleton Electric.
 - 3. Erickson Electrical Equipment Company.
 - 4. Pentair - Hoffman.
 - 5. Hubbell Incorporated; Killark Electric Manufacturing Co. Division.
 - 6. O-Z/Gedney; a unit of General Signal.
 - 7. RACO; a Hubbell Company.
 - 8. Robroy Industries, Inc.; Enclosure Division.
 - 9. Scott Fetzer Co; Adalet Division.
 - 10. Spring City Electrical Manufacturing Company.
 - 11. Thomas & Betts Corporation.
 - 12. Walker Systems, Inc.; Wiremold Company (The).

13. Woodhead, Daniel Company; Woodhead Industries, Inc. Subsidiary.
- C. Sheet Steel Gage (Any Direction)
1. Less than 24": 14 USS gauge.
 2. Greater than 24": 12 USS gauge.
- D. Outlet and Device Boxes
1. Sheet Metal Outlet and Device Boxes: Comply with NEMA OS 1 and UL 514A.
 2. Cast-Metal Outlet and Device Boxes: Comply with NEMA FB 1, galvanized ferrous alloy for use with IMC and RMC, aluminum for use with ARC, Type FD.
 3. Nonmetallic Outlet and Device Boxes: Comply with NEMA OS 2 and UL 514C.
 4. Luminaire Outlet Boxes: Nonadjustable, designed for attachment of luminaire weighing 50 lb (23 kg). Outlet boxes designed for attachment of luminaires weighing more than 50 lb (23 kg) shall be listed and marked for the maximum allowable weight.
 5. Wall Device Box Dimensions: Minimum depth 2-1/8 inches. Gangable boxes are permitted.
 6. Box extensions used to accommodate new building finishes shall be of same material as recessed box.
- E. Pull and Junction Boxes
1. Small Sheet: NEMA OS 1.
 2. Cast-Metal: Comply with NEMA FB 1 and UL 1773, cast aluminum with gasketed cover.
 3. Access Cover as follows, unless otherwise indicated:
 - a. Screw Cover:
 - 1) Both cover dimensions less than 30 inches
 - 2) In line pulls with one cover dimension less than 16 inches
 - b. Either cover dimension greater than 30 inches: One or more hinged cover(s) with Latch.
- F. Cabinets and Enclosures
1. Finished inside and out with manufacturer's standard enamel.
 2. Access Door:
 - a. Hinged with key latch to match panelboards.
 - b. Three point latch when dual doors are in use or when hinged side exceeds 47 inches.
 - c. Gasketed
 3. Metal barriers to separate wiring of different systems and voltage.
 4. Labeled with appropriate safety warnings
 5. Accessory feet where required for freestanding equipment.
 6. Interior Panels: Steel; all sides finished with manufacturer's standard enamel. Removeable. Hardware and accessories suitable for supporting equipment.
 7. Provisions for seismic anchoring and deflection per Section 260548 Seismic Controls for Electrical Systems.

8. Lugs for grounding conductor(s) bonded to enclosure.
9. Accessories:
 - a. Door Pocket for wiring diagram
 - b. Convenience Light and Receptacle
 - c. Environmental control system to support operating range of internal equipment. Filtered ventilation.
 - d. Terminal Blocks: Tin plated copper, 600Volt, individually removable, DIN rail mounted. For termination of all incoming and outgoing wiring.
 - e. Wire Channels: Nylon or PVC. Arranged alongside of equipment and sized per wiring requirements.

2.7 PENETRATIONS

- A. Sleeves and seals associated with penetrations shall preserve the fire, thermal, water, or other rating of the penetrated element. Refer to Division 7 for Penetration Firestopping products.
- B. Wall Sleeves
 1. Steel Pipe Sleeves: ASTM A 53/A 53M, Type E, Grade B, Schedule 40, zinc coated, plain ends.
 2. Cast-Iron Pipe Sleeves: Cast or fabricated "wall pipe," equivalent to ductile-iron pressure pipe, with plain ends and integral waterstop unless otherwise indicated.
- C. Compressive Seals:
 1. Modular sealing device, designed for field assembly, to fill annular space between sleeve and raceway.
 2. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Eaton/Crouse Hinds Link Seal.
 - b. Emerson/OZ Gedney
 3. Sleeve or body casting: Cast iron, cast in place or core drill.
 4. Sealing Elements EPDM rubber interlocking links shaped to fit surface of pipe. Include type and number required for pipe material and size of pipe.
 5. Pressure Plates: Glass Reinforced Nylon or PVC coated stainless steel
 6. Connecting Bolts and Nuts: 316 type Stainless steel of length required to secure pressure plates to sealing elements.
 7. Completed assembly suitable rated at 20 psig or 40 feet of head.
- D. Raceway Seal Fittings
 1. General
 - a. For use with GRC or IMC. Sealant fill, wire fill provisions and orientation to match application, location and containment requirement.
 - b. Sealing system, may be removed for replacement of wire without affecting integrity of raceway system.

- c. Sealant or sealing material furnished by fitting manufacturer to match application and be compatible with wire insulation type and thermal rating.
- 2. Foam Sealant: High expansion, two part urethane foam, 120 lb compressive strength and capable of withstanding 22 feet of water head pressure. Complies with UL 94 fire rating HBF. American Polywater FST or equal.
- 3. Sealing Bushings: Slotted PVC coated steel discs; neoprene sealing ring; stainless steel socket head cap screws and washers. Custom holes drilled to accommodate cables. Stainless steel socket head screws. Hot dipped galvanized malleable or ductile iron locking collars. Seals against gas or fluid pressure of 50 psig. O-Z Gedney CSB series.
- 4. In Line Epoxy Cement Fill Fittings: For control of gasses and vapors, rated for 40% fill, liquid epoxy sealant, Emerson EY or EYAX series or equal.
- 5. Comply with UL 1203 for explosion proof and dust ignition proof environments.

PART 3 - EXECUTION

3.1 GENERAL

- A. Comply with NECA 1 and NECA 101 for installation requirements except where requirements on Drawings or in this article are stricter. Comply with NECA 102 for aluminum conduits.
- B. Comply with NFPA 70.
- C. Comply with requirements in Division 26 Sections "Hangers and Supports for Electrical Systems" and "Seismic Controls for Electrical Systems" for hangers and supports.
- D. Determine optimal raceway routes that result in coordination with all building systems. Determine pull box quantities, sizes and locations.

3.2 RACEWAY APPLICATION

- A. Outdoors: Apply raceway products as specified below unless otherwise indicated:
 - 1. Exposed Conduit: GRC, IMC,.
 - 2. Concealed Conduit, Aboveground: GRC, IMC, EMT.
 - 3. Boxes and Enclosures, Aboveground: NEMA 250, Type 4X, 4, or 3R
- B. Indoors
 - 1. Exposed, Not Subject to Physical Damage: EMT, IMC, GRC.
 - 2. Exposed and Subject to Damage: GRC, IMC.
 - a. Raceway locations include the following (any height):
 - 1) Loading dock.

- 2) Gymnasiums
 - b. Raceway locations include the following, when below 8 feet above floor:
 - 1) Corridors used for traffic of mechanized carts, forklifts, and pallet-handling units.
 - 2) Mechanical rooms.
 - 3. Concealed in Ceilings and Interior Walls and Partitions: EMT.
 - 4. Damp or Wet Locations: GRC, IMC.
 - 5. Boxes and Enclosures: NEMA 250, Type 1, except use NEMA 250, Type 4X stainless steel in institutional and commercial kitchens, trash compactor areas, at sump pumps, and similar damp, wet or corrosive locations.
- C. In Slabs: Not permitted.
- D. Connection to Vibrating Equipment (Including Transformers and Hydraulic, Pneumatic, Electric Solenoid, or Motor-Driven Equipment): FMC, except use LFMC in fire pump rooms, damp locations, and wet locations.
- E. Raceway Fittings: Compatible with raceways and suitable for use and location.
- 1. Rigid and Intermediate Steel Conduit: Use threaded rigid steel conduit fittings unless otherwise indicated. Comply with NEMA FB 2.10.
 - 2. PVC Externally Coated, Rigid Steel Conduits: Use only fittings listed for use with this type of conduit. Patch and seal all joints, nicks, and scrapes in PVC coating after installing conduits and fittings. Use sealant recommended by fitting manufacturer and apply in thickness and number of coats recommended by manufacturer.
 - 3. EMT: Use compression fittings. Comply with NEMA FB 2.10. Cast metal fittings are not acceptable
 - 4. Flexible Conduit: Use only fittings listed for use with flexible conduit. Comply with NEMA FB 2.20.

3.3 INSTALLATION

- A. Install raceways parallel or perpendicular to structural building lines. Conceal conduit and EMT within finished walls, ceilings, and floors except as follows:
- 1. In rooms without a dropped ceiling.
 - 2. In non-public spaces such as mechanical, electrical, communication rooms.
 - 3. Parking garages.
 - 4. Unless otherwise indicated.
- B. Do not route:
- 1. Parallel horizontal runs of raceways within 6 inches (150 mm) or directly above flues, steam, or hot-water piping.
 - 2. Nonmetallic conduit where ambient temperature exceeds 120 deg F (49 deg C)
 - 3. Aluminum conduits or fittings in contact with concrete or earth.

- C. Complete raceway installation before starting conductor installation.
- D. Anchors and Supports:
 - 1. Positively attach raceways, boxes, and enclosures to structure, do not attach to supports for mechanical or other non-electrical systems.
 - 2. Support raceways within 12 inches (300 mm) of enclosures to which attached.
 - 3. Set boxes, enclosures, and cabinets plumb.
- E. Raceway Terminations:
 - 1. Cut conduit perpendicular to the length. For conduits 2-inch (53-mm) trade size and larger, use roll cutter or a guide to make cut straight and perpendicular to the length.
 - 2. Locations Subject to Moisture or Vibration: Use insulating bushings to protect conductors.
 - 3. Terminate threaded conduits into threaded hubs or with locknuts on inside and outside of boxes or cabinets. Install bushings on conduits up to 1-1/4-inch (35mm) trade size and insulated throat metal bushings on 1-1/2-inch (41-mm) trade size and larger conduits terminated with locknuts. Install insulated throat metal grounding bushings on service conduits.
 - 4. Install raceways square to the enclosure and terminate at enclosures with locknuts. Install locknuts hand tight plus 1/4 turn more.
 - 5. Do not rely on locknuts to penetrate nonconductive coatings on enclosures. Remove coatings in the locknut area prior to assembling conduit to enclosure to assure a continuous ground path.
 - 6. Threaded Conduit Joints, Exposed to Wet, Damp, Corrosive, or Outdoor Conditions: Apply listed compound to threads of raceway and fittings before making up joints. Follow compound manufacturer's written instructions.
- F. Install pull wires in empty raceways. Use polypropylene or monofilament plastic line with not less than 200-lb (90-kg) tensile strength. Leave at least 12 inches (300 mm) of slack at each end of pull wire. Cap, plug or compressive seal underground raceways designated as spare at point of below grade entry into building or at first pulling access point.
- G. Stub-ups:
 - 1. Above Recessed Ceilings: Use a raceway bushing or insulated fitting to terminate stub-ups not terminated in hubs or in an enclosure.
 - 2. Through slab, comply with either:
 - a. Arrange stub-ups so curved portions of bends are not visible above finished slab.
 - b. Terminate conduit at threaded GRC coupling with top of coupling 1/8" below top of slab.
- H. Outlet and Device Boxes:
 - 1. Mount outlet boxes at heights indicated on Drawings. If mounting heights of boxes are not individually indicated, give priority to ADA requirements.

Install wall outlet boxes with height measured to center of box unless otherwise indicated.

2. Recessed Boxes in Masonry Walls: Saw-cut opening for box in center of cell of masonry block, and install box flush with surface of wall. Prepare block surfaces to provide a flat surface for a rain-tight connection between box and cover plate or supported equipment and box.
3. Horizontally separate boxes mounted on opposite sides of walls so they are not in the same vertical channel. Do not compromise wall ratings for fire and sound separation.
4. Locate boxes so that cover or plate will not span different building finishes.
5. Support boxes of three gangs or more from more than one side by spanning two framing members or mounting on brackets specifically designed for the purpose.
6. Box construction and size to match device requirements. Where device is furnished under this or other Divisions of this specification obtain requirements prior to roughing in.
7. Set floor boxes level and adjust to match finished floor surface.
8. Provide cast outlet boxes in exterior, wet, or cast in concrete locations.

I. Surface Raceways:

1. Install surface raceways only where indicated.
2. Install surface raceway with a minimum 2-inch (50-mm) radius control at bend points.
3. Secure surface raceway with screws or other anchor-type devices at intervals not exceeding 48 inches (1200 mm) and with no less than two supports per straight raceway section. Support surface raceway according to manufacturer's written instructions. Tape and glue are not acceptable support methods.

J. Movement:

1. General
 - a. Select raceway elements to accommodate the expected movement. Set initial position of raceway movement element as appropriate to accommodate ultimate worst case movement.
 - b. Install raceway supports to allow for expansion movement.
 - c. Provide bonding jumper for fittings without a continuous ground path.
2. Raceway thermal performance:
 - a. Install in each run of aboveground metallic raceway that is located where environmental temperature change may exceed 100 deg F (55 deg C) and that has straight-run length that exceeds 100 feet (30 m).
 - b. Install fitting(s) that provide expansion and contraction for at least 0.000078 inch per foot of length of straight run per deg F (0.0115 mm per meter of length of straight run per deg C) of temperature change for metal conduits.
3. Structural and Architectural Elements: Install expansion fittings or flexible raceways at all locations where raceways cross building or structure ex-

pansion joints. Install each expansion-joint fitting with position, mounting, and piston setting selected according to manufacturer's written instructions for conditions at specific location at time of installation.

4. Where piston fittings are used provide slack conductor in adjacent pull boxes or equipment to alleviate stress on conductor terminations during expansion joint movement.
- K. Flexible Conduit Connections: Comply with NEMA RV 3. Use a maximum of 72 inches (1830 mm) of flexible conduit for recessed and semi-recessed luminaires, equipment subject to vibration, noise transmission, transformers and motors.

3.4 SEALS

- A. Select seals as appropriate for the element (ie: liquids, gasses, dust, and/or vapor) the seal is isolating.
- B. Follow manufacturer's instructions when installing sealants and seal fittings.
- C. Location:
 1. Seal fitting shall be accessible.
 2. Locate seal fittings so no fittings or boxes are between the seal and the element requiring isolation.
 3. For concealed raceways, install each fitting in a flush steel box with a blank cover plate having a finish like that of adjacent plates or surfaces.
- D. Transition to RMC or IMC where required by code or seal fitting application.
- E. Seal the following points:
 1. Where raceways pass from warm to cold locations:
 - a. Boundaries of refrigerated spaces
 - b. Boundaries between heated and unheated spaces.
 2. Raceway connections to continually wet environments such as sumps and wells.
 3. To limit transmittance of hazardous liquids, gasses, dust, and/or vapors.
 4. Where raceways 2" and larger rise from below grade to terminate at stand or slab mounted exterior utilization equipment.

3.5 PENETRATIONS

- A. Penetrate fire barriers, smoke barriers, vapor barriers, acoustic barriers, waterproofing, roofing materials, floors, walls, foundations, and other rated architectural and structural elements and assemblies in a manner that preserves the integrity of the rating and the intended performance.
 1. Install firestopping at penetrations of fire-rated floor and wall assemblies. Comply with requirements in Division 07 requirements for penetration firestopping.

2. Roof penetrations shall be made in accordance with the recommendations of the roofing system supplier and shall not compromise the roofing warranty.

3.6 PROTECTION

- A. Protect coatings, finishes, and cabinets from damage and deterioration.
 1. Repair damage to galvanized finishes with zinc-rich paint recommended by manufacturer.
 2. Repair damage to PVC coatings or paint finishes with matching touchup coating recommended by manufacturer.

END OF SECTION 26 05 33

SECTION 26 05 53

IDENTIFICATION FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Equipment identification nameplates.
 - 2. Receptacle Identification Labels

1.3 REFERENCES

- A. American National Standards Institute (ANSI):
 - 1. ANSI A13.1 "Scheme for Identification of Piping Systems"
- B. Occupational Safety and Health Administration (OSHA). 29 CFR - Labor Chapter XVII Part 1910-145 "Occupational and Safety Health Standards" 1992.

1.4 ACTION SUBMITTALS

- A. Product Data: For each electrical identification product indicated.

1.5 QUALITY ASSURANCE

- A. Comply with NFPA 70.
- B. Comply with 29 CFR 1910.144 and 29 CFR 1910.145.
- C. Comply with ANSI Z535.4 for safety signs and labels.
- D. Adhesive-attached labeling materials, including label stocks, laminating adhesives, and inks used by label printers, shall comply with UL 969.

1.6 COORDINATION

- A. Coordinate identification names, abbreviations, colors, and other features with requirements in other Sections requiring identification applications, Drawings, Shop Drawings, manufacturer's wiring diagrams, and the Operation and Maintenance Manual; and with those required by codes, standards, and 29 CFR 1910.145. Use consistent designations throughout Project.
- B. Note that equipment names and room numbers shown on the Contract Drawings may not be final names and numbers. Confirm all final naming prior to label manufacture.
- C. Coordinate installation of identifying devices with completion of covering and painting of surfaces where devices are to be applied.
- D. Coordinate installation of identifying devices with location of access panels and doors.

PART 2 - PRODUCTS

2.1 EQUIPMENT NAMEPLATES

- A. Materials:
 - 1. Engraved plastic laminate - three-layer laminated plastic with punched or drilled holes for screw mounting
 - 2. Self-Adhesive, Engraved, Laminated Acrylic or Melamine Label: Adhesive backed
 - 3. Adhesive Film Label: Machine printed, in black, by thermal transfer or equivalent process.
 - 4. Adhesive Film Label with Clear Protective Overlay: Machine printed, in black, by thermal transfer or equivalent process. Overlay shall provide a weatherproof and UV-resistant seal for label.
 - 5. Stenciled Legend: In nonfading, waterproof, black ink or paint. Minimum letter height shall be 1 inch (25 mm)
- B. Dimension
 - 1. Nameplate minimum of 1 3/4" high by 5" wide.
 - 2. Lettering height for panel or equipment identifier @ 1/4".
 - 3. Lettering height for remaining lines @ 1/8" high with 1/8" spacing between lines.
 - 4. Normal System: White letters on black background.
 - 5. Comply with ANSI 13.1.
- C. Disconnects, Starters, Combination Starters and Other Devices
 - 1. Provide phenolic nameplate for each device with the following information:

Line 1: Load served

Line 2: Panelboard and circuit number from which device is fed

Line 3: Fuse size or breaker size as applicable

2.2 RECEPTACLE AND SWITCH IDENTIFICATION LABELS

- A. Materials (Where engraved device faceplates are not used)
 - 1. Adhesive Film Label with Clear Protective Overlay: Machine printed, in black, by thermal transfer or equivalent process. Overlay shall provide a weatherproof and UV-resistant seal for label.
- B. Identification
 - 1. Label normal receptacle and switch cover plates with the circuit number supplying them below the device using 3/16" high, black filled letters.
 - 2. For all receptacles other than 15 and 20 amp, 120 volts, provide separate nameplate with ampere rating, voltage and phase.

PART 3 - EXECUTION

3.1 INSTALLATION - GENERAL

- A. Verify identity of each item before installing identification products.
- B. Location: Install identification materials and devices at locations for most convenient viewing without interference with operation and maintenance of equipment.
- C. Apply identification devices to surfaces that require finish after completing finish work.
- D. Self-Adhesive Identification Products: Clean surfaces before application, using materials and methods recommended by manufacturer of identification device.
- E. Attach signs and plastic labels that are not self-adhesive type with mechanical fasteners appropriate to the location and substrate.

3.2 EQUIPMENT IDENTIFICATION:

- A. Label and mark equipment per all applicable codes.
- B. On each unit of equipment, install unique designation nameplate that is consistent with naming used in wiring diagrams, schedules, and the Operation and Maintenance Manual.
- C. In addition to equipment listed in Part 2 provide nameplates for:
 - 1. Access doors for concealed electrical devices

2. Transformers
 3. Substations
 4. Enclosed over-current protective devices
 5. Electrical cabinets, enclosures and terminal cabinets
 6. Contactors
 7. Variable speed drives
 8. Battery -inverters, battery racks, UPS equipment
 9. Power-generating units
 10. Monitoring and control panels and equipment
- D. Confirm all final naming prior to label manufacture.
- E. Labeling Instructions:
1. Indoor Equipment: Adhesive film label.
 2. Outdoor Equipment: Engraved, laminated acrylic or melamine label with screw fasteners
 3. Elevated Components: Increase sizes of labels and letters to those appropriate for viewing from the floor.
 4. Unless provided with self-adhesive means of attachment, fasten labels with appropriate mechanical fasteners that do not change the NEMA or NRTL rating of the enclosure.

END OF SECTION 26 05 53

**SECTION 26 09 23
LIGHTING CONTROL DEVICES**

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.
- B. Related Sections include the following:
 - 1. Section 260519 Low Voltage Electrical Power Conductors and Cables
 - 2. Section 265119 LED Interior Lighting

1.2 SUMMARY

- A. This Section includes the following lighting control devices:
 - 1. Snap switches and wall box dimmers
 - 2. Indoor occupancy sensors

1.3 DEFINITIONS

- A. LED: Light-Emitting Diode
- B. PIR: Passive Infrared
- C. DT: Dual Technology

1.4 SUBMITTALS

- A. Make submittals in accordance with Section 260500 - Common Work Results For Electrical.
- B. Product Data: Provide clearly marked and legible data sheets for each item of equipment being installed on the project. This shall include each major replaceable component that is part of a larger assembly. Data sheets should clearly indicate:
 - 1. Equipment manufacturer, make, model number, size, nameplate data, etc.

2. Dimensional and performance data for specific unit provided as appropriate
 3. Required environmental operating parameters
 4. UL, FM and ETL listing and category
 5. Manufacturer contact information including address, telephone number, facsimile number, email address, web site address and contact person or persons.
 6. Local manufacturer's representative contact information including address, telephone number, facsimile number, email address, web site address and contact person or persons.
- C. Shop Drawings: Show installation details for occupancy and light-level sensors.
1. Lighting plan showing location, orientation, and coverage area of each sensor. This plan shall take into consideration the size and use of each space as well as the specific capabilities of submitted manufacturer's equipment to provide proper coverage to the areas of control.
 2. Interconnection diagrams showing field-installed wiring.
- D. Label List: Submit list of proposed text for all labels prior to manufacturing for review and approval by Owner's representative.
- E. Warranty: Submit a copy of product warranty that complies with contract document requirements. Where these requirements exceed manufacturer's standard warranty include cost of extended warranty in contract price.
- F. Maintenance Requirements: Submit maintenance requirements manual or guidelines. This document should detail the requirements necessary to comply with the warranty. This is required for the submittal process and is in addition to the O&M requirements.
- G. Samples: Provide sample devices and finishes plus other samples when requested, as part of the submittal process.
- H. Commissioning Checklist: Submit a copy of the proposed commissioning checklist to be utilized for this project.
- I. Commissioning Results: Submit a copy of the completed commissioning documents.

1.5 COORDINATION

- A. Coordinate layout and installation of ceiling-mounted devices with other construction that penetrates ceilings or is supported by them, including light fixtures, HVAC equipment, fire-suppression system, and partition assemblies.

1.6 QUALITY ASSURANCE

- A. Qualifications

1. Manufacturer shall have been in the business of manufacturing and providing service for lighting control equipment for similar capabilities and size, under the same name and ownership, for a minimum of three years preceding bid date of the project.
 2. All components and assemblies shall be factory pre-tested prior to installation.
 3. Factory trained technicians shall be on site for start-up, commissioning and training.
 4. Factory trained technicians shall be available for telephone support twenty-four (24) hours a day, seven (7) days a week.
 5. Lighting control devices must be approved by the CEC (California Energy Commission).
- B. Regulatory Requirements
1. Underwriters Laboratories: Provide U.L. listed lighting control equipment.
 2. Code of Federal Regulations: 47 CFR - FCC All assemblies are to be in compliance with FCC emissions standards specified in Part 15 for Class A application.

1.7 WARRANTY

- A. Manufacturer's Warranty: The manufacturer shall provide a written warranty agreeing to provide parts to replace any portion of the lighting control system equipment that fails due to material or workmanship for a period of twelve months from warranty commencement.
- B. Warranty Commencement: Warranty shall begin at the point of substantial completion of the system installation, which is defined as the date when commissioning and owner training has been completed and the owner obtains beneficial use of the system.
- C. Warranty Replacement Parts: The manufacturer shall be able to ship replacement parts within 24 hours for any component that that fails due to material or workmanship during the warranty period.

PART 2 - PRODUCTS

2.1 TOGGLE SWITCHES

- A. Comply with NEMA WD 1, UL 20, and FS W-S-896.
- B. Switches, 120/277 V, 20 A:
1. Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Single Pole:
 - 1) Cooper; AH1221.
 - 2) Hubbell; HBL1221.

- 3) Leviton; 1221-2.
- 4) Pass & Seymour; CSB20AC1.
- b. Two Pole:
 - 1) Cooper; AH1222.
 - 2) Hubbell; HBL1222.
 - 3) Leviton; 1222-2.
 - 4) Pass & Seymour; CSB20AC2.
- c. Three Way:
 - 1) Cooper; AH1223.
 - 2) Hubbell; HBL1223.
 - 3) Leviton; 1223-2.
 - 4) Pass & Seymour; CSB20AC3.
- d. Four Way:
 - 1) Cooper; AH1224.
 - 2) Hubbell; HBL1224.
 - 3) Leviton; 1224-2.
 - 4) Pass & Seymour; CSB20AC4.

2.2 DECORATOR-STYLE DEVICES

- A. Toggle Switches, Square Face, 120/277 V, 15 A: Comply with NEMA WD 1, UL 20, and FS W-S-896.
 - 1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Cooper; 7621 (single pole), 7623 (three way).
 - b. Hubbell; DS115 (single pole), DS315 (three way).
 - c. Leviton; 5621-2 (single pole), 5623-2 (three way).
 - d. Pass & Seymour; 2621 (single pole), 2623 (three way).
- B. Lighted Toggle Switches, Square Face, 120 V, 15 A: Comply with NEMA WD 1 and UL 20.
 - 1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Cooper; 7631 (single pole), 7633 (three way).
 - b. Hubbell; DS120IL (single pole), DS320 (three way).
 - c. Leviton; 5631-2 (single pole), 5633-2 (three way).
 - d. Pass & Seymour; 2625 (single pole), 2626 (three way).
 - 2. Description: With neon-lighted handle, illuminated when switch is "off."

2.3 WALL-BOX DIMMERS

- A. Subject to compliance with the contract documents, provide products from one of the following manufacturers:
 - 1. Lutron
 - 2. Leviton

- 3. Wattstopper
- B. Dimmer Switches: Modular, full-wave, solid-state units with integral, quiet on-off switches, with audible frequency and EMI/RFI suppression filters.
- C. Control: Continuously adjustable slider with single-pole or three-way switching. Comply with UL 1472.
- D. Where two or more devices are ganged together, a single faceplate without visible fasteners will cover all devices.
- E. Incandescent Lamp Dimmers: 120 V; control shall follow square law dimming curve. On-off switch positions shall bypass dimmer module.
 - 1. 600 W; dimmers shall require no derating when ganged with other devices.
- F. LED Lamp Dimmer Switches: Modular; compatible with dimmer drivers; trim potentiometer to adjust low-end dimming; dimmer-driver combination capable of consistent dimming with low end not greater than 20 percent of full brightness.

2.4 INDOOR OCCUPANCY SENSORS

- A. Subject to compliance with the contract documents, provide products from one of the following manufacturers:
 - 1. Bryant Electric; a Hubbell company.
 - 2. Cooper Industries, Inc.
 - 3. Hubbell Building Automation, Inc.
 - 4. Leviton Mfg. Company Inc.
 - 5. Acuity Lighting Group, Inc.
 - 6. Lutron Electronics Co., Inc.
 - 7. NSi Industries LLC; TORK Products.
 - 8. RAB Lighting.
 - 9. Sensor Switch, Inc.
 - 10. Square D; a brand of Schneider Electric.
 - 11. Watt Stopper.
- B. General Operation
 - 1. The Occupancy Sensor system shall sense the presence of human activity within the desired space and fully control the on/off function of the loads automatically. Sensors shall turn on the load within 2 feet of entrance and shall not initiate "on" outside of entrance.
 - 2. Upon detection of human activity by the detector, a Time Delay shall be initiated to maintain the light on for a field adjustable pre-set period.
 - 3. Mounting
 - a. Sensor: Suitable for mounting in any position on a standard outlet box.

- b. Relay (when required): Externally mounted through a 1/2 inch knockout in a standard electrical enclosure or integral to the sensor.
 - c. Time Delay and Sensitivity Adjustments: Recessed and concealed behind hinged door.
 - 4. Line Voltage Sensors
 - a. Sensor shall be a self-contained dual voltage device capable of directly switching loads upon detection of human activity.
 - b. Sensor must be rated for 800 watts at 120 VAC, suitable for incandescent light fixtures, LED fixtures with electronic drivers, or 1/6 hp motors or rated for 1000 watts at 277 VAC, suitable for LED light fixtures with electronic drivers, or 1/3 hp motors minimum. Sensor shall be capable of parallel wiring for 3-way switching applications.
 - c. Sensor Time Delay shall be factory set for typical applications, and field adjusted during commissioning. Sensor must provide a LED motion indicator.
 - 5. Low Voltage Sensor
 - a. Sensors must be designed to work in conjunction with remote power packs, relays, or other control systems. Sensors must operate with a Class 2, low voltage wiring strategy. Sensors must be capable of being parallel wired for multi-sensor applications.
 - b. Sensor must provide a transistor output, returning the voltage input rectified to DC, to control remote power packs, relays, or other control systems. Sensor must be available with an optional single pole, double throw signal relay capable of being wired open on occupancy, or closed on occupancy. Sensor Time Delay shall be factory set for typical applications, and field adjusted during commissioning. Sensor must provide a LED motion indicator.
- C. Switch-Box Occupancy Sensors
 - 1. General
 - a. Sensor must not protrude out from the cover plate more than 0.37 inches, and recess into the switch box more than 1 inch. Sensor must surface mount to single gang switch box and accept accessory plates for multi-gang installations. Sensor must provide an Off/Auto override switch, (2 switches if 2-pole device).
 - b. Optional 2-Pole units must be available. Manual or Auto ON shall be configurable for both poles.
 - 2. Dual Technology (DT)
 - a. Sensing must incorporate PIR with ultrasonic monitoring. Both PIR and Ultrasonic motion sensing shall initiate an ON condition and either technology sensing motion shall keep the ON state.
 - b. Either technology shall be able to be disabled during commissioning if necessary for the specific application.
 - 3. Ultrasonic
 - a. Ultrasonic sensing incorporating an omni-directional Doppler technology to detect occupancy in the area of coverage.
 - 4. Switch Type:
 - a. Single pole

5. Concealed, field-adjustable, "off" time-delay selector at up to 30 minutes.

D. Ceiling Occupancy Sensors

1. General

- a. Sensor shall be ceiling mounted device, mounted to either a single gang enclosure, or surface mounted to a round surface raceway pancake box.
- b. Time delay shall be set during commissioning and field adjustable.
- c. Indicator: Digital display, to show when motion is detected during testing and normal operation of sensor.
- d. Bypass Switch: Override the "on" function in case of sensor failure.
- e. Detector Sensitivity: Detect a person of average size and weight moving not less than 12 inches (305 mm) in either a horizontal or a vertical manner at an approximate speed of 12 inches/s (305 mm/s).
- f. Detection Coverage
 - 1) Small Room: Detect occupancy anywhere within a circular area of 600 sq. ft. (56 sq. m) when mounted on a 96-inch- (2440-mm-) high ceiling.
 - 2) Standard Room: Detect occupancy anywhere within a circular area of 1000 sq. ft. (93 sq. m) when mounted on a 96-inch- (2440-mm-) high ceiling.
 - 3) Large Room: Detect occupancy anywhere within a circular area of 2000 sq. ft. (186 sq. m) when mounted on a 96-inch- (2440-mm-) high ceiling.
 - 4) Corridor: Detect occupancy anywhere within 90 feet (27.4 m) when mounted on a 10-foot- (3-m-) high ceiling in a corridor not wider than 14 feet (4.3 m).

2. Dual Technology (DT)

- a. Sensing must incorporate PIR with Ultrasonic. Both PIR and Ultrasonic motion sensing shall initiate an ON condition and either technology sending motion shall keep the ON state.

E. Wall Mount Occupancy Sensors (low voltage)

1. General

- a. Sensor must be designed for large spaces where the occupants work area is up to 40 feet from the sensor. Sensor must be mounted 8 to 10 feet above the floor, out of occupants reach. Sensor shall be mounted either flat against the wall or in a corner. For pendant mount fixture applications, sensor must be mounted below the level of the fixture.
- b. Sensor time delay shall be set during commissioning and shall be capable of being field modified if necessary.
- c. Sensors must be capable of parallel wiring for multi-sensor applications.

2.5 POWER PACKS AND SLAVE PACKS

- A. Manufacturer:
 - 1. Bryant Electric; a Hubbell company.
 - 2. Cooper Industries, Inc.
 - 3. Hubbell Building Automation, Inc.
 - 4. Leviton Mfg. Company Inc.
 - 5. Lightolier Controls.
 - 6. Lithonia Lighting; Acuity Lighting Group, Inc.
 - 7. Lutron Electronics Co., Inc.
 - 8. NSi Industries LLC; TORK Products.
 - 9. RAB Lighting.
 - 10. Sensor Switch, Inc.
 - 11. Square D; a brand of Schneider Electric.
 - 12. Watt Stopper.
- B. Power Packs and Slave Packs must be designed to power and accept signals from remote Low Voltage Sensors, or other control devices, and directly switch the line voltage of the desired load controlled.
- C. Power Packs must accept 120, 240, or 277 VAC utilizing a dual tap transformer.
- D. Power Pack and Slave Pack relay switching shall not require more than 3 milliamps of current at 15 to 30 VDC.
- E. Power Pack and Slave Pack relay switching shall be performed with a mechanical relay in parallel with an AC Semiconductor to allow relay contacts to switch under a no-load condition. Switching capacity shall be 20 amps of all types of loads: Incandescent, Electronic Driver, Magnetic, or Motor.
- F. Power Packs shall be available in combination 2-Pole units capable of switching two independent loads, 20 amps each.

2.6 STAND ALONE ROOM AUTOMATIC CONTROLS

- A. Manufacturers:
 - 1. Subject to compliance with the contract documents, products of one of the following vendors are acceptable:
 - a. nLight by Sensor Switch, Acuity Brands Lighting, Inc.;
 - b. Wattstopper DLM
 - c. Lutron Energi Savr Node
 - d. Cooper Controls/Greengate Room Controller (for non-networked applications only)
- B. Intelligent Room Controllers
 - 1. Room Controllers must be designed to power and accept signals from remote low voltage sensors, or other control devices, and directly switch the line voltage of the desired load controlled.

2. Room Controllers must accept 120, 240, or 277 VAC utilizing a dual tap transformer.
 3. Room Controllers shall allow power for auxiliary devices, depending on model.
 4. Room Controller shall employ Zero Cross Circuitry for each load, and shall be capable of switching a 20A load and dimming 0-10V loads. In addition, controllers shall be capable of dimming alternate methods, including but not limited to incandescent dimming, magnetic low voltage, forward phase electronic low voltage and LED drivers, and dimmable two-wire and three-wire fluorescent loads.
 5. Room Controllers shall have 1, 2, or 3 switch legs, but no more than a 20A load per device.
- C. Ceiling Mounted Occupancy Sensors
1. Ceiling mounted dual technology digital (passive infrared and ultrasonic or microphonic) occupancy sensor. Furnish the Company's system which accommodates the square-foot coverage requirements for each area controlled, utilizing room controllers, digital occupancy sensors and accessories which suit the lighting and electrical system parameters.

2.7 CONDUCTORS AND CABLES

- A. Power Wiring to Supply Side of Remote-Control Power Sources: Not smaller than No. 12 AWG, complying with Section 260519 - Low Voltage Electrical Power Conductors and Cables.
- B. Classes 2 and 3 Control Cable: Multiconductor cable with stranded copper conductors not smaller than No. 22 AWG, complying with Section 260519 - Low Voltage Electrical Power Conductors and Cables. Provide plenum rated as required.
- C. Class 1 Control Cable: Multiconductor cable with stranded copper conductors not smaller than No. 18 AWG, complying with Section 260519 - Low Voltage Electrical Power Conductors and Cables. Provide plenum rated as required.
- D. Install unshielded, twisted-pair cable for control and signal transmission conductors, complying with Section 260519 - Low Voltage Electrical Power Conductors and Cables. Provide plenum rated as required.

PART 3 - EXECUTION

3.1 SENSOR INSTALLATION

- A. Coordinate layout and installation of ceiling-mounted devices with other construction that penetrates ceilings or is supported by them, including light fixtures, HVAC equipment, smoke detectors, fire-suppression systems, and partition assemblies.

- B. Install and aim sensors in locations to achieve at least 90 percent coverage of areas indicated. Install sensors in accordance with manufacturer's instructions. Do not exceed coverage limits specified in manufacturer's written instructions.
- C. Where sensors are integral to light fixtures, coordinate orientation and location of fixture with sensor position.

3.2 DEVICE INSTALLATION

- A. Dimmers:
 - 1. Install dimmers within terms of their listing.
 - 2. Verify that dimmers used for fan speed control are listed for that application.
 - 3. Install unshared neutral conductors on line and load side of dimmers according to manufacturers' device listing conditions in the written instructions.
- B. Arrangement of Devices: Group adjacent switches under single, multigang wall plates.

3.3 WIRING INSTALLATION

- A. Wiring Method: Comply with Section 260519 - Low Voltage Electrical Power Conductors and Cables.
- B. Wiring within Enclosures: Comply with NECA 1. Separate power-limited and nonpower-limited conductors according to conductor manufacturer's written instructions.
- C. Size conductors according to lighting control device manufacturer's written instructions, unless otherwise indicated.
- D. Splices, Taps, and Terminations: Make connections only on numbered terminal strips in junction, pull, and outlet boxes; terminal cabinets; and equipment enclosures.

3.4 IDENTIFICATION

- A. Identify components and power and control wiring according to Section 260553 - Identification For Electrical Systems.
- B. Label time switches and contactors with a unique designation.

3.5 FIELD QUALITY CONTROL

- A. Perform the following field tests and inspections and prepare test reports:

1. After installing time switches and sensors, and after electrical circuitry has been energized, adjust and test for compliance with manufacturers' commissioning checklist and section 260126 Maintenance and Testing of Electrical Systems.
 2. Operational Test: Verify actuation of each sensor and adjust time delays.
- B. Remove and replace lighting control devices where test results indicate that they do not comply with specified requirements.
- C. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

3.6 SYSTEM STARTUP AND COMMISSIONING

- A. Commissioning shall take place prior to demonstration of system to Owner. After the system has been installed the Contractor shall provide manufacturer's recommended commissioning with factory trained and authorized technicians on-site, to:
1. Verify that the contractor has properly installed and interconnected all necessary components.
 2. Verify correct operation of all system components.
 3. Verify that all switch and contact inputs are in compliance with contract requirements.
 4. Occupancy sensors and photo-sensors: Ensure that each sensor is correctly placed and oriented to provide the intended function. Adjust sensor location if unanticipated obstructions are present that impede the proper operation of the device.
 5. Occupancy Sensors: Adjust sensitivity and time delay of the occupancy sensor and test to ensure it provides appropriate response. Set initial time delay for 15 minutes.
 6. Dual Technology Type Occupancy Sensors: If interferences occur, disable either PIR or ultrasonic technology as appropriate for application.
 7. Daylight harvesting: Calibrate sensors after all furnishings and interior finishes are installed. Adjust photo-sensor to determine the threshold for switching based upon the detected light level. Calibrate sensor under normal daylight levels and dusk light levels.
 8. Daylight dimming controls: Confirm that fluorescent lamps are pre-seasoned by manufacturer or season lamps as recommended by manufacturer prior to dimming.
 9. Submit completed verification checklist.

3.7 OWNER'S INSTRUCTIONS AND SYSTEM DEMONSTRATION

- A. System Demonstration

1. Schedule demonstration a minimum of two-weeks prior to system turn over and substantial completion. Schedule with owner's representative and electrical engineer.
 2. Demonstrate complete system operation and contract compliance to designated owner's representative and engineer to prove system is functional and ready for comprehensive training.
- B. System Instruction
1. The Contractor shall after one week (minimum) written notification to Architect conduct an instruction session during which all maintenance and operational aspects of the system will be described and demonstrated to personnel selected by the Owner. The session shall be conducted by a Contractor's representative thoroughly familiar with the characteristics of the system. O & M manual information regarding the system shall be turned over to the Architect prior to scheduling the instruction session.
 2. Training shall utilize the following draft documents:
 - a. Draft O&M Manual
 - b. Contractor's record drawings
 3. The training effort shall validate the O&M Manual and record drawing documentation.

END OF SECTION 26 09 23

SECTION 26 27 26

WIRING DEVICES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Receptacles, receptacles with integral GFCI, and associated device plates.
 - 2. Wall-box motion sensors.

1.3 DEFINITIONS

- A. EMI: Electromagnetic interference.
- B. GFCI: Ground-fault circuit interrupter.
- C. Pigtail: Short lead used to connect a device to a branch-circuit conductor.
- D. RFI: Radio-frequency interference.
- E. TVSS: Transient voltage surge suppressor.
- F. UTP: Unshielded twisted pair.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Shop Drawings: List of legends and description of materials and process used for pre-marking wall plates.

1.5 INFORMATIONAL SUBMITTALS

- A. Field quality-control reports.

1.6 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: For wiring devices to include in all manufacturers' packing-label warnings and instruction manuals that include labeling conditions.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers' Names: Shortened versions (shown in parentheses) of the following manufacturers' names are used in other Part 2 articles:
 - 1. Cooper Wiring Devices; Division of Cooper Industries, Inc. (Cooper).
 - 2. Hubbell Incorporated; Wiring Device-Kellems (Hubbell).
 - 3. Leviton Mfg. Company Inc. (Leviton).
 - 4. Pass & Seymour/Legrand (Pass & Seymour).
- B. Source Limitations: Obtain each type of wiring device and associated wall plate from single source from single manufacturer.

2.2 GENERAL WIRING-DEVICE REQUIREMENTS

- A. Wiring Devices, Components, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

2.3 STRAIGHT-BLADE RECEPTACLES

- A. Convenience Receptacles, 125 V, 20 A: Comply with NEMA WD 1, NEMA WD 6 Configuration 5-20R, UL 498, and FS W-C-596.
 - 1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Cooper; 5351 (single), CR5362 (duplex).
 - b. Hubbell; HBL5351 (single), HBL5352 (duplex).
 - c. Leviton; 5891 (single), 5352 (duplex).
 - d. Pass & Seymour; 5361 (single), 5362 (duplex).

2.4 GFCI RECEPTACLES

- A. General Description:

1. Straight blade, feednon-feed-through type.
 2. Comply with NEMA WD 1, NEMA WD 6, UL 498, UL 943 Class A (including auto monitoring and end of life power denial requirements), and FS W-C-596.
 3. Include indicator light that shows when the GFCI has malfunctioned and no longer provides proper GFCI protection.
- B. Duplex GFCI Convenience Receptacles, 125 V, 20 A:
1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Cooper; VGF20.
 - b. Hubbell; GFR5352L.
 - c. Pass & Seymour; 2095.
 - d. Leviton; 7899.
- C. Tamper-Resistant GFCI Convenience Receptacles, 125 V, 20 A:
1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Hubbell; GFTR20.
 - b. Pass & Seymour; 2095TR.

2.5 DECORATOR-STYLE DEVICES

- A. Convenience Receptacles: Square face, 125 V, 15 A; comply with NEMA WD 1, NEMA WD 6 Configuration 5-15R, and UL 498.
1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Cooper; 6252.
 - b. Hubbell; DR15.
 - c. Leviton; 16252.
 - d. Pass & Seymour; 26252.
- B. Tamper-Resistant Convenience Receptacles: Square face, 125 V, 15 A; comply with NEMA WD 1, NEMA WD 6 Configuration 5-15R, and UL 498.
1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Cooper; TR6252.
 - b. Hubbell; DR15TR.
 - c. Pass & Seymour; TR26252.
 2. Description: Labeled to comply with NFPA 70, "Receptacles, Cord Connectors, and Attachment Plugs (Caps)" Article, "Tamper-Resistant Receptacles in Dwelling Units" Section.
- C. Tamper-Resistant and Weather-Resistant Convenience Receptacles: Square face, 125 V, 15 A; comply with NEMA WD 1, NEMA WD 6 Configuration 5-15R, and UL 498.
1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Cooper; TWRBR15.
 - b. Hubbell; DR15TR.

- c. LevitonTRW15.
 - d. Pass & Seymour; TRW26252.
- 2. Description: Labeled to comply with NFPA 70, "Receptacles, Cord Connectors, and Attachment Plugs (Caps)" Article, "Tamper-Resistant Receptacles in Dwelling Units" Section, when installed in wet and damp locations.
- D. GFCI, [Feed] [Non-Feed]-Through Type, Convenience Receptacles: Square face, 125 V, 15 A; comply with NEMA WD 1, NEMA WD 6 Configuration 5-15R, UL 498, and UL 943 Class A.
 - 1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Cooper; VGF15.
 - b. Hubbell; GF15LA.
 - c. Leviton; 8599.
 - d. Pass & Seymour; 1594.
- E. GFCI, Tamper-Resistant and Weather-Resistant Convenience Receptacles: Square face, 125 V, 15 A; comply with NEMA WD 1, NEMA WD 6 Configuration 5-15R, UL 498, and UL 943 Class A.
 - 1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Cooper; TWRVGF15.
 - b. Hubbell; GFTR15.
 - c. Pass & Seymour; 1594TRWR.
 - 2. Description: Labeled to comply with NFPA 70, "Receptacles, Cord Connectors, and Attachment Plugs (Caps)" Article, "Tamper-Resistant Receptacles in Dwelling Units" Section.

2.6 WALL PLATES

- A. Single and combination types shall match corresponding wiring devices.
 - 1. Plate-Securing Screws: Metal with head color to match plate finish.
- B. Wet-Location, Weatherproof Cover Plates: NEMA 250, complying with Type 3R, weather-resistant, die-cast aluminum thermoplastic with lockable cover.

2.7 FINISHES

- A. Device Color:
 - 1. Wiring Devices Connected to Normal Power System: As selected by Architect unless otherwise indicated or required by NFPA 70 or device listing.
- B. Wall Plate Color: For plastic covers, match device color.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Coordination with Other Trades:
 - 1. Protect installed devices and their boxes. Do not place wall finish materials over device boxes and do not cut holes for boxes with routers that are guided by riding against outside of boxes.
 - 2. Keep outlet boxes free of plaster, drywall joint compound, mortar, cement, concrete, dust, paint, and other material that may contaminate the raceway system, conductors, and cables.
 - 3. Install device boxes in brick or block walls so that the cover plate does not cross a joint unless the joint is troweled flush with the face of the wall.
 - 4. Install wiring devices after all wall preparation, including painting, is complete.
- B. Conductors:
 - 1. Do not strip insulation from conductors until right before they are spliced or terminated on devices.
 - 2. Strip insulation evenly around the conductor using tools designed for the purpose. Avoid scoring or nicking of solid wire or cutting strands from stranded wire.
 - 3. The length of free conductors at outlets for devices shall meet provisions of NFPA 70, Article 300, without pigtails.
 - 4. Existing Conductors:
 - a. Cut back and pigtail, or replace all damaged conductors.
 - b. Straighten conductors that remain and remove corrosion and foreign matter.
 - c. Pigtailing existing conductors is permitted, provided the outlet box is large enough.
- C. Device Installation:
 - 1. Replace devices that have been in temporary use during construction and that were installed before building finishing operations were complete.
 - 2. Keep each wiring device in its package or otherwise protected until it is time to connect conductors.
 - 3. Do not remove surface protection, such as plastic film and smudge covers, until the last possible moment.
 - 4. Connect devices to branch circuits using pigtails that are not less than 6 inches (152 mm) in length.
 - 5. When there is a choice, use side wiring with binding-head screw terminals. Wrap solid conductor tightly clockwise, two-thirds to three-fourths of the way around terminal screw.
 - 6. Use a torque screwdriver when a torque is recommended or required by manufacturer.
 - 7. When conductors larger than No. 12 AWG are installed on 15- or 20-A circuits, splice No. 12 AWG pigtails for device connections.
 - 8. Tighten unused terminal screws on the device.

- 9. When mounting into metal boxes, remove the fiber or plastic washers used to hold device-mounting screws in yokes, allowing metal-to-metal contact.
- D. Device Plates: Do not use oversized or extra-deep plates. Repair wall finishes and remount outlet boxes when standard device plates do not fit flush or do not cover rough wall opening.
- E. Arrangement of Devices: Unless otherwise indicated, mount flush, with long dimension vertical and with grounding terminal of receptacles on top.

3.2 RECEPTACLES

- A. Provide exterior GFCI receptacle within 25'-0" of each roof mounted mechanical equipment, for all outdoor receptacles, and other locations shown on the drawings.

3.3 GFCI RECEPTACLES

- A. Install non-feed-through-type GFCI receptacles where protection of downstream receptacles is not required.

3.4 IDENTIFICATION

- A. Comply with Section 260553 "Identification for Electrical Systems."
- B. Identify each receptacle with panelboard identification and circuit number. Use hot, stamped, or engraved machine printing with black-filled lettering on face of plate, and durable wire markers or tags inside outlet boxes.
 - 1. For receptacles other than 15 and 20 amp, 120 volts, engrave cover-plate or provide separate nameplate with ampere rating, voltage and phase. Minimum lettering size 3/16".

3.5 ENGRAVING

- A. Engrave cover-plates on all owner furnished equipment and equipment furnished under other divisions with circuit number, panelboard and "emergency" (where applies) as specified in this section. This includes but is not limited to: headwalls, gas columns and booms, patient consoles, medical rail systems, custom casework with electrical devices, etc.

3.6 CLEANING

- A. Remove excess plaster from interior of outlet boxes.
- B. Clean devices and cover-plates after painting is complete. Replace stained or improperly painted devices or cover-plates.

3.7 CORD AND PLUG SETS

- A. Provide for all cord connected equipment furnished by the Owner or specified in other sections when equipment is not supplied with an integral cord and plug set.
- B. For equipment other than 120 volts, 1□, replace plug furnished with equipment to match receptacle actually installed (within ampacity rating of equipment).

3.8 FIELD QUALITY CONTROL

- A. Perform the following tests and inspections :
 - 1. Test Instruments: Use instruments that comply with UL 1436.
 - 2. Test Instrument for Convenience Receptacles: Digital wiring analyzer with digital readout or illuminated digital-display indicators of measurement.
- B. Tests for Convenience Receptacles:
 - 1. Line Voltage: Acceptable range is 105 to 132 V.
 - 2. Percent Voltage Drop under 15-A Load: A value of 6 percent or higher is unacceptable.
 - 3. Ground Impedance: Values of up to 2 ohms are acceptable.
 - 4. GFCI Trip: Test for tripping values specified in UL 1436 and UL 943.
 - 5. Receptacle Polarity Test: Test every receptacle installed or reconnected under this contract with a receptacle circuit tester. Tester shall test for open ground, reverse polarity, open hot, open neutral, hot and ground reversed, hot or neutral and hot open. Rewire receptacles with faults and retest. Submit statement of completed testing signed by the electrician that performed the test.
 - 6. Ground-Fault Receptacle Circuit Interrupter Tests: Test each receptacle or branch circuit breaker having ground-fault circuit protection to assure that the ground-fault circuit interrupter will not operate when subjected to a ground-fault current of less than 4 milliamperes and will operate when subjected to a ground-fault current exceeding 6 milliamperes. Perform testing using an instrument specifically designed and manufactured for testing ground-fault circuit interrupters. Apply the test to the receptacle. "TEST" button operation will not be acceptable as a substitute for this test. Replace receptacles that do not shutoff power with 7/1000 of an ampere within 1/40th of a second and retest.
 - 7. Using the test plug, verify that the device and its outlet box are securely mounted.
 - 8. Tests shall be diagnostic, indicating damaged conductors, high resistance at the circuit breaker, poor connections, inadequate fault current path, defective devices, or similar problems. Correct circuit conditions, remove malfunctioning units and replace with new ones, and retest as specified above.
- C. Wiring device will be considered defective if it does not pass tests and inspections.
- D. Prepare test and inspection reports.

END OF SECTION 26 27 26

SECTION 26 51 19
LED INTERIOR LIGHTING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Interior lighting fixtures, lamps, and drivers.
 - 2. Emergency lighting units.
 - 3. Lighting fixture supports.
- B. Related Requirements:
 - 1. Section 260923 "Lighting Control Devices" for automatic control of lighting, including time switches, photoelectric relays, occupancy sensors, and multipole lighting relays and contactors.
 - 2. Section 262726 "Wiring Devices" for manual wall-box dimmers and switches.
- C. Substitutions:
 - 1. Bidders requesting approval to provide products other than those specifically listed in the Light Fixture Schedule shall submit requests in writing to the Architect and Lighting Designer ten days prior to the close of the bid period. Approval will be in the form of an addendum to the specifications issued to all registered plan holders. No requests for substitution will be considered after this date.
 - 2. Substitution request shall include all information required under paragraph 1.5 SUBMITTALS. Requests for approval shall be accompanied by a working fixture sample (including lamps and a cord and plug). Provide the name of at least one installation where each proposed substitute has been installed for at least six months along with the name and phone number of the Architect, Owners representative and the Lighting Designer of Record. If required by the Architect, the proposed substitutes must be installed at the bidder's expense in a location selected by the Architect.

1.3 REFERENCES

- A. National Electrical Manufacturer's Association (NEMA) LE5-1993:
 - 1. Procedure for determining Luminaire efficiency ratings.

- B. Underwriters Laboratories, Inc. (UL):
 - UL 496: Edison Base Lampholders
 - UL 676: Underwater Lighting Fixtures
 - UL 924: Emergency Lighting and Power Equipment
 - UL 1012 Power Units Other Than Class 2
 - UL 1310 Class 2 Power Units
 - UL 1574: Track Lighting Systems
 - UL 1598 Luminaires

1.4 DEFINITIONS

- A. CCT: Correlated color temperature.
- B. CRI: Color Rendering Index.
- C. Fixture: See "Luminaire."
- D. IP: International Protection or Ingress Protection Rating.
- E. LED: Light-emitting diode.
- F. LER: Luminaire efficacy rating
- G. Lumen: Measured output of lamp and luminaire, or both.
- H. Luminaire: Complete lighting unit, including lamp, reflector, and housing.

1.5 SYSTEM DESCRIPTION

- A. Light fixture schedule series numbers are a design series reference and do not necessarily represent the exact catalog number, size, voltage, wattage, type of lamp, driver, finish trim, ceiling type, mounting hardware, ceiling trim or special requirements as specified hereinafter or as required by the particular installations. Provide complete fixtures to correspond with the number of lamps, wattage and/or size specified.
- B. If there are discrepancies between fixture illustrations and the written description in the fixture schedule, the written description in the fixture schedule shall take precedence.
- C. Light fixture voltage shall match voltage of circuit serving the light fixture.

1.6 SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Arrange in order of luminaire designation.
 - 2. Include data on features, accessories, and finishes.
 - 3. Include physical description and dimensions of luminaires.

4. Include emergency lighting units, including batteries and chargers.
 5. Include life, output (lumens, CCT, and CRI), and energy-efficiency data.
 6. Photometric data and adjustment factors based on laboratory tests, complying with IES LM-79 and IES LM-80].
 - a. Manufacturers' Certified Data: Photometric data certified by manufacturer's laboratory with a current accreditation under the National Voluntary Laboratory Accreditation Program for Energy Efficient Lighting Products.
- B. Shop Drawings: For nonstandard or custom luminaires.
1. Include plans, elevations, sections, and mounting and attachment details.
 2. Include details of luminaire assemblies. Indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
 3. Include diagrams for power, signal, and control wiring.

1.7 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: For luminaires and lighting systems to include in operation and maintenance manuals.
1. Provide a list of all lamp types used on Project; use ANSI and manufacturers' codes.
 2. Provide cut sheets of all fixtures and control devices.
 3. Provide instruction manuals for all control systems.

1.8 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
1. Diffusers and Lenses: One for every 100 of each type and rating installed. Furnish at least one of each type.
 2. Emergency battery pack: One for every 20 emergency lighting unit. Furnish at least one of each type.
 3. LED Drivers: One for every 100 of each type installed. Furnish at least one of each type.
 4. LED power supplies and transformers: One for every 100 of each type and rating installed. Furnish at least one of each type.
 5. Globes and Guards: One for every 20 of each type and rating installed. Furnish at least one of each type.

1.9 QUALITY ASSURANCE

- A. Luminaire Photometric Data Testing Laboratory Qualifications: Luminaire manufacturer's laboratory that is accredited under the NVLAP for Energy Efficient Lighting Products.
- B. Provide luminaires from a single manufacturer for each luminaire type.

- C. Each luminaire type shall be binned within a three-step MacAdam Ellipse to ensure color consistency among luminaires.
- D. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- E. Comply with NFPA 70.

1.10 DELIVERY, STORAGE, AND HANDLING

- A. Protect finishes of exposed surfaces by applying a strippable, temporary protective covering before shipping.

1.11 WARRANTY

- A. Warranty: Manufacturer and Installer agree to repair or replace components of luminaires that fail in materials or workmanship within specified warranty period.
- B. Warranty Period: Five year(s) from date of Substantial Completion.
- C. Special Warranty for Emergency Lighting Batteries: Manufacturer's standard form in which manufacturer of battery-powered emergency lighting unit agrees to repair or replace components of rechargeable batteries that fail in materials or workmanship within specified warranty period.
 - 1. Warranty Period for Emergency Lighting Unit Batteries: 10 years from date of Substantial Completion. Full warranty shall apply for first year, and prorated warranty for the remaining nine years.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Seismic Performance: Luminaires shall withstand the effects of earthquake motions determined according to ASCE/SEI 7.
- B.
 - 1. The term "withstand" means "the luminaire will remain in place without separation of any parts when subjected to the seismic forces specified and the luminaire will be fully operational during and after the seismic event."
- C. Ambient Temperature: 41 to 104 deg F (5 to 40 deg C).
 - 1. Relative Humidity: Zero to 95 percent.

2.2 GENERAL MATERIAL REQUIREMENTS

- A. Metal Parts:
 - 1. Free of burrs and sharp corners and edges.
 - 2. Sheet metal components shall be steel unless otherwise indicated.
 - 3. Form and support to prevent warping and sagging.
- B. Steel:
 - 1. ASTM A36/A36M for carbon structural steel.
 - 2. ASTM A568/A568M for sheet steel.
- C. Stainless Steel:
 - 1. Manufacturer's standard grade.
 - 2. Manufacturer's standard type, ASTM A240/240M.
- D. Galvanized Steel: ASTM A653/A653M.
- E. Aluminum: ASTM B209.
- F. Finish ferrous mounting hardware and accessories to prevent corrosion and discoloration to adjacent materials.
- G. For vapor tight installations, painted finishes of fixtures and accessories shall be weather resistant enamel using proper primers or galvanized and bonderized epoxy, so that the entire assembly is completely corrosion resistant for the service intended. Where aluminum parts come into contact with bronze or steel parts, apply a coating material to both surfaces to prevent corrosion.
- H. Fixtures shall be free of light leaks and designed to provide sufficient ventilation of electronic parts to provide the photometric performance required. Drivers shall be adequately vented.
- I. All sheet metal work shall be free from tool marks and dents and shall have accurate angles bent as sharp as compatible with the gauges of the required metal. Intersections and joints shall be formed true and of adequate strength and structural rigidity to prevent any distortion after assembly. Finish exposed edges so no sharp or ragged edges are exposed. All miters shall be in accurate alignment with abutting intersecting members.
- J. For fixtures with replaceable lamps: lampholders shall hold lamps securely against vibrations and maintenance handling.
- K. Reflector Cones:
 - 1. Provide minimum 45° lamp and lamp image cut-off to light source. No visible lamp flashing in the cone.
 - 2. Plastic materials shall not be used for reflector cones, unless noted otherwise in the Light Fixture Schedule.
 - 3. Reflector cones shall not be riveted or welded to housing and shall be removable without tools. Retention devices shall not deform the cone in any manner. Trim

- shall be flush with finished ceiling without gaps or light leaks. Where the flange trim is separate from the cone, it shall have the same finish as the cone.
4. Reflector cones shall be of uniform gauge, not less than 0.032-inch thick, high purity aluminum Alcoa 3002 alloy, free of spin marks or other defects.
 5. Manufacture reflector under the Alzak process. Refer to fixture schedule for cone color and specular or diffuse finish requirements. Submit one sample of each cone type for review when required in the fixture schedule.
- L. For adjustable fixtures, provide positive locking devices to fix aiming angle. Fixture shall be capable of being relamped without adjusting aiming angle.
- M. Fixtures recessed in suspended ceilings where the space above the ceiling is either an air supply or return plenum shall conform to NEC Article 300-22.
- N. Safety: Provide safety devices for removable fixture elements (cones, reflectors, lenses, etc.) to support removable elements when not in normal operating position. Safety devices shall be detachable if necessary and shall not interfere with fixture performance, maintenance or the seating of any fixture element, and not be visible during normal fixture operation.
- O. Fixture Finish: Visible surfaces. Powder coated paint or natural aluminum as specified in Light Fixture Schedule. Color and finish as selected by architect. Concealed parts, (lamp holders, yokes, brackets, etc.) matte black.
- P. Off-state Power: Luminaires shall not draw power in the off state. Exception: Luminaires with integral occupancy, motion, photo-controls or individually addressable fixtures with external control and intelligence are exempt from this requirement. The power draw for such luminaires shall not exceed 0.5 watts when in the off state.

2.3 METAL FINISHES

- A. Variations in finishes are unacceptable in the same piece. Variations in finishes of adjoining components are acceptable if they are within the range of approved samples and if they can be and are assembled or installed to minimize contrast.

2.4 WIRING

- A. Wiring shall be as required by code for fixture wiring.
- B. Flexible cord wiring between fixture components or to electrical receptacle and not in wireways shall have a minimum temperature rating of 105°C.
- C. Cords shall be fitted with proper strain reliefs and watertight entries where required by application.
- D. No internal wiring shall be visible at normal viewing angles, i.e. above 45° from vertical.

2.5 POWER SUPPLIES:

1. Minimum power factor 90%.
2. Minimum operating temperature of -20°C.
3. Output operating frequency shall be minimum 120 Hz.
4. Power supply shall meet FCC requirements for non-consumer use.
5. Sound rating: Class A.
6. Power supply shall comply with IEEE C.62.41-1991, Class A operation.
7. Power supply shall comply with IEEE 1789-2015,
 - a. Below 90 Hz, Modulation (%) is less than $0.01 \times \text{frequency}$.
 - b. Between 90 Hz and 3000 Hz, Modulation (%) is below $0.0333 \times \text{frequency}$.
 - c. Above 3000 Hz, there is no restriction on Modulation (%).
8. Demonstrate conformance with product literature
9. Present tests that demonstrate driver performance at full dimming range, from 0.1% to 100% in 10% increments.

2.6 LAMPS (for fixtures with replaceable lamps)

- A. Each lamp type in the Project shall be manufactured by the same manufacturer.
 1. Minimum CRI of 80 with an R9 of 50 or higher unless otherwise specified in the Light Fixture Schedule.
 2. Color temperature variation shall not exceed +/- 100 degrees Kelvin at installation, and +/- 200 degrees Kelvin over the life of the module.
 3. LED modules/arrays shall deliver at least 70% of initial lumens, when installed in-situ, for a minimum of 35,000 hours.

2.7 SOCKETS

- A. Porcelain for medium screw base. For other lamp types, as required by base type.
- B. Housings:
 1. 1/8-inch (3.175-mm) minimum unless otherwise indicated.

2.8 LUMINAIRE SUPPORT

- A. Single-Stem Hangers: 1/2-inch (13-mm) steel tubing with swivel ball fittings and ceiling canopy. Finish same as luminaire.
- B. Wires: ASTM A641/A641M, Class 3, soft temper, zinc-coated steel, 12 gage (2.68 mm).
- C. Rod Hangers: 3/16-inch (5-mm) minimum diameter, cadmium-plated, threaded steel rod.
- D. Hook Hangers: Integrated assembly matched to luminaire, line voltage, and equipment with threaded attachment, cord, and locking-type plug.

2.9 EMERGENCY BATTERY PACKS

- A. Where fixtures are indicated or specified to have self-contained battery backup:
 - 1. Provide battery pack(s) with 1100 lumen output or as indicated. Unit shall have high temperature nickel cadmium battery, automatic transfer switch, battery charger high frequency inverter, installed test/charging indicator and switch, dual voltage, and be UL listed to standard 924. Provide normal switching connection where indicated.
- B. Testing: Apply power for 24 hours, disconnect power observe, measure and record light output for specified 90-minute period. Continue to run on battery until automatic low battery cut-off circuit disconnects battery. Restore normal power and verify battery returns to charging mode.
- C. Warranty: Entire unit shall be warranted for 5 years, battery shall have 15-year life expectancy with 5-year full warranty and 7 additional years prorated warranty. Full warranty to cover labor and materials without charge. Prorated warranty to cover material only.

2.10 EMERGENCY LIGHTING WITH INTEGRAL POWER TRANSFER DEVICE

- A. Directly controlled luminaires that respond to external controls and are used to provide emergency lighting by responding to bypass normal circuits in the event of loss of normal power, shall be UL 924 listed.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- B. Examine roughing-in for luminaire to verify actual locations of luminaire and electrical connections before luminaire installation.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 TEMPORARY LIGHTING

- A. If approved by the Architect, use selected permanent luminaires for temporary lighting. When construction is sufficiently complete, clean luminaires used for temporary lighting.

3.3 INSTALLATION

- A. Comply with NECA 1.
- B. Provide mounting accessories and trims for wall and ceiling construction types shown in Finish Schedule and on Drawings.
- C. Install luminaires level, plumb, and square with ceilings and walls unless otherwise indicated.
- D. For fixtures with replaceable lamps, install lamps in each luminaire.
- E. Remote Mounting of Drivers: Distance between the driver and fixture not to exceed that recommended by driver manufacturer. Verify requirements for maximum distance between driver and luminaire with driver manufacturers.
- F. Verify weight and mounting method of fixtures and provide suitable supports. Fixture mounting assemblies to comply with local seismic codes and regulations.
- G. For fire rated ceilings and walls, provide rated enclosure for recessed light fixture, or consult with Architect and Lighting Designer to specify fixture suitable for use in rated ceiling or wall.
- H. Install fixtures with vent holes free of air blocking obstacles.
- I. Lighting fixtures located in recessed ceilings with a fire resistive rating of 1-hour or more to be enclosed in an approved fire-resistive rated box equal to that of the ceiling.
- J. Adjust aperture rings on all recessed fixtures to be flush with the finished ceiling.
- K. Adjust variable position lampholders for proper lamp position prior to fixture installation.
- L. Blemished, damaged or unsatisfactory fixtures or accessories to be replaced with new.
- M. For pendant mounted fixtures, mounting height is from finished ceiling to top of pendant light fixture. For wall mounted fixtures, center on outlet box unless otherwise noted. Verify mounting provisions and other requirements prior to order of light fixtures.
- N. In accessible suspended ceilings, provide 72" flexible conduit wiring connection (flexible tubing not permitted) from a rigidly supported junction box.
- O. All finishes shall be unmarred upon project completion. Repair or replace damaged finishes.
- P. Replace all burned out or inoperative lamps and LED boards at the end of the construction prior to Owner occupancy. LED boards with visibly different color LEDs will be considered inoperative and require replacement.

3.4 DIFFUSERS AND ENCLOSURES

- A. Remove protective plastic covers from lighting fixture diffusers only after construction work, painting and clean-up are completed. Remove all dirty lamps, reflectors and diffusers; clean and reinstall. When cleaning "Alzak" reflectors, use a manufacturer recommended cleaning solution. Reflectors damaged or impregnated with fingerprints shall be replaced at no cost to Owner.
- B. Whether surface mounted or recessed, remove all construction dirt and dust from heat sink fins to ensure proper dissipation of heat.

3.5 DOWNLIGHT/ACCENT/WALLWASH LIGHT FIXTURE SUPPORT

- A. Surface or Pendant Type: Attach heavy formed steel straps to the outlet box by means of threaded stems with locknuts, or directly to the outlet box where the light fixture is specifically so designed.
- B. Recessed Type: Mount in frames suitable for the ceiling, with recessed portion of the fixture securely supported from the ceiling framing. Bottom of light fixture to be flush with adjacent ceiling. Fixture trim shall totally conceal ceiling opening. Provide two #14 earthquake chains or #12 wires when fixture is supported by ceiling suspension system.
- C. Provide access as required for driver. Provide earthquake chains when light fixture is supported by the ceiling suspension system. For remote drivers, isolate driver from structure.

3.6 TROFFER AND LINEAR TYPE LIGHT FIXTURE SUPPORT

- A. Recessed type: For light fixtures supported by the ceiling suspension system, provide four Caddy #515 support clips (one each corner) which lock light fixture to ceiling tees after light fixture is installed. In addition, provide for each light fixture two #14 earthquake chains or #12 wires secured at diagonally opposite fixture corners (for fixtures weighing less than 56 pounds) to structural members above suspended ceiling. For plaster or gypsum board ceilings provide plaster frame compatible with light fixture. Contractor shall coordinate fixture trim with ceiling type.
- B. Surface Mounted Type:
 - 1. Where mounted on accessible ceilings, support from structural members above ceiling by means of hanger rods through ceiling or as approved.
 - 2. Continuous Runs of Fixtures: Laser sight to assure fixtures are straight when sighting from end to end, regardless of irregularities in the ceiling. Where light fixtures are so installed, omit ornamental ends between sections.
- C. Pendant Mounted Type:
 - 1. For fixtures with rigid pendants, supply swivel ball aligners at canopy to comply with local seismic requirements.

2. Where suspended from accessible ceiling, support fixture from structural members above ceiling by means of hanger rods through ceiling or as accepted.
3. Continuous Runs of Light Fixtures: Laser sight to assure fixtures are straight when sighting from end to end, regardless of irregularities in the ceiling. Where light fixtures are so installed, omit ornamental ends between sections.
4. Where pendant is longer than 48 inches (1200mm), brace to limit swinging.

3.7 CEILING AND WALL LIGHT FIXTURE SUPPORT

- A. Where ceiling and/or wall are of insufficient strength to support weight of lighting fixtures installed, provide additional framing to support as required.
- B. Comply with requirements in Section 260519 "Low-Voltage Electrical Power Conductors and Cables" for wiring connections.

3.8 IDENTIFICATION

- A. Identify system components, wiring, cabling, and terminals. Comply with requirements for identification specified in Section 260553 "Identification for Electrical Systems."

3.9 FIELD QUALITY CONTROL

- A. Perform the following tests and inspections:
 1. Operational Test: After installing luminaires, switches, and accessories, and after electrical circuitry has been energized, test units to confirm proper operation.
 2. Test for Emergency Lighting: Interrupt power supply to demonstrate proper operation. Verify transfer from normal power to battery power and retransfer to normal.
- B. Luminaire will be considered defective if it does not pass operation tests and inspections.
- C. Prepare test and inspection reports.

END OF SECTION 26 51 19

LIMITED ASBESTOS INSPECTION REPORT

For:

FULLERTON PARK AND RIDE FACILITY
EASTERLY AND WESTERLY RESTROOM BUILDINGS
3000 WEST ORANGETHORPE AVENUE
FULLERTON, CALIFORNIA 92833

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AESCO Project Number: G5588
Reference Number EE 22-20221-0022
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LIMITED ASBESTOS INSPECTION REPORT

Project Number: 22-20221-0022.1

Client: AESCO
17781 Georgetown Lane
Huntington Beach, California 92647

Site Location: Fullerton Park and Ride Facility
Easterly and Westerly Restroom Buildings
3000 West Orangethorpe Avenue
Fullerton, California 92833

Site Use: Government

Inspection Date: March 11, 2022

Inspected By: Mr. Rhys Kuzmic
Certified Asbestos Consultant, # 09-4586

Report Assembled By: Ms. Yesenia G. Galeana
Technical Report Writer

Report Generated/Reviewed By: Mr. Tim Galeana
Certified Asbestos Consultant, # 98-2470

I. EXECUTIVE SUMMARY

AESCO provided the services of a Certified Asbestos Consultants (Rhys Kuzmic, CAC No. 09-4586) to conduct a limited asbestos inspection of the Easterly and Westerly Restroom Buildings within the Fullerton Park & Ride Facility located at 3000 West Orangethorpe Avenue, Fullerton, California 92833. The inspection was conducted as a precursor to the upcoming restroom renovation activities. No Asbestos-Containing Material (ACM) was identified during this inspection. *This is considered a limited inspection. The inspection was limited to the surfaces and components anticipated to be impacted by the restroom's renovation project of the Easterly and Westerly Restroom Buildings within the Fullerton Park & Ride Facility, as directed by the client.*

II. SAMPLING METHODOLOGY

A visual inspection was performed on March 11, 2022 of the suspect material at the Easterly and Westerly Restroom Buildings within the Fullerton Park & Ride Facility was conducted prior to the collection of any bulk samples. The visual inspection was conducted to identify and record the location and condition of the materials to be sampled. Following the visual inspection, bulk material samples of the identified suspect asbestos-containing building materials were collected. The materials were categorized

into homogeneous groupings, and each sample was assigned a unique sample number and placed into a sealed container.

Upon completion of the bulk sample collection, a chain of custody was prepared and the samples were delivered to the laboratory for analysis. LA Testing, located at 520 Mission Street, South Pasadena, California 91030 (323-254-9960) analyzed the samples via EPA 600/R-93/116 method using Polarized Light Microscopy (PLM). LA Testing is an accredited participant in the National Voluntary Laboratory Accreditation Program (NVLAP), No. 200232-0, and also accredited by the American Industrial Hygiene Association (AIHA), No. 102814. The principles described in the current Environmental Protection Agency (EPA) 600 method were used in the preparation and analysis of the bulk samples.

Note: Inaccessible, suspect asbestos materials may be located within sealed ceilings, walls, or floors; or within wall cavities, interstitials, shafts, etc. Suspect asbestos materials located in these areas must be sampled prior to any activities that might cause them to be disturbed.

III. SAMPLE ANALYSIS

Thirty-nine (39) samples were collected during this inspection. The laboratory analysis results are listed in the following table. Materials determined not to contain asbestos are listed as “No Asbestos Detected” (NAD).

Any material found to contain more than 1% of a known asbestos substance is considered an asbestos-containing material (ACM). Materials falling within this category are controlled and must be handled in accordance with the California Occupational Safety & Health Administration (Cal/OSHA), EPA, and South Coast Air Quality Management District (SCAQMD) regulations.

In addition, materials which are characterized as non-ACM by EPA or other local regulatory agencies may fall within the regulatory standards of Cal/OSHA, which further regulates any materials found to contain more than 1/10 of 1%, but 1% or less, of a known asbestos substance as asbestos-containing construction materials (ACCMs). Impacting or handling ACCMs requires special employer registration, documentation, training, and personal protective equipment. When a material is to be impacted, the National Emission Standards for Hazardous Air Pollutants (NESHAPs) regulations require further testing for materials that fall within this category.

The PLM analytical protocol requires each layer of the sample to be analyzed separately. The quantity of analyses will vary based on the number of layers in a sample and whether a “positive stop” is employed. When one sample of a homogeneous area is positive, the remainder of the samples need not be analyzed because the entire homogeneous area must be considered positive.

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Sampling results begin on the next page.**

POLARIZED LIGHT MICROSCOPY (PLM) ANALYSIS DATA

Fullerton Park and Ride Facility
3000 West Orangethorpe Avenue
Fullerton, California 92833

Homogeneous Material #	Material Description	Material Location	Estimated Quantity	Condition ^A	Type ^B	Friable	Percent Damaged	Sample Number	Sample Location	Analytical Results
Easterly Restroom Building^C										
1	Ceramic tile and grout	Walls and Floors of Men's and Women's Restrooms, Driver's Restroom	1,400 Square Feet	G	Misc.	No	<1%	2203110022.1RK-01	Men's restroom, west wall	Layers A thru C: NAD ^D
								2203110022.1RK-02	Women's restroom, west partition wall	Layers A thru C: NAD
								2203110022.1RK-03	Driver's restroom, east-center floor	Layers A thru C: NAD
2	Cementitious pattern floor tile	Floors of Storage Room and Janitor's Room	40 Square Feet	G	Misc.	No	0	2203110022.1RK-04	Storage room, northeast	NAD
								2203110022.1RK-05	Janitor's room, southeast	NAD
								2203110022.1RK-06	Janitor's room, southwest	NAD
3	Cementitious wall board	Behind ceramic tile of Men's and Women's Restrooms, Driver's Restroom South wall of Janitor's Room Storage Room	1,000 Square Feet	G	Misc.	No	0	2203110022.1RK-07	Men's restroom, west wall	Layers A & B: NAD
								2203110022.1RK-08	Storage room, south wall	Layers A & B: NAD
								2203110022.1RK-09	Janitor's room, south wall	Layers A & B: NAD

Note: This table must be used in conjunction with the entire report. This document is not to be used for contract bidding and is intended to be used to identify asbestos-containing materials and their locations only.

^A G = Good; D = Damaged; SD = Severely Damaged

^B Misc. = Miscellaneous; Surf. = Surfacing; TSI = Thermal System Insulation

^C NOTE: 1) No fire-rated doors identified throughout. 2) Exterior components not in scope per Emily Yu.

^D NAD – No Asbestos Detected

Construction Material Testing/Inspection ♦ Environmental ♦ Geotechnical Engineering Services

Limited Asbestos Inspection Report

Fullerton Park & Ride Facility
Project Number EE 22-20221-0022.1
March xx, 2022

POLARIZED LIGHT MICROSCOPY (PLM) ANALYSIS DATA

Fullerton Park and Ride Facility
3000 West Orangethorpe Avenue
Fullerton, California 92833

Homogeneous Material #	Material Description	Material Location	Estimated Quantity	Condition ^E	Type ^F	Friable	Percent Damaged	Sample Number	Sample Location	Analytical Results
Easterly Restroom Building										
4	Wall adhesive with sealant	Around select sinks, vents, toilets and urinals of Men's and Women's Restrooms, Driver's Restroom	3 Square Feet	G	Misc.	No	0	2203110022.1RK-10	Men's restroom, west wall by toilet	NAD ^G
								2203110022.1RK-11	Men's restroom, west wall by toilet	NAD
								2203110022.1RK-12	Men's restroom, west wall by sink	Layers A& B: NAD
5	Concrete	Walls and ceilings of Storage Room and Janitor's Room Ceilings of Men's and Women's Restrooms, Driver's Restroom	500 Square Feet	G	Misc.	No	0	2203110022.1RK-13	Storage room, north wall	NAD
								2203110022.1RK-14	Storage room, east wall	NAD
								2203110022.1RK-15	Janitor's room, northwest ceiling	NAD
6	Concrete slab	Throughout building	500 Square Feet	G	Misc.	No	0	2203110022.1RK-16	Exterior, southwest corner of Janitor's room	Layers A & B: NAD
								2203110022.1RK-17	Exterior, at east entry to Driver's restroom	Layers A & B: NAD
								2203110022.1RK-18	Exterior, at southwest entry to Women's restroom	Layers A & B: NAD

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^F Misc. = Miscellaneous; Surf. = Surfacing; TSI = Thermal System Insulation

^G NAD – No Asbestos Detected

Construction Material Testing/Inspection ♦ Environmental ♦ Geotechnical Engineering Services

Limited Asbestos Inspection Report

Fullerton Park & Ride Facility
Project Number EE 22-20221-0022.1
March xx, 2022

POLARIZED LIGHT MICROSCOPY (PLM) ANALYSIS DATA

Fullerton Park and Ride Facility
3000 West Orangethorpe Avenue
Fullerton, California 92833

Homogeneous Material #	Material Description	Material Location	Estimated Quantity	Condition ^H	Type ^I	Friable	Percent Damaged	Sample Number	Sample Location	Analytical Results
Easterly Restroom Building										
7	Lightweight concrete over cementitious flooring	Janitor's Room	2 Square Feet	G	Misc.	No	0	2203110022.1RK-19	Southwest	NAD ^J
								2203110022.1RK-20	Southwest	NAD
								2203110022.1RK-21	Southwest	Layers A& B: NAD

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**The remainder of this page is intentionally blank.
Sampling results continues on the next page.**

^H G = Good; D = Damaged; SD = Severely Damaged

^I Misc. = Miscellaneous; Surf. = Surfacing; TSI = Thermal System Insulation

^J NAD – No Asbestos Detected

POLARIZED LIGHT MICROSCOPY (PLM) ANALYSIS DATA

Fullerton Park and Ride Facility
3000 West Orangethorpe Avenue
Fullerton, California 92833

Homogeneous Material #	Material Description	Material Location	Estimated Quantity	Condition ^K	Type ^L	Friable	Percent Damaged	Sample Number	Sample Location	Analytical Results
Westerly Restroom Building^M										
8	Ceramic tile and grout	Walls and Floors of Men's and Women's Restrooms, Driver's Restroom	1,400 Square Feet	G	Misc.	No	<1%	2203110022.1RK-22	Men's restroom, south wall	Layers A thru C: NAD ^N
								2203110022.1RK-23	Women's restroom, south wall	Layers A thru C: NAD
								2203110022.1RK-24	Driver's restroom, northeast floor	Layers A thru C: NAD
9	Cementitious pattern floor tile	Floors of Storage Room and Janitor's Room	40 Square Feet	G	Misc.	No	0	2203110022.1RK-25	Storage room, southeast	NAD
								2203110022.1RK-26	Janitor's room, southeast	NAD
								2203110022.1RK-27	Janitor's room, northeast	NAD

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**The remainder of this page is intentionally blank.
Sampling results continues on the next page.**

^K G = Good; D = Damaged; SD = Severely Damaged

^L Misc. = Miscellaneous; Surf. = Surfacing; TSI = Thermal System Insulation

^M NOTE: 1) No fire-rated doors identified throughout. 2) Exterior components not in scope per Emily Yu.

^N NAD – No Asbestos Detected

Construction Material Testing/Inspection ♦ Environmental ♦ Geotechnical Engineering Services

Limited Asbestos Inspection Report

Fullerton Park & Ride Facility
Project Number EE 22-20221-0022.1
March xx, 2022

POLARIZED LIGHT MICROSCOPY (PLM) ANALYSIS DATA

Fullerton Park and Ride Facility
3000 West Orangethorpe Avenue
Fullerton, California 92833

Homogeneous Material #	Material Description	Material Location	Estimated Quantity	Condition ^o	Type ^p	Friable	Percent Damaged	Sample Number	Sample Location	Analytical Results
Westerly Restroom Building										
10	Cementitious wall board	Behind ceramic tile of Men's and Women's Restrooms, Driver's Restroom South wall of Janitor's Room Storage Room	1,000 Square Feet	G	Misc.	No	<1%	2203110022.1RK-28	Women's restroom, south wall	Layers A & B: NAD ^q
								2203110022.1RK-29	Storage room, south wall	Layers A & B: NAD
								2203110022.1RK-30	Janitor's room, south wall	Layers A & B: NAD
11	Caulking/sealant	Driver's Restroom at Urinal	1 Square Feet	G	Misc.	No	0	2203110022.1RK-31	South wall	NAD
								2203110022.1RK-32	South wall	NAD
								2203110022.1RK-33	South wall	NAD
12	Concrete	Walls and ceilings of Storage Room and Janitor's Room Ceilings of Men's and Women's Restrooms, Driver's Restroom	500 Square Feet	G	Misc.	No	0	2203110022.1RK-34	Storage room, north wall	NAD
								2203110022.1RK-35	Janitor's room, north wall	NAD
								2203110022.1RK-36	Janitor's room, northwest ceiling	NAD

Note: This table must be used in conjunction with the entire report. This document is not to be used for contract bidding and is intended to be used to identify asbestos-containing materials and their locations only.

^o G = Good; D = Damaged; SD = Severely Damaged

^p Misc. = Miscellaneous; Surf. = Surfacing; TSI = Thermal System Insulation

^q NAD – No Asbestos Detected

Construction Material Testing/Inspection ♦ Environmental ♦ Geotechnical Engineering Services

Limited Asbestos Inspection Report

Fullerton Park & Ride Facility
Project Number EE 22-20221-0022.1
March xx, 2022

POLARIZED LIGHT MICROSCOPY (PLM) ANALYSIS DATA

Fullerton Park and Ride Facility
3000 West Orangethorpe Avenue
Fullerton, California 92833

Homogeneous Material #	Material Description	Material Location	Estimated Quantity	Condition ^R	Type ^S	Friable	Percent Damaged	Sample Number	Sample Location	Analytical Results
Westerly Restroom Building										
13	Concrete slab	Throughout building	500 Square Feet	G	Misc.	No	0	2203110022.1RK-37	Exterior, southwest of Storage room	NAD ^T
								2203110022.1RK-38	Exterior, at southeast entry of Storage room	NAD
								2203110022.1RK-39	Exterior, southwest of Janitor's room	NAD

Note: This table must be used in conjunction with the entire report. This document is not to be used for contract bidding and is intended to be used to identify asbestos-containing materials and their locations only.

The remainder of this page is blank.

^R G = Good; D = Damaged; SD = Severely Damaged

^S Misc. = Miscellaneous; Surf. = Surfacing; TSI = Thermal System Insulation

^T NAD – No Asbestos Detected

IV. FINDINGS

AESCO conducted a limited asbestos inspection of the of the Easterly and Westerly Restroom Buildings within the Fullerton Park & Ride Facility located at 3000 West Orangethorpe Avenue, Fullerton, California 92833.

Thirteen (13) homogeneous material groups were identified during the visual inspection. Thirty-nine (39) samples of suspect asbestos-containing materials were collected and delivered to LA Testing of South Pasadena, CA for analysis. The homogeneous areas and sampling results are listed on the table in Section III.

The analytical data revealed that the sampled materials do not contain asbestos.

V. CONCLUSIONS/RECOMMENDATIONS

No asbestos-containing materials were identified during this inspection. Activities involving the inspected materials may proceed as normal construction actions. If suspect asbestos materials that were not sampled are to be disturbed, additional sampling will be required.

If you have any questions, please call Mr. Tim Galeana at 626-441-7050. We are glad we could be of service to you.

VI. DISCLAIMER/REPORT LIMITATIONS

All reports and recommendations are based on conditions and practices observed and information made available to AESCO by the client and the designated sites/facilities on the days sampling was conducted. This report does not purport to set forth all hazards, nor to indicate that other hazards do not exist. No responsibility is assumed by AESCO for the control or correction of conditions or practices existing at the facilities, or at any other premises surveyed by AESCO, for and on the behalf of the client. Services provided by AESCO shall be governed by the standard of practice for professional services measured at the time those services are rendered.

All information contained in this report is proprietary and limited to the scope of services, parameters of the analytical methods used and the conditions present at the time of this inspection. Any references to quantities are considered estimates and are not to be construed as actual.

APPENDIX A – LABORATORY ANALYSIS REPORT



LA Testing

520 Mission Street South Pasadena, CA 91030

Tel/Fax: (323) 254-9960 / (323) 254-9982

<http://www.LATesting.com> / pasadenalab@latesting.com

IFB NO. 2-2409

LA Testing Order: 322205433

Customer ID: 32EXEC52

Customer PO:

Project ID:

EXHIBIT B
ATTACHMENT A

Attention: Yesenia Galeana
Executive Environmental Services Corp.
310 East Foothill Blvd.
Suite 200
Arcadia, CA 91006

Project: 22-20221-0022.1 / Sampler: Rhys Kuzmic

Phone: (626) 441-7050

Fax: (626) 441-0016

Received Date: 03/11/2022 1:30 PM

Analysis Date: 03/14/2022

Collected Date: 03/11/2022

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

Sample	Appearance	Non-Asbestos		Asbestos % Type
		% Fibrous	% Non-Fibrous	
2203110022.1RK-01-A 322205433-0001	Brown Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
2203110022.1RK-01-B 322205433-0001A	Blue Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
2203110022.1RK-01-C 322205433-0001B	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
2203110022.1RK-02-A 322205433-0002	Brown/Beige Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
2203110022.1RK-02-B 322205433-0002A	Blue Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
2203110022.1RK-02-C 322205433-0002B	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
2203110022.1RK-03-A 322205433-0003	Brown Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
2203110022.1RK-03-B 322205433-0003A	Blue Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
2203110022.1RK-03-C 322205433-0003B	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
2203110022.1RK-04 322205433-0004	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
2203110022.1RK-05 322205433-0005	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
2203110022.1RK-06 322205433-0006	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
2203110022.1RK-07-A 322205433-0007	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
2203110022.1RK-07-B 322205433-0007A	White Fibrous Homogeneous	80% Glass	20% Non-fibrous (Other)	None Detected
2203110022.1RK-08-A 322205433-0008 QC	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
2203110022.1RK-08-B 322205433-0008A	White Fibrous Homogeneous	80% Glass	20% Non-fibrous (Other)	None Detected

Initial report from: 03/14/2022 13:45:10



LA Testing

520 Mission Street South Pasadena, CA 91030

Tel/Fax: (323) 254-9960 / (323) 254-9982

<http://www.LATesting.com> / pasadenalab@latesting.com

IFB NO. 2-2409

LA Testing Order: 322205433

Customer ID: 32EXEC52

Customer PO:

Project ID:

EXHIBIT B
ATTACHMENT A

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

Sample	Appearance	Non-Asbestos		Asbestos % Type
		% Fibrous	% Non-Fibrous	
2203110022.1RK-09-A 322205433-0009	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
2203110022.1RK-09-B 322205433-0009A	White Fibrous Homogeneous	90% Glass	10% Non-fibrous (Other)	None Detected
2203110022.1RK-10 322205433-0010	Blue Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
2203110022.1RK-11 322205433-0011	Blue Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
2203110022.1RK-12-A 322205433-0012	Blue Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
2203110022.1RK-12-B 322205433-0012A	Clear Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
2203110022.1RK-13 322205433-0013	Gray Non-Fibrous Homogeneous	2% Cellulose	98% Non-fibrous (Other)	None Detected
2203110022.1RK-14 322205433-0014	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
2203110022.1RK-15 322205433-0015	Gray/White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
2203110022.1RK-16 322205433-0016	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
2203110022.1RK-17 322205433-0017	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
2203110022.1RK-18 322205433-0018	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
2203110022.1RK-19 322205433-0019 QC	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
2203110022.1RK-20 322205433-0020	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
2203110022.1RK-21 322205433-0021	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
2203110022.1RK-22-A 322205433-0022	Brown/Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
2203110022.1RK-22-B 322205433-0022A	Black Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
2203110022.1RK-22-C 322205433-0022B	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
2203110022.1RK-23-A 322205433-0023	Brown/Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected

Initial report from: 03/14/2022 13:45:10



LA Testing

520 Mission Street South Pasadena, CA 91030

Tel/Fax: (323) 254-9960 / (323) 254-9982

<http://www.LATesting.com> / pasadenalab@latesting.com

IFB NO. 2-2409

LA Testing Order: 322205433
Customer ID: 32EXEC52
Customer PO:
Project ID:

EXHIBIT B
ATTACHMENT A

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

Sample	Appearance	Non-Asbestos		Asbestos % Type
		% Fibrous	% Non-Fibrous	
2203110022.1RK-23-B 322205433-0023A	Black Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
2203110022.1RK-23-C 322205433-0023B	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
2203110022.1RK-24-A 322205433-0024	Brown/Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
2203110022.1RK-24-B 322205433-0024A	Black Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
2203110022.1RK-24-C 322205433-0024B	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
2203110022.1RK-25 322205433-0025	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
2203110022.1RK-26 322205433-0026	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
2203110022.1RK-27 322205433-0027	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
2203110022.1RK-28-A 322205433-0028	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
2203110022.1RK-28-B 322205433-0028A	White Fibrous Homogeneous	80% Glass	20% Non-fibrous (Other)	None Detected
2203110022.1RK-29-A 322205433-0029	Gray/White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
2203110022.1RK-29-B 322205433-0029A	White Fibrous Homogeneous	80% Glass	20% Non-fibrous (Other)	None Detected
2203110022.1RK-30-A 322205433-0030	Gray/White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
2203110022.1RK-30-B 322205433-0030A	White Fibrous Homogeneous	90% Glass	10% Non-fibrous (Other)	None Detected
2203110022.1RK-31 322205433-0031	Clear Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
2203110022.1RK-32 322205433-0032	Clear Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
2203110022.1RK-33 322205433-0033	Clear Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
2203110022.1RK-34 322205433-0034	Gray/White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
2203110022.1RK-35 322205433-0035	Gray/White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected

Initial report from: 03/14/2022 13:45:10



LA Testing

520 Mission Street South Pasadena, CA 91030

Tel/Fax: (323) 254-9960 / (323) 254-9982

<http://www.LATesting.com> / pasadenalab@latesting.com

IFB NO. 2-2409

LA Testing Order: 322205433
Customer ID: 32EXEC52
Customer PO:
Project ID:

EXHIBIT B

ATTACHMENT A

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

Sample	Appearance	Non-Asbestos		Asbestos % Type
		% Fibrous	% Non-Fibrous	
2203110022.1RK-36 322205433-0036	Gray/White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
2203110022.1RK-37 322205433-0037	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
2203110022.1RK-38 322205433-0038 QC	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
2203110022.1RK-39 322205433-0039	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected

Analyst(s)

Humberto Espinoza Bajo (20)

Kieu-anh Pham Duong (38)

Jerry Drapala Ph.D, Laboratory Manager
or Other Approved Signatory

LA Testing maintains liability limited to cost of analysis. Interpretation and use of test results are the responsibility of the client. This report relates only to the samples reported above, and may not be reproduced, except in full, without written approval by LA Testing. LA Testing bears no responsibility for sample collection activities or analytical method limitations. The report reflects the samples as received. Results are generated from the field sampling data (sampling volumes and areas, locations, etc.) provided by the client on the Chain of Custody. Samples are within quality control criteria and met method specifications unless otherwise noted. The above analyses were performed in general compliance with Appendix E to Subpart E of 40 CFR (previously EPA 600/M4-82-020 "Interim Method") but augmented with procedures outlined in the 1993 ("final") version of the method. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST or any agency of the federal government. Non-friable organically bound materials present a problem matrix and therefore LA Testing recommends gravimetric reduction prior to analysis. Unless requested by the client, building materials manufactured with multiple layers (i.e. linoleum, wallboard, etc.) are reported as a single sample. Estimation of uncertainty is available on request.

Samples analyzed by LA Testing South Pasadena, CA NVLAP Lab Code 200232-0, CA ELAP 2283

Initial report from: 03/14/2022 13:45:10

#322205433



Industrial Hygiene Laboratory Submittal Asbestos -- PLM

Originating Office
☒ 310 E. Foothill Blvd., Suite 200
 Arcadia, CA 91006
 Phone: 626.441.7050
 Fax: 626.441.0016

Lab Submitted to:
☐ AmeriSci
☐ EMLab (Glendale)
☒ LA Testing

☐ **Routine**
 (5 Working Days)

☐ **RUSH** (surcharges may apply)
 Circle 6 24 48 hours days

Project #:
 22-20221-0022.1

Sampled by:
 Rhys Kuzmic

Site Zip Code:
 92833

Sample Date:
 03/11/2022

Page 1 of 7

The receiving Laboratory is required to complete the following:

- All invoices are to be sent to: 310 E. Foothill Blvd., Suite 200, Arcadia, CA 91006 with a copy of the lab report.
- Analyze all samples by PLM by EPA 600/R-93/116.
- Stop analysis of homogeneous groups at first positive that is greater than or equal to 1.0%

Building Name: Easton Restroom Building

- All lab reports and invoices are to contain the Project Number from above.
- Unsigned and reports marked draft are unacceptable.
- Report to the attention of: Yesenia Galeana, Phone: (562) 889-1327

Optional Items to be completed by the laboratory (if check marked): ☒ Email Report to: Info@execenv.com ☒ Other: ygaleana@execenv.com

☐ Alternate billing address:

☐ Other:

☒ US Mail Report to: ☒ Originating office check marked above ☐ Other:

Sample No.:	Sample Location - Include Room information where appropriate	Material Description	Homogeneous Location	No.	Quantity	Percent Damaged
-01	Mens Restroom, West wall	Ceramic tile and grout	Mens Restroom, Women's Restroom Drivers Restroom floors and walls	1	4400 SF	<1
-02	Women's Restroom, West partition wall	↓		↓	↓	↓
-03	Drivers Restroom, east-center floor	↓		↓	↓	↓
-04	Storage Room, NE floor	Ceramic floor (tile cementitious patterns)	Storage Room, Janitor's Room floors	2	40 SF	0
-05	Janitor's Room, SE floor	↓		↓	↓	↓
-06	Janitor's Room, SW floor	↓		↓	↓	↓

Prefix: 2203110022.1RK

Notes:

Released By, Date, & Time: Phyllis 03/11/2022 1:30PM

Received By, Date, & Time:

Phyllis (w)

03/11/2022 1:30

Released By, Date, & Time:



Industrial Hygiene Laboratory Submittal Asbestos -- PLM

Originating Office
☒ 310 E. Foothill Blvd., Suite 200
 Arcadia, CA 91006
 Phone: 626.441.7050
 Fax: 626.441.0016

Lab Submitted to:
☐ AmeriSci
☐ EMLab (Glendale)
☒ LA Testing

☐ Routine (5 Days)
☒ RUSH (surcharges may apply)
 Circle 6 24 48 3 to 5
 One hours hours days

Project #:
 22-20221-0022.1

Sampled by:
 Rhys Kuzmic

Site Zip Code:
 92833

Sample Date:
 03/11/2022

Page 2 of 7

The receiving Laboratory is required to complete the following:

1. All invoices are to be sent to: 310 E. Foothill Blvd., Suite 200, Arcadia, CA 91006 with a copy of the lab report.
2. Analyze all samples by PLM by EPA 600/R-93/116.
3. Stop analysis of homogeneous groups at first positive that is greater than or equal to 1.0%

Building Name: Eastern Restaurant Buildings

4. All lab reports and invoices are to contain the Project Number from above.
5. Unsigned and reports marked draft are unacceptable.
6. Report to the attention of: Yesenia Galeana, Phone: (562) 889-1327

Optional Items to be completed by the laboratory (if check marked): ☒ Email Report to: Info@execenv.com ☒ Other: ygaleana@execenv.com;

☒ US Mail Report to: ☒ Originating office check marked above ☐ Other: ☐ Alternate billing address:

Sample No.:	Sample Location - Include Room information where appropriate	Material Description	Homogeneous Location	No.	Quantity	Percent Damaged
-07	Mens Restroom, west wall	Cementitious wall board	Mens Restroom, Womens Restroom, Drivers Restroom walls (behind ceramic tile); Storage Room, Janitor's Room south walls	3	14000 SF	0
-08	Storage Room, south wall					
-09	Janitor's Room, south wall					
-10	Mens Restroom, west wall by toilet	Wall adhesive/sealant	Mens Restroom, Womens Restroom, Drivers Restroom ground select	4	3 SF	0
-11	Mens Restroom, west wall by toilet		snks, vents, toilets, urinals			
-12	Mens Restroom, west wall at sink					

Prefix: 2203110022.1RK

Notes:

Released By, Date: 03/11/2022 1:30 PM

Received By, Date: 03/11/2022 1:30 PM

03/11/2022 1:30 PM

Released By, Date: 03/11/2022 1:30 PM

IFB NO. 2-2409
 EXHIBIT B
 ATTACHMENT A



Industrial Hygiene Laboratory Submittal Asbestos -- PLM

Originating Office
☒ 310 E. Foothill Blvd., Suite 200
 Arcadia, CA 91006
 Phone: 626.441.7050
 Fax: 626.441.0016

Lab Submitted to:
☐ AmeriSci
☐ EMLab (Glendale)
☒ LA Testing

☐ Routine (5 Working Days)
☒ RUSH (surcharges may apply)
 Circle 6 hours 24 hours 48 hours 3 to 5 days

Project #:
 22-20221-0022.1

Sampled by:
 Rhys Kuzmic

Site Zip Code:
 92833

Sample Date:
 03/11/2022

Page 3 of 7

The receiving Laboratory is required to complete the following:

1. All invoices are to be sent to: 310 E. Foothill Blvd., Suite 200, Arcadia, CA 91006 with a copy of the lab report.
2. Analyze all samples by PLM by EPA 600/R-93/116.
3. Stop analysis of homogeneous groups at first positive that is greater than or equal to 1.0%

Building Name: Easterly Restaurant Buildings

4. All lab reports and invoices are to contain the Project Number from above.
5. Unsigned and reports marked draft are unacceptable.
6. Report to the attention of: Yessenia Galeana, Phone: (562) 889-1327

Optional Items to be completed by the laboratory (if check marked): ☒ Email Report to: Info@execenv.com ☒ Other: ygaleana@execenv.com

☒ US Mail Report to: ☒ Originating office check marked above ☐ Alternate billing address: ☐ Other:

Sample No.:	Sample Location - Include Room information where appropriate	Material Description	Homogeneous Location	No.	Quantity	Percent Damaged
-13	Storage Room, North wall	Concrete	Storage Room, Janitor's Room walls and ceilings	5	(ex) 250sf 500	0
-14	Storage Room, east wall		Mens Restroom, Women's Restroom, Drivers Restroom ceilings	↓	↓	↓
-15	Janitor's Room, NW ceiling			↓	↓	↓
-16	Exterior, SW corner of Janitor's Room	Concrete skb	T-O buildings skb	6	500sf	0
-17	Exterior, at east entry to Drivers Restroom			↓	↓	↓
-18	Exterior, at SW entry to Women's Restroom			↓	↓	↓

Prefix: 2203110022.1RK

IFB NO. 2-2409
 EXHIBIT B
 ATTACHMENT A

Notes:

By, Date, & Time: Run for 03/11/2022 1:30 PM

Received By, Date, & Time: Amokiosnak 03/11/2022 1330

Released By, Date, & Time:

Originating Office	Lab Submitted to:
☒ 310 E. Foothill Blvd., Suite 200 Arcadia, CA 91006 Phone: 626.441.7050 Fax: 626.441.0016	☐ AmeriSci ☐ EMLab (Glendale) ☒ LA Testing

☐ Routine (5 Working Days)	☐ RUSH (surcharges may apply) Circle 6 24 48 3 to 5 One hours hours days	Project #: 22-20221-0022.1	Sampled by: Rhys Kuzmic	Site Zip Code: 92833	Sample Date: 03/11/2022	Page 4 of 7
--	---	--------------------------------------	-----------------------------------	--------------------------------	-----------------------------------	-------------

The receiving Laboratory is required to complete the following:

1. All invoices are to be sent to: 310 E. Foothill Blvd., Suite 200, Arcadia, CA 91006 with a copy of the lab report.
2. Analyze all samples by PLUM by EPA 600/R-93/116.
3. Stop analysis of homogeneous groups at first positive that is greater than or equal to 1.0%

Building Name: <u>Eastview Restroom Building</u>	4. All lab reports and invoices are to contain the Project Number from above. 5. Unsigned and reports marked draft are unacceptable. 6. Report to the attention of: Yesenia Galeana, Phone: (562) 889-1327
---	--

☒ **Optional Items to be completed by the laboratory (if check marked):** ☒ Email Report to: Info@execenv.com ☒ Other: ygaleana@execenv.com;

☒ **US Mail Report to:** ☒ Originating office check marked above ☐ Other: ☐ Alternate billing address:

[illegible]

Released By, Date, & Time:	
Received By, Date, & Time:	Rm Kw 03/11/2022 1:30 PM
Released By, Date, & Time:	Andrew (wv)
Received By, Date, & Time:	03/11/2022 1330



Industrial Hygiene Laboratory Submittal
Asbestos -- PLM

Originating Office
☒ 310 E. Foothill Blvd., Suite 200
Arcadia, CA 91006
Phone: 626.441.7050
Fax: 626.441.0016

Lab Submitted to:
☐ AmeriSci
☐ EMLab (Glendale)
☒ LA Testing

☐ Routine (5 Days)
☒ RUSH (surcharges may apply)
Circle 6 hours 24 hours 48 hours 3 to 5 days

Project #: 22-20221-0022.1

Sampled by: Rhys Kuzmic

Site Zip Code: 92833

Sample Date: 03/11/2022

Page 5 of 7

Building Name: Westerly Restroom Building

The receiving Laboratory is required to complete the following:

1. All invoices are to be sent to: 310 E. Foothill Blvd., Suite 200, Arcadia, CA 91006 with a copy of the lab report.
2. Analyze all samples by PLM by EPA 600/R-93/116.
3. Stop analysis of homogeneous groups at first positive that is greater than or equal to 1.0%

Optional Items to be completed by the laboratory (if check marked): ☒ Email Report to: Info@execenv.com ☒ Other: ygaleana@execenv.com;

☒ US Mail Report to: ☒ Originating office check marked above ☐ Other:

☐ Alternate billing address:

Sample No.:	Sample Location - Include Room information where appropriate	Material Description	Homogeneous Location	No.	Quantity	Percent Damaged
-22	Mens Restroom, south wall	Ceramic tile and grout	Mens Restroom, Womens Restroom, Drivers Restroom floors and walls	8	2,400 SF	<1
-23	Womens Restroom, south wall					
-24	Drivers Restroom, NE floor					
-25	Storage Room, SE floor	Cementitious floor (tile pattern)	Storage Room, Janitor's Room	9	40 SF	0
-26	Janitor's Room, SE floor					
-27	Janitor's Room, NE floor					

Prefix: 2203110022.1RK

Notes: Plm Kuz 03/11/2022 1:30 PM

Released By, Date, & Time: Amoroso EWJ 03/11/2022 1330

Received By, Date, & Time:

Form: AL-006PLM



Industrial Hygiene Laboratory Submittal Asbestos -- PLM

Originating Office
☒ 310 E. Foothill Blvd., Suite 200
 Arcadia, CA 91006
 Phone: 626.441.7050
 Fax: 626.441.0016

Lab Submitted to:
☐ AmeriSci
☐ EMLab (Glendale)
☒ LA Testing

☐ Routine (5 Days)
☒ RUSH (surcharges may apply)
 Circle 6 hours 24 hours 48 hours 3 to 5 days

Project #:
22-20221-0022.1

Sampled by:
Rhys Kuzmich

Site Zip Code:
92833

Sample Date:
03/11/2022

Page 6 of 7

The receiving Laboratory is required to complete the following:

1. All invoices are to be sent to: 310 E. Foothill Blvd., Suite 200, Arcadia, CA 91006 with a copy of the lab report.
2. Analyze all samples by PLM by EPA 600/R-93/116.
3. Stop analysis of homogeneous groups at first positive that is greater than or equal to 1.0%

Building Name: Westerly Restroom Building

4. All lab reports and invoices are to contain the Project Number from above.
5. Unsigned and reports marked draft are unacceptable.
6. Report to the attention of: Yessenia Galeana, Phone: (562) 889-1327

Optional Items to be completed by the laboratory (if check marked): ☒ Email Report to: Info@execenv.com ☒ Other: ygaleana@execenv.com;

☒ US Mail Report to: ☒ Originating office check marked above ☐ Other: ☐ Alternate billing address:

Sample No.:	Sample Location - Include Room information where appropriate	Material Description	Homogeneous Location	No.	Quantity	Percent Damaged
-28	Women's Restroom, south wall	Cementitious wall board	Men's Restroom/Women's Restroom	10	4000 SF	0
-29	Storage Room, south wall		Driver's Restroom walls behind ceramic tile; Storage Room			
-30	Janitor's Room, south wall		Janitor's Room south walls			
-31	Driver's Restroom, south wall	Caulking/sealant	Driver's Restroom at window	11	1 SF	0
-32	Driver's Restroom, south wall					
-33	Driver's Restroom, south wall					

Prefix: 2203110022.1RK

Notes:

Released By, Date, & Time:

Runkin 03/11/2022 1:30 PM

Received By, Date, & Time:

Amorok (w/1)

03/11/2022 1330

Rev. 1/19

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Released By, Date, & Time:

Form: AL-006PLM



Industrial Hygiene Laboratory Submittal Asbestos -- PLM

Originating Office

☒ 310 E. Foothill Blvd., Suite 200
Arcadia, CA 91006
Phone: 626.441.7050
Fax: 626.441.0016

Lab Submitted to:

☐ AmeriSci
☐ EMLab (Glendale)
☒ LA Testing

☐ Routine
(5 Days)

☐ RUSH (surcharges may apply)
Circle 6 hours 24 hours 48 hours 3 to 5 days

Project #:
22-20221-0022.1

Sampled by:
Rhys Kuzmic

Site Zip Code:
92833

Sample Date:
03/11/2022

Page 7 of 7

The receiving Laboratory is required to complete the following:

1. All invoices are to be sent to: 310 E. Foothill Blvd., Suite 200, Arcadia, CA 91006 with a copy of the lab report.
2. Analyze all samples by PLM by EPA 600/R-93/116.
3. Stop analysis of homogeneous groups at first positive that is greater than or equal to 1.0%

Building Name: Westerly Restroom Building

4. All lab reports and invoices are to contain the Project Number from above.
5. Unsigned and reports marked draft are unacceptable.
6. Report to the attention of: Yesenia Galeana, Phone: (562) 889-1327

Optional Items to be completed by the laboratory (if check marked): ☒ Email Report to: Info@execenv.com ☒ Other: ygaleana@execenv.com;

☒ US Mail Report to: ☒ Originating office check marked above ☐ Other: ☐ Alternate billing address:

Sample No.:	Sample Location - Include Room information where appropriate	Material Description	Homogeneous Location	No.	Quantity	Percent Damaged
-34	Storage Room, north wall	Concrete	Storage Room Janitor's Room walls & ceilings	12	500sf	0
-35	Janitor's Room, north wall	↓	Men's Restroom, Women's Restroom, Men's Restroom ceilings	↓	↓	↓
-36	Janitor's Room, NW ceiling	↓		↓	↓	↓
-37	Extended, SW of Storage Room	Concrete slab	T-O building slab	13	500sf	0
-38	Extended, at SE entry of Storage Room	↓		↓	↓	↓
-39	Extended, SW of Janitor's Room	↓		↓	↓	↓

Prefix: 2203110022.1RK #322205433

Notes:

Released By, Date, & Time: Rhys Kuzmic 03/11/2022 1:30PM

Received By, Date, & Time:

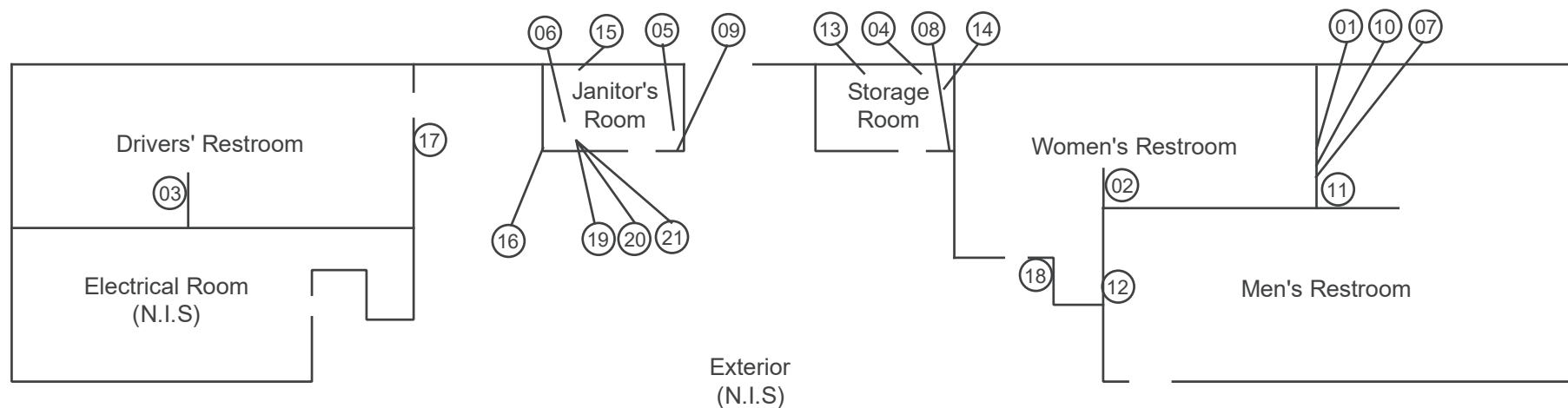
Chen (ur)

03/11/2022 1:30

Released By, Date, & Time:

APPENDIX B – SAMPLE LOCATION DRAWING

Easterly Restroom Building (Interior)



Client: AESCO

Project #: 22-20221-0022.1

Info: PLM Sample Locations

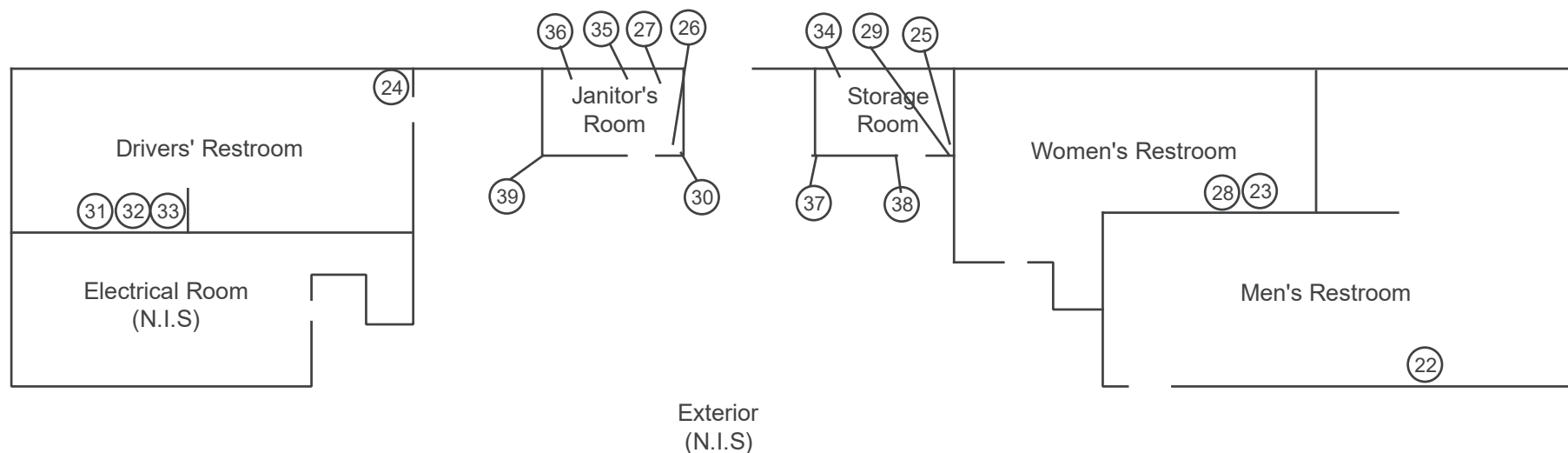


EXECUTIVE ENVIRONMENTAL
 HEALTH & SAFETY SIMPLIFIED

Site: Fullerton Park & Ride
 3000 W Orangethorpe Ave
 Fullerton, CA 92833

Drawing Not to Scale - © 2012

Westerly Restroom Building (Interior)



N.I.S - Not In Scope
 Exterior - Not In Scope
 ○ - PLM Sample Locations



Client: AESCO

Project #: 22-20221-0022.1

Info: PLM Sample Locations



EXECUTIVE ENVIRONMENTAL
 HEALTH & SAFETY SIMPLIFIED

Site: Fullerton Park & Ride
Address: 3000 W Orangethorpe Ave
 Fullerton, CA 92833

Drawing Not to Scale - © 2012

APPENDIX C – STAFF CERTIFICATION

IFB NO. 2-2409

EXHIBIT B

State of California ATTACHMENT A

Division of Occupational Safety and Health
Certified Asbestos Consultant



Rhys D Kuzmic
Name

Certification No. **09-4586**

Expires on **01/20/23**

This certification was issued by the Division of Occupational Safety and Health as authorized by Sections 7180 et seq. of the Business and Professions Code.

LIMITED LEAD-BASED PAINT/CERAMIC TILE INSPECTION REPORT

Conducted at:

FULLERTON PARK AND RIDE FACILITY
EASTERLY AND WESTERLY RESTROOM BUILDINGS
3000 WEST ORANGETHORPE AVENUE
FULLERTON, CALIFORNIA 92833

Prepared by:



17781 GEORGETOWN LANE
HUNTINGTON BEACH, CALIFORNIA 92647
TEL 714-375-3830
FAX 714-375-3831
www.aescotech.com

AESCO Project Number:
20220221-G5527 & G5553
Reference Number EE 22-20221-0022
March 8, 2022

Report assembled by:

Yesenia G. Galeana
Technical Report Writer

Report generated/reviewed by:

Tim Galeana, CAC # 98-2470
Senior Project Manager

Project Reviewed by:

Adam Chamma, P.E.
General Engineering Manager

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- I. EXECUTIVE SUMMARY
- II. SAMPLING PROTOCOL
- III. SAMPLING METHODOLOGY
- IV. SAMPLE ANALYSIS
- V. CONCLUSIONS/RECOMMENDATIONS
- VI. DISCLAIMER/REPORT LIMITATIONS

APPENDICES

- APPENDIX A – SITE DRAWING
- APPENDIX B – XRF SUMMARY RESULTS
- APPENDIX C – PHOTOS
- APPENDIX D – DEPARTMENT OF PUBLIC HEALTH FORM 8552
- APPENDIX E – XRF PERFORMANCE CHARACTERISTICS SHEET

LLIMITED LEAD-BASED PAINT/CERAMIC TILE INSPECTION

Reference Number: 22-20221-0022

Client: AESCO
17781 Georgetown Lane
Huntington Beach, California 92647

Site Location: Fullerton Park and Ride Facility
Easterly and Westerly Restroom Buildings
3000 West Orangethorpe Avenue
Fullerton, California 92833

Site Use: Government

Inspection Date: March 7, 2022

Inspected By: Mr. Rhys Kuzmic
Certified Lead Professional, CDPH # 4395

Report Assembled By: Ms. Yesenia G. Galeana
Technical Report Writer

Report Generated/Reviewed By: Mr. Tim Galeana
Certified Lead Professional, CDPH # 0394

I. EXECUTIVE SUMMARY

AESCO conducted a limited lead-based paint/ceramic tile inspection of the Easterly and Westerly Restroom Buildings within the Fullerton Park & Ride Facility located at 3000 West Orangethorpe Avenue, Fullerton, California 92833. The inspection was conducted as a precursor to the upcoming restroom renovation activities. AESCO provided a California Department of Public Health Certified Lead Inspector to conduct the inspection. Regulated lead-based ceramic glaze was detected during this inspection. The services were conducted on March 7, 2022. *This is considered a limited inspection. The inspection was limited to the surfaces and components anticipated to be impacted by the restroom's renovation project of the Easterly and Westerly Restroom Buildings within the Fullerton Park & Ride Facility, as directed by the client.*

II. SAMPLING PROTOCOL

According to the United States Department of Housing and Urban Development's (HUD) guideline document, Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing, and Section 1017 of Title X, Residential Lead-Based Paint Hazard Reduction Act of 1992, Public Law 102-550, paint found to have a lead concentration of at least 1.0 mg/cm² (milligrams per centimeter squared) by X-Ray Fluorescence (XRF), analysis or 0.5 percent (5000 parts per million) by weight, is regulated as lead-based paint.

Construction Material Testing/Inspection ♦ Environmental ♦ Geotechnical Engineering Services

Any material containing any detectable level of lead is subject to the Occupational Safety and Health Administration's (OSHA) Lead Exposure in Construction Rule 29 Code of Federal Regulation (CFR) 1926.62 and California Code of Regulations Title 8, Section 1532.1 Lead (8CCR1532.1) and Title 8, Section 5198, Lead (8CCR5198). All work that disturbs this type of material must be performed in accordance with this and any other applicable standards.

All facilities built prior to 1979 for residential buildings and prior to 1993 for schools are suspect for lead-containing materials. Federal and state regulations recognize only the following methods of identification: analysis by an XRF instrument, paint bulk sample collection and analysis, or a combination of both. This inspection was conducted via XRF instrumentation and bulk sample collection. The parameters used to interpret the XRF results are outlined in the HUD guidelines and the XRF Performance Characteristics Sheets (PCS).

III. SAMPLING METHODOLOGY

A visual inspection of the Easterly and Westerly Restroom Buildings was conducted by a CLP to identify major site features and surfaces and/or coated with lead-based paint or ceramic glaze. After identifying the surface or components suspected of being coated with lead-based paint or ceramic glaze, CLP grouped the components and substrates into testing combinations. If there was any reason to suspect that materials may have been installed or painted at different times, even if they appear uniform, they were assigned to separate testing combinations.

Following the visual inspection, screening for the presence of lead-based paint or ceramic glaze was performed on-site using a portable XRF instrument. The XRF has the ability to measure lead content in paint and ceramic glaze within the range of 0 to 50 milligrams per centimeter squared (mg/cm²). The on-site inspection capability of the XRF instrument typically reduces the number of paint-chip samples that may need to be collected and sent for laboratory analysis. The portable XRF instrument used in this inspection was manufactured by Heuresis.

The following specifications apply to the Viken Detection XRF (formerly Heuresis):

- Ability to report Positive and Negative determination at 1.0mg lead/cm² with 2-sigma confidence with measurement time of 1-3 nominal seconds on mast lead paint samples.
- Detects lead at 0.1 mg/cm² with 2-sigma confidence with a measurement time of 1 second on most samples.
- Equipped with a ⁵⁷Co sealed source, 5mCi (185 MBq), radioactive source. Substrate effects are automatically corrected through a complex algorithm and calibration.

IV. SAMPLE ANALYSIS

According to state and federal standards, the following surfaces and components that were analyzed with the Viken Detection XRF instrument during this inspection are considered to be coated with a regulated lead-based ceramic glaze.

XRF SAMPLE ANALYSIS DATA Fullerton Park and Ride Facility 3000 West Orangethorpe Avenue Fullerton, California 92833				
Area	Component	Substrate	Estimated Quantity	XRF Result Mg/cm ²
Easterly Restroom Building^A				
Storage Room Janitor Room	Floor drain	Metal	2 Total	31, 28.6
Westerly Restroom Building^B				
Storage Room Janitor Room	Floor drain	Metal	2 Total	31, 29.9

Note: This table must be used in conjunction with the entire report.

V. CONCLUSIONS/RECOMMENDATIONS

AESCO conducted a limited lead-based paint/ceramic glaze inspection of the Easterly and Westerly Restroom Buildings within the Fullerton Park & Ride Facility located at 3000 West Orangethorpe Avenue, Fullerton, California 92833. The following conclusions and/or recommendations apply:

Limited Lead-Containing Paint/Ceramic Tile Inspection

- Easterly and Westerly Restroom Buildings within the Fullerton Park & Ride Facility were tested via the Viken Detection XRF for the presence of lead.
- The items listed in the previous table were identified as being coated with a regulated lead-based ceramic glaze.
- The surfaces/components were observed to be in intact condition during this inspection.

A NOTE: 1) Bare metal doors throughout, no paint or coating. 2) Men's and Women's restrooms have bare metal toilets, sinks and handrails, no paint or coating. 3) Driver's restroom has bare metal handrails, no paint or coating. 4) Exterior throughout not in scope.

B NOTE: No coating or paint: 1) Bare metal doors throughout. 2) Men's and Women's restrooms have bare metal toilets, sinks and handrails, no paint or coating. 3) Driver's restroom has bare metal handrails, no paint or coating. 4) Exterior throughout not in scope.

Construction Material Testing/Inspection ♦ Environmental ♦ Geotechnical Engineering Services

Limited Lead-Based Paint/Ceramic Tile Inspection Report

Fullerton Park & Ride Facility
Reference Number EE 22-20221-0022
March 8, 2022

- A fully representative number of XRF readings were taken at the project site. The results of these assays are presented in the XRF Summary Results spreadsheets.

It is recommended that all renovation, remodeling, construction, or demolition actions that might potentially disturb surfaces covered with lead-based paint and/or ceramic glaze be performed by properly trained and qualified personnel.

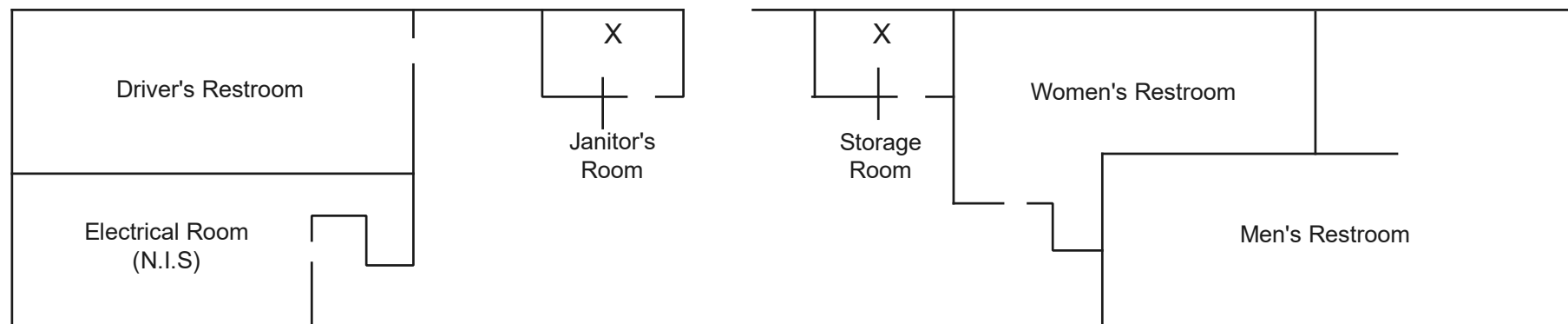
VI. DISCLAIMER/REPORT LIMITATIONS

All reports and recommendations are based on conditions and practices observed and information made available to AESCO by the client and the designated sites/facilities on the days sampling was conducted. This report does not purport to set forth all hazards, nor to indicate that other hazards do not exist. No responsibility is assumed by AESCO for the control or correction of conditions or practices existing at the facilities, or at any other premises surveyed by AESCO, for and on the behalf of the client. Services provided by AESCO shall be governed by the standard of practice for professional services measured at the time those services are rendered.

All information contained in this report is proprietary and limited to the scope of services, parameters of the analytical methods used and the conditions present at the time of this inspection. Any references to quantities are considered estimates and are not to be construed as actual.

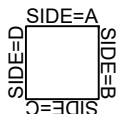
APPENDIX A – SITE DRAWING

Easterly Restroom Building (Interior)



X - Floor Drain (Metal)

N.I.S - Not In Scope
 Exterior - Not In Scope



Client: AESCO

Project #: 22-20221-0022

Info: Lead-Based Ceramic Glaze Identified

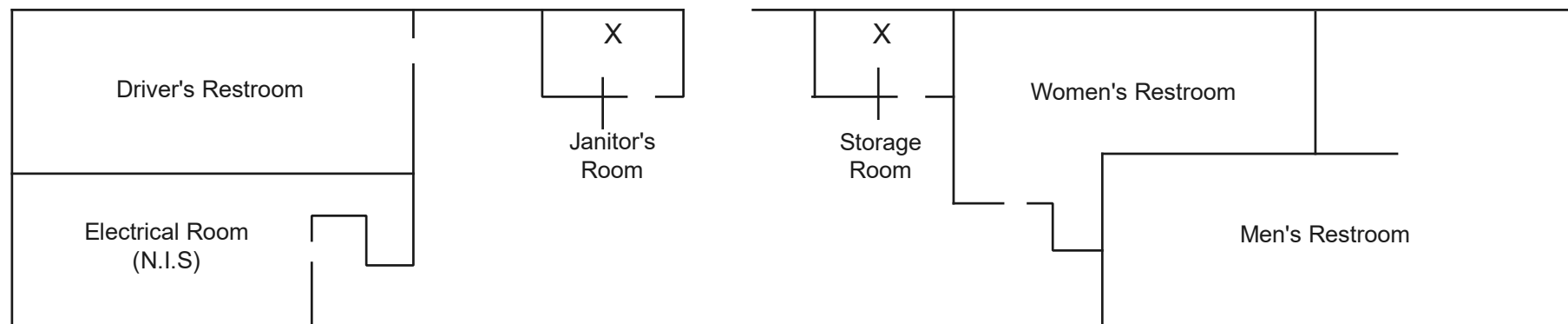


EXECUTIVE ENVIRONMENTAL
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Site: Fullerton Park & Ride
Address: 3000 W Orangethorpe Ave
 Fullerton, CA 92833

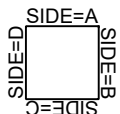
Drawing Not to Scale - © 2012

Westerly Restroom Building (Interior)



X - Floor Drain (Metal)

N.I.S - Not In Scope
 Exterior - Not In Scope



Client: AESCO

Project #: 22-20221-0022

Info: Lead-Based Ceramic Glaze Identified



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 HEALTH & SAFETY SIMPLIFIED

Site: Fullerton Park & Ride
 3000 W Orangethorpe Ave
 Fullerton, CA 92833
Address:

Drawing Not to Scale - © 2012

APPENDIX B – XRF SUMMARY RESULTS

AESCO
Fullerton Park and Ride Facilities

Reading #	Date	Building	Location	Component	Substrate	Side	Condition	Concentration	Result
1	3/7/2022			Calibrate				0.9	Negative
2	3/7/2022			Calibrate				0.9	Negative
3	3/7/2022			Calibrate				0.9	Negative
4	3/7/2022	Easterly Restroom Building	Men's Restroom	Wall tile	Ceramic		Intact	0	Negative
5	3/7/2022	Easterly Restroom Building	Men's Restroom	Wall tile	Ceramic	B	Intact	0.1	Negative
6	3/7/2022	Easterly Restroom Building	Men's Restroom	Wall tile	Ceramic	C	Intact	-0.3	Negative
7	3/7/2022	Easterly Restroom Building	Men's Restroom	Wall tile	Ceramic	D	Intact	-0.4	Negative
8	3/7/2022	Easterly Restroom Building	Men's Restroom	Wall tile	Ceramic	A	Intact	-0.1	Negative
9	3/7/2022	Easterly Restroom Building	Men's Restroom	Wall tile	Ceramic	B	Intact	0	Negative
10	3/7/2022	Easterly Restroom Building	Men's Restroom	Wall tile	Ceramic	C	Intact	-0.2	Negative
11	3/7/2022	Easterly Restroom Building	Men's Restroom	Wall tile	Ceramic	D	Intact	-0.1	Negative
12	3/7/2022	Easterly Restroom Building	Men's Restroom	Floor tile	Ceramic	Lower	Intact	0.1	Negative
13	3/7/2022	Easterly Restroom Building	Men's Restroom	Ceiling	Concrete	Upper	Intact	0.2	Negative
14	3/7/2022	Easterly Restroom Building	Men's Restroom	Ceiling	Concrete	Upper	Intact	0.3	Negative
15	3/7/2022	Easterly Restroom Building	Men's Restroom	Soffit	Concrete	Upper	Intact	-0.5	Negative
16	3/7/2022	Easterly Restroom Building	Women's Restroom	Wall tile	Ceramic	A	Intact	-0.3	Negative

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Fullerton Park and Ride Facilities

Reading #	Date	Building	Location	Component	Substrate	Side	Condition	Concentration	Result
17	3/7/2022	Easterly Restroom Building	Women's Restroom	Wall tile	Ceramic	B	Intact	-0.3	Negative
18	3/7/2022	Easterly Restroom Building	Women's Restroom	Wall tile	Ceramic	C	Intact	-0.3	Negative
19	3/7/2022	Easterly Restroom Building	Women's Restroom	Wall tile	Ceramic	D	Intact	-0.4	Negative
20	3/7/2022	Easterly Restroom Building	Women's Restroom	Wall tile	Ceramic	A	Intact	-0.4	Negative
21	3/7/2022	Easterly Restroom Building	Women's Restroom	Wall tile	Ceramic	B	Intact	-0.2	Negative
22	3/7/2022	Easterly Restroom Building	Women's Restroom	Wall tile	Ceramic	C	Intact	-0.3	Negative
23	3/7/2022	Easterly Restroom Building	Women's Restroom	Wall tile	Ceramic	D	Intact	-0.3	Negative
24	3/7/2022	Easterly Restroom Building	Women's Restroom	Floor tile	Ceramic	Lower	Intact	0.2	Negative
25	3/7/2022	Easterly Restroom Building	Women's Restroom	Floor	Ceramic	Lower	Intact	0	Negative
26	3/7/2022	Easterly Restroom Building	Women's Restroom	Ceiling	Concrete	Upper	Intact	0.5	Negative
27	3/7/2022	Easterly Restroom Building	Women's Restroom	Ceiling	Concrete	Upper	Intact	0.2	Negative
28	3/7/2022	Easterly Restroom Building	Women's Restroom	Ceiling	Concrete	Upper	Intact	0.3	Negative
29	3/7/2022	Easterly Restroom Building	Women's Restroom	Door frame	Metal	C	Peeling	0.4	Negative
30	3/7/2022	Easterly Restroom Building	Women's Restroom	Door frame	Metal	C	Peeling	0.3	Negative

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Fullerton Park and Ride Facilities

Reading #	Date	Building	Location	Component	Substrate	Side	Condition	Concentration	Result
31	3/7/2022	Easterly Restroom Building	Women's Restroom	Hand dryer	Metal	C	Intact	0.4	Negative
32	3/7/2022	Easterly Restroom Building	Men's Restroom	Door frame	Metal	C	Peeling	0.4	Negative
33	3/7/2022	Easterly Restroom Building	Men's Restroom	Door frame	Metal	C	Peeling	0	Negative
34	3/7/2022	Easterly Restroom Building	Storage Room	Door frame	Metal	C	Intact	0.1	Negative
35	3/7/2022	Easterly Restroom Building	Storage Room	Door frame	Metal	C	Intact	0	Negative
36	3/7/2022	Easterly Restroom Building	Storage Room	Wall	Concrete	A	Intact	0.5	Negative
37	3/7/2022	Easterly Restroom Building	Storage Room	Wall	Concrete	B	Intact	0.1	Negative
38	3/7/2022	Easterly Restroom Building	Storage Room	Wall	Wallboard	C	Intact	0	Negative
39	3/7/2022	Easterly Restroom Building	Storage Room	Wall	Wallboard	C	Intact	0	Negative
40	3/7/2022	Easterly Restroom Building	Storage Room	Wall	Concrete	D	Intact	0.5	Negative
41	3/7/2022	Easterly Restroom Building	Storage Room	Ceiling	Concrete	Upper	Intact	0.4	Negative
42	3/7/2022	Easterly Restroom Building	Storage Room	Floor tile	Ceramic	Lower	Intact	0.3	Negative
43	3/7/2022	Easterly Restroom Building	Storage Room	Drain	Metal	Lower	Intact	31	Positive
44	3/7/2022	Easterly Restroom Building	Janitor's Room	Drain	Metal	Lower	Intact	28.6	Positive

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Reading #	Date	Building	Location	Component	Substrate	Side	Condition	Concentration	Result
45	3/7/2022	Easterly Restroom Building	Janitor's Room	Floor tile	Ceramic	Lower	Intact	0.1	Negative
46	3/7/2022	Easterly Restroom Building	Janitor's Room	Wall	Concrete	A	Intact	0	Negative
47	3/7/2022	Easterly Restroom Building	Janitor's Room	Wall	Concrete	B	Intact	0.1	Negative
48	3/7/2022	Easterly Restroom Building	Janitor's Room	Wall	Wallboard	C	Intact	-0.1	Negative
49	3/7/2022	Easterly Restroom Building	Janitor's Room	Wall	Wallboard	C	Intact	0	Negative
50	3/7/2022	Easterly Restroom Building	Janitor's Room	Wall	Concrete	D	Intact	0.2	Negative
51	3/7/2022	Easterly Restroom Building	Janitor's Room	Ceiling	Concrete	Upper	Intact	0.1	Negative
52	3/7/2022	Easterly Restroom Building	Janitor's Room	Ceiling	Concrete	Upper	Intact	0.2	Negative
53	3/7/2022	Easterly Restroom Building	Janitor's Room	Shelf	Wood	A	Intact	0	Negative
54	3/7/2022	Easterly Restroom Building	Janitor's Room	Shelf	Wood	A	Intact	-0.2	Negative
55	3/7/2022	Easterly Restroom Building	Janitor's Room	Cabinet	Wood	A	Intact	-0.1	Negative
56	3/7/2022	Easterly Restroom Building	Janitor's Room	Shelf	Wood	D	Intact	-0.1	Negative
57	3/7/2022	Easterly Restroom Building	Janitor's Room	Shelf	Wood	D	Intact	-0.3	Negative
58	3/7/2022	Easterly Restroom Building	Janitor's Room	Door frame	Metal	C	Intact	0.1	Negative

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Reading #	Date	Building	Location	Component	Substrate	Side	Condition	Concentration	Result
59	3/7/2022	Easterly Restroom Building	Janitor's Room	Door frame	Metal	C	Intact	0.1	Negative
60	3/7/2022	Easterly Restroom Building	Janitor's Room	Conduit	Metal	Upper	Intact	0.2	Negative
61	3/7/2022	Easterly Restroom Building	Drivers' Restroom	Wall tile	Ceramic	A	Intact	-0.1	Negative
62	3/7/2022	Easterly Restroom Building	Drivers' Restroom	Wall tile	Ceramic	B	Intact	-0.3	Negative
63	3/7/2022	Easterly Restroom Building	Drivers' Restroom	Wall tile	Ceramic	C	Intact	0	Negative
64	3/7/2022	Easterly Restroom Building	Drivers' Restroom	Wall tile	Ceramic	D	Intact	0.2	Negative
65	3/7/2022	Easterly Restroom Building	Drivers' Restroom	Wall tile	Ceramic	A	Intact	-0.2	Negative
66	3/7/2022	Easterly Restroom Building	Drivers' Restroom	Wall tile	Ceramic	B	Intact	-0.3	Negative
67	3/7/2022	Easterly Restroom Building	Drivers' Restroom	Wall tile	Ceramic	C	Intact	0	Negative
68	3/7/2022	Easterly Restroom Building	Drivers' Restroom	Wall tile	Ceramic	D	Intact	0.3	Negative
69	3/7/2022	Easterly Restroom Building	Drivers' Restroom	Floor tile	Ceramic	Lower	Intact	0.3	Negative
70	3/7/2022	Easterly Restroom Building	Drivers' Restroom	Floor tile	Ceramic	Lower	Intact	0.2	Negative
71	3/7/2022	Easterly Restroom Building	Drivers' Restroom	Ceiling	Concrete	Upper	Intact	0.4	Negative
72	3/7/2022	Easterly Restroom Building	Drivers' Restroom	Ceiling	Concrete	Upper	Intact	0.3	Negative

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Reading #	Date	Building	Location	Component	Substrate	Side	Condition	Concentration	Result
73	3/7/2022	Easterly Restroom Building	Drivers' Restroom	Toilet	Porcelain	C	Intact	-0.1	Negative
74	3/7/2022	Easterly Restroom Building	Drivers' Restroom	Urinal	Porcelain	C	Intact	0.3	Negative
75	3/7/2022	Easterly Restroom Building	Drivers' Restroom	Sink	Porcelain	C	Intact	-0.6	Negative
76	3/7/2022	Easterly Restroom Building	Drivers' Restroom	Door frame	Metal	B	Intact	0.4	Negative
77	3/7/2022	Easterly Restroom Building	Drivers' Restroom	Door frame	Metal	B	Intact	0.3	Negative
78	3/7/2022	Easterly Restroom Building	Drivers' Restroom	Hand dryer	Metal	D	Intact	0.1	Negative
79	3/7/2022	Easterly Restroom Building	Drivers' Restroom	Vent	Plastic	C	Intact	0.3	Negative
80	3/7/2022	Westerly Restroom Building	Men's Restroom	Wall tile	Ceramic	A	Intact	-0.2	Negative
81	3/7/2022	Westerly Restroom Building	Men's Restroom	Wall tile	Ceramic	B	Intact	-0.1	Negative
82	3/7/2022	Westerly Restroom Building	Men's Restroom	Wall tile	Ceramic	C	Intact	-0.1	Negative
83	3/7/2022	Westerly Restroom Building	Men's Restroom	Wall tile	Ceramic	D	Intact	-0.2	Negative
84	3/7/2022	Westerly Restroom Building	Men's Restroom	Wall tile	Ceramic	A	Intact	-0.3	Negative
85	3/7/2022	Westerly Restroom Building	Men's Restroom	Wall tile	Ceramic	B	Intact	-0.1	Negative
86	3/7/2022	Westerly Restroom Building	Men's Restroom	Wall tile	Ceramic	C	Intact	-0.2	Negative

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Reading #	Date	Building	Location	Component	Substrate	Side	Condition	Concentration	Result
87	3/7/2022	Westerly Restroom Building	Men's Restroom	Wall tile	Ceramic	D	Intact	-0.2	Negative
88	3/7/2022	Westerly Restroom Building	Men's Restroom	Floor tile	Ceramic	Lower	Intact	0.1	Negative
89	3/7/2022	Westerly Restroom Building	Men's Restroom	Wall tile with graffiti	Ceramic	A	Intact	-0.1	Negative
90	3/7/2022	Westerly Restroom Building	Men's Restroom	Wall tile with graffiti	Ceramic	A	Intact	-0.3	Negative
91	3/7/2022	Westerly Restroom Building	Men's Restroom	Wall tile with graffiti	Ceramic	A	Intact	-0.4	Negative
92	3/7/2022	Westerly Restroom Building	Men's Restroom	Wall tile with graffiti	Ceramic	A	Intact	-0.1	Negative
93	3/7/2022	Westerly Restroom Building	Men's Restroom	Wall tile with graffiti	Ceramic	B	Intact	0.1	Negative
94	3/7/2022	Westerly Restroom Building	Men's Restroom	Wall tile with graffiti	Ceramic	B	Intact	0.1	Negative
95	3/7/2022	Westerly Restroom Building	Men's Restroom	Wall tile with graffiti	Ceramic	B	Intact	0	Negative
96	3/7/2022	Westerly Restroom Building	Men's Restroom	Wall tile with graffiti	Ceramic	B	Intact	-0.1	Negative
97	3/7/2022	Westerly Restroom Building	Men's Restroom	Wall tile with graffiti	Ceramic	B	Intact	-0.2	Negative
98	3/7/2022	Westerly Restroom Building	Men's Restroom	Wall tile with graffiti	Ceramic	C	Intact	-0.3	Negative
99	3/7/2022	Westerly Restroom Building	Men's Restroom	Wall tile with graffiti	Ceramic	C	Intact	0	Negative
100	3/7/2022	Westerly Restroom Building	Men's Restroom	Wall tile with graffiti	Ceramic	C	Intact	-0.2	Negative

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Reading #	Date	Building	Location	Component	Substrate	Side	Condition	Concentration	Result
101	3/7/2022	Westerly Restroom Building	Men's Restroom	Wall tile with graffiti	Ceramic	C	Intact	-0.2	Negative
102	3/7/2022	Westerly Restroom Building	Men's Restroom	Wall tile with graffiti	Ceramic	C	Intact	-0.4	Negative
103	3/7/2022	Westerly Restroom Building	Men's Restroom	Wall tile with graffiti	Ceramic	D	Intact	-0.3	Negative
104	3/7/2022	Westerly Restroom Building	Men's Restroom	Wall tile with graffiti	Ceramic	D	Intact	-0.2	Negative
105	3/7/2022	Westerly Restroom Building	Men's Restroom	Wall tile with graffiti	Ceramic	D	Intact	-0.3	Negative
106	3/7/2022	Westerly Restroom Building	Men's Restroom	Wall tile with graffiti	Ceramic	D	Intact	-0.4	Negative
107	3/7/2022	Westerly Restroom Building	Men's Restroom	Floor tile with graffiti	Ceramic	Lower	Intact	0.2	Negative
108	3/7/2022	Westerly Restroom Building	Men's Restroom	Floor tile with graffiti	Ceramic	Lower	Intact	0.1	Negative
109	3/7/2022	Westerly Restroom Building	Men's Restroom	Soffit tile with graffiti	Ceramic	Upper	Intact	-0.1	Negative
110	3/7/2022	Westerly Restroom Building	Men's Restroom	Soffit tile with graffiti	Ceramic	Upper	Intact	-0.2	Negative
111	3/7/2022	Westerly Restroom Building	Men's Restroom	Soffit tile	Ceramic	Upper	Intact	-0.1	Negative
112	3/7/2022	Westerly Restroom Building	Men's Restroom	Ceiling	Concrete	Upper	Intact	0.3	Negative
113	3/7/2022	Westerly Restroom Building	Men's Restroom	Ceiling	Concrete	Upper	Intact	0.2	Negative
114	3/7/2022	Westerly Restroom Building	Men's Restroom	Ceiling with graffiti	Concrete	Upper	Intact	0.3	Negative

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Reading #	Date	Building	Location	Component	Substrate	Side	Condition	Concentration	Result
115	3/7/2022	Westerly Restroom Building	Men's Restroom	Ceiling with graffiti	Concrete	Upper	Intact	0.1	Negative
116	3/7/2022	Westerly Restroom Building	Men's Restroom	Toilet with graffiti	Metal	A	Intact	-0.1	Negative
117	3/7/2022	Westerly Restroom Building	Men's Restroom	Toilet with graffiti	Metal	A	Intact	0	Negative
118	3/7/2022	Westerly Restroom Building	Men's Restroom	Sink with graffiti	Metal	D	Intact	-0.1	Negative
119	3/7/2022	Westerly Restroom Building	Men's Restroom	Door with graffiti	Metal	C	Intact	0	Negative
120	3/7/2022	Westerly Restroom Building	Men's Restroom	Door with graffiti	Metal	C	Intact	0	Negative
121	3/7/2022	Westerly Restroom Building	Men's Restroom	Door with graffiti	Metal	C	Intact	0	Negative
122	3/7/2022	Westerly Restroom Building	Men's Restroom	Door with graffiti	Metal	C	Intact	0	Negative
123	3/7/2022	Westerly Restroom Building	Men's Restroom	Door frame	Metal	C	Peeling	0.3	Negative
124	3/7/2022	Westerly Restroom Building	Men's Restroom	Door frame	Metal	C	Peeling	0	Negative
125	3/7/2022	Westerly Restroom Building	Men's Restroom	Door frame	Metal	C	Peeling	-0.1	Negative
126	3/7/2022	Westerly Restroom Building	Men's Restroom	Wall panel	Wood	D	Intact	-0.2	Negative
127	3/7/2022	Westerly Restroom Building	Men's Restroom	Wall panel	Wood	D	Intact	0	Negative
128	3/7/2022	Westerly Restroom Building	Women's Restroom	Wall tile	Ceramic	A	Intact	-0.1	Negative

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Reading #	Date	Building	Location	Component	Substrate	Side	Condition	Concentration	Result
129	3/7/2022	Westerly Restroom Building	Women's Restroom	Wall tile	Ceramic	B	Intact	-0.2	Negative
130	3/7/2022	Westerly Restroom Building	Women's Restroom	Wall tile	Ceramic	C	Intact	-0.2	Negative
131	3/7/2022	Westerly Restroom Building	Women's Restroom	Wall tile	Ceramic	D	Intact	-0.3	Negative
132	3/7/2022	Westerly Restroom Building	Women's Restroom	Wall tile	Ceramic	A	Intact	-0.5	Negative
133	3/7/2022	Westerly Restroom Building	Women's Restroom	Wall tile	Ceramic	B	Intact	-0.2	Negative
134	3/7/2022	Westerly Restroom Building	Women's Restroom	Wall tile	Ceramic	C	Intact	-0.2	Negative
135	3/7/2022	Westerly Restroom Building	Women's Restroom	Wall tile	Ceramic	D	Intact	-0.4	Negative
136	3/7/2022	Westerly Restroom Building	Women's Restroom	Floor tile	Ceramic	Lower	Intact	0	Negative
137	3/7/2022	Westerly Restroom Building	Women's Restroom	Floor tile	Ceramic	Lower	Intact	0.1	Negative
138	3/7/2022	Westerly Restroom Building	Women's Restroom	Ceiling	Concrete	Upper	Intact	0.3	Negative
139	3/7/2022	Westerly Restroom Building	Women's Restroom	Ceiling	Concrete	Upper	Intact	0.3	Negative
140	3/7/2022	Westerly Restroom Building	Women's Restroom	Ceiling with graffiti	Concrete	Upper	Intact	0.4	Negative
141	3/7/2022	Westerly Restroom Building	Women's Restroom	Ceiling with graffiti	Concrete	Upper	Intact	0.3	Negative
142	3/7/2022	Westerly Restroom Building	Women's Restroom	Vent	Metal	B	Intact	0.1	Negative

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Reading #	Date	Building	Location	Component	Substrate	Side	Condition	Concentration	Result
143	3/7/2022	Westerly Restroom Building	Women's Restroom	Vent with graffiti	Metal	B	Intact	0.3	Negative
144	3/7/2022	Westerly Restroom Building	Women's Restroom	Vent with graffiti	Metal	B	Intact	0.1	Negative
145	3/7/2022	Westerly Restroom Building	Women's Restroom	Door frame	Metal	C	Peeling	0.2	Negative
146	3/7/2022	Westerly Restroom Building	Women's Restroom	Door frame	Metal	C	Peeling	0.3	Negative
147	3/7/2022	Westerly Restroom Building	Women's Restroom	Door frame with graffiti	Metal	C	Peeling	0.3	Negative
148	3/7/2022	Westerly Restroom Building	Women's Restroom	Door frame with graffiti	Metal	C	Peeling	0.3	Negative
149	3/7/2022	Westerly Restroom Building	Women's Restroom	Wall tile with graffiti	Ceramic	A	Intact	-0.3	Negative
150	3/7/2022	Westerly Restroom Building	Women's Restroom	Wall tile with graffiti	Ceramic	B	Intact	-0.3	Negative
151	3/7/2022	Westerly Restroom Building	Women's Restroom	Wall tile with graffiti	Ceramic	C	Intact	-0.1	Negative
152	3/7/2022	Westerly Restroom Building	Women's Restroom	Wall tile with graffiti	Ceramic	D	Intact	0	Negative
153	3/7/2022	Westerly Restroom Building	Women's Restroom	Hand dryer	Metal	C	Intact	0.1	Negative
154	3/7/2022	Westerly Restroom Building	Women's Restroom	Light fixture with graffiti	Plastic	C	Intact	-0.1	Negative
155	3/7/2022	Westerly Restroom Building	Storage Room	Wall	Concrete	A	Intact	0.3	Negative
156	3/7/2022	Westerly Restroom Building	Storage Room	Wall	Concrete	B	Intact	0.3	Negative

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Reading #	Date	Building	Location	Component	Substrate	Side	Condition	Concentration	Result
157	3/7/2022	Westerly Restroom Building	Storage Room	Wall	Wallboard	C	Intact	0.1	Negative
158	3/7/2022	Westerly Restroom Building	Storage Room	Wall	Wallboard	C	Intact	-0.1	Negative
159	3/7/2022	Westerly Restroom Building	Storage Room	Wall	Concrete	D	Intact	0.4	Negative
160	3/7/2022	Westerly Restroom Building	Storage Room	Ceiling	Concrete	Upper	Intact	0.2	Negative
161	3/7/2022	Westerly Restroom Building	Storage Room	Ceiling	Concrete	Upper	Intact	0.2	Negative
162	3/7/2022	Westerly Restroom Building	Storage Room	Door frame	Metal	C	Intact	0.1	Negative
163	3/7/2022	Westerly Restroom Building	Storage Room	Door frame	Metal	C	Intact	0	Negative
164	3/7/2022	Westerly Restroom Building	Storage Room	Door frame	Metal	C	Intact	0.1	Negative
165	3/7/2022	Westerly Restroom Building	Storage Room	Door frame	Metal	C	Intact	0	Negative
166	3/7/2022	Westerly Restroom Building	Storage Room	Conduit	Metal	C	Intact	0	Negative
167	3/7/2022	Westerly Restroom Building	Storage Room	Floor	Ceramic tile	Lower	Intact	0.2	Negative
168	3/7/2022	Westerly Restroom Building	Storage Room	Floor	Ceramic tile	Lower	Intact	0.2	Negative
169	3/7/2022	Westerly Restroom Building	Storage Room	Shelf	Wood	D	Intact	-0.1	Negative
170	3/7/2022	Westerly Restroom Building	Storage Room	Shelf	Wood	D	Intact	-0.2	Negative

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Reading #	Date	Building	Location	Component	Substrate	Side	Condition	Concentration	Result
171	3/7/2022	Westerly Restroom Building	Storage Room	Conduit	Metal	B	Intact	0.3	Negative
172	3/7/2022	Westerly Restroom Building	Storage Room	Drain	Metal	Lower	Intact	31	Positive
173	3/7/2022	Westerly Restroom Building	Janitor's Room	Drain	Metal	Lower	Intact	29.9	Positive
174	3/7/2022			Calibrate			Intact	1	Positive
175	3/7/2022			Calibrate			Intact	0.9	Negative
176	3/7/2022			Calibrate			Intact	0.9	Negative
177	3/7/2022	Westerly Restroom Building	Janitor's Room	Floor tile	Ceramic	Lower	Intact	0.2	Negative
178	3/7/2022	Westerly Restroom Building	Janitor's Room	Floor tile	Ceramic	Lower	Intact	0.5	Negative
179	3/7/2022	Westerly Restroom Building	Janitor's Room	Wall	Concrete	A	Intact	0.5	Negative
180	3/7/2022	Westerly Restroom Building	Janitor's Room	Wall	Concrete	B	Intact	0.1	Negative
181	3/7/2022	Westerly Restroom Building	Janitor's Room	Wall	Wallboard	C	Intact	-0.1	Negative
182	3/7/2022	Westerly Restroom Building	Janitor's Room	Wall	Wallboard	C	Intact	0	Negative
183	3/7/2022	Westerly Restroom Building	Janitor's Room	Wall	Concrete	D	Intact	0.1	Negative
184	3/7/2022	Westerly Restroom Building	Janitor's Room	Ceiling	Concrete	Upper	Intact	-0.1	Negative
185	3/7/2022	Westerly Restroom Building	Janitor's Room	Ceiling	Concrete	Upper	Intact	0.4	Negative
186	3/7/2022	Westerly Restroom Building	Janitor's Room	Shelf	Wood	D	Intact	-0.2	Negative

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Reading #	Date	Building	Location	Component	Substrate	Side	Condition	Concentration	Result
187	3/7/2022	Westerly Restroom Building	Janitor's Room	Shelf	Wood	D	Intact	-0.2	Negative
188	3/7/2022	Westerly Restroom Building	Janitor's Room	Conduit	Metal	C	Intact	-0.2	Negative
189	3/7/2022	Westerly Restroom Building	Janitor's Room	Door frame	Metal	C	Intact	0.1	Negative
190	3/7/2022	Westerly Restroom Building	Janitor's Room	Door frame	Metal	C	Intact	0.1	Negative
191	3/7/2022	Westerly Restroom Building	Janitor's Room	Door frame	Metal	C	Intact	0.1	Negative
192	3/7/2022	Westerly Restroom Building	Janitor's Room	Door frame	Metal	C	Intact	0.1	Negative
193	3/7/2022	Westerly Restroom Building	Drivers' Restroom	Door frame	Metal	B	Intact	0.4	Negative
194	3/7/2022	Westerly Restroom Building	Drivers' Restroom	Door frame	Metal	B	Intact	0.3	Negative
195	3/7/2022	Westerly Restroom Building	Drivers' Restroom	Wall tile	Ceramic	A	Intact	-0.4	Negative
196	3/7/2022	Westerly Restroom Building	Drivers' Restroom	Wall tile	Ceramic	B	Intact	-0.3	Negative
197	3/7/2022	Westerly Restroom Building	Drivers' Restroom	Wall tile	Ceramic	C	Intact	0.1	Negative
198	3/7/2022	Westerly Restroom Building	Drivers' Restroom	Wall tile	Ceramic	D	Intact	0.1	Negative
199	3/7/2022	Westerly Restroom Building	Drivers' Restroom	Wall tile	Ceramic	A	Intact	-0.3	Negative
200	3/7/2022	Westerly Restroom Building	Drivers' Restroom	Wall tile	Ceramic	B	Intact	-0.3	Negative

AESCO
Fullerton Park and Ride Facilities

Reading #	Date	Building	Location	Component	Substrate	Side	Condition	Concentration	Result
201	3/7/2022	Westerly Restroom Building	Drivers' Restroom	Wall tile	Ceramic	C	Intact	-0.2	Negative
202	3/7/2022	Westerly Restroom Building	Drivers' Restroom	Wall tile	Ceramic	D	Intact	0	Negative
203	3/7/2022	Westerly Restroom Building	Drivers' Restroom	Floor tile	Ceramic	Lower	Intact	0.4	Negative
204	3/7/2022	Westerly Restroom Building	Drivers' Restroom	Floor tile	Ceramic	Lower	Intact	0.2	Negative
205	3/7/2022	Westerly Restroom Building	Drivers' Restroom	Toilet	Porcelain	C	Intact	0	Negative
206	3/7/2022	Westerly Restroom Building	Drivers' Restroom	Urinal	Porcelain	C	Intact	0.1	Negative
207	3/7/2022	Westerly Restroom Building	Drivers' Restroom	Sink	Porcelain	C	Intact	-0.8	Negative
208	3/7/2022	Westerly Restroom Building	Drivers' Restroom	Ceiling	Concrete	Upper	Intact	0.2	Negative
209	3/7/2022	Westerly Restroom Building	Drivers' Restroom	Ceiling	Concrete	Upper	Intact	0.2	Negative
210	3/7/2022	Westerly Restroom Building	Drivers' Restroom	Vent	Plastic	C	Intact	0.1	Negative
211	3/7/2022	Westerly Restroom Building	Drivers' Restroom	Vent	Metal	C	Intact	0	Negative
212	3/7/2022	Westerly Restroom Building	Drivers' Restroom	Hand dryer	Metal	D	Intact	0.2	Negative
213	3/7/2022			Calibrate				1	Positive
214	3/7/2022			Calibrate				1	Positive
215	3/7/2022			Calibrate				1	Positive

APPENDIX C – PHOTOS



Photo 1 – Easterly Restroom Building, Men's Restroom



Photo 2 – Easterly Restroom Building, Storage Room with floor drain



Photo 3 – Easterly Restroom Building, Drivers' Restroom



Photo 4 – Easterly Restroom Building, Drivers' Restroom



Photo 5 – Westerly Restroom Building, Men's Restroom



Photo 6 – Westerly Restroom Building, Storage Room with floor drain



Photo 7 – Westerly Restroom Building, Drivers' Restroom

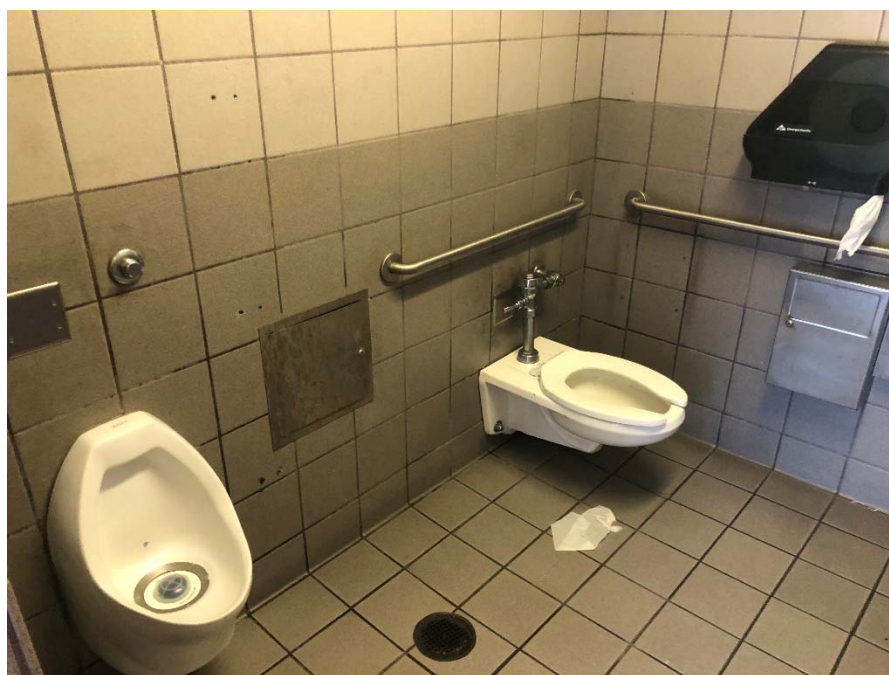


Photo 8 – Westerly Restroom Building, Drivers' Restroom

APPENDIX D – DEPARTMENT OF PUBLIC HEALTH FORM 8552

LEAD HAZARD EVALUATION REPORT**Section 1 — Date of Lead Hazard Evaluation** 03/07/2022**Section 2 — Type of Lead Hazard Evaluation (Check one box only)**☒ Lead Inspection ☐ Risk assessment ☐ Clearance Inspection ☐ Other (specify) _____**Section 3 — Structure Where Lead Hazard Evaluation Was Conducted**

Address [number, street, apartment (if applicable)] 3000 West Orangethorpe Avenue		City Fullerton	County Orange	Zip Code 92833
Construction date (year) of structure Unknown	Type of structure ☐ Multi-unit building ☐ School or daycare ☐ Single family dwelling ☒ Other Restroom Buildings		Children living in structure? ☐ Yes ☒ No ☐ Don't Know	

Section 4 — Owner of Structure (if business/agency, list contact person)

Name Orange County Transportation Authority (Emily Yu)		Telephone number 714-560-5801	
Address [number, street, apartment (if applicable)] 550 South Main Street	City Orange	State CA	Zip Code 92863

Section 5 — Results of Lead Hazard Evaluation (check all that apply)

☐ No lead-based paint detected ☒ Intact lead-based paint detected ☐ Deteriorated lead-based paint detected
☒ No lead hazards detected ☐ Lead-contaminated dust found ☐ Lead-contaminated soil found ☐ Other _____

Section 6 — Individual Conducting Lead Hazard Evaluation

Name Rhys Kuzmic		Telephone number 626-441-7050	
Address [number, street, apartment (if applicable)] 310 East Foothill Blvd. Suite 200	City Arcadia	State CA	Zip Code 91006
CDPH certification number 18093/LRC-00004395	Signature 		Date 03/07/2022

Name and CDPH certification number of any other individuals conducting sampling or testing (if applicable)

Section 7 — Attachments

- A. A foundation diagram or sketch of the structure indicating the specific locations of each lead hazard or presence of lead-based paint;
B. Each testing method, device, and sampling procedure used;
C. All data collected, including quality control data, laboratory results, including laboratory name, address, and phone number.

First copy and attachments retained by inspector

Second copy and attachments retained by owner

Third copy only (no attachments) mailed or faxed to:

California Department of Public Health
Childhood Lead Poisoning Prevention Branch Reports
850 Marina Bay Parkway, Building P, Third Floor
Richmond, CA 94804-6403
Fax: (510) 620-5656

APPENDIX E – XRF PERFORMANCE CHARACTERISTICS SHEET

HEURESIS PCS December 2015

Performance Characteristic Sheet

EFFECTIVE DATE: December 1, 2015

MANUFACTURER AND MODEL:

Make: *Heuresis*
Models: *Model Pb200i*
Source: *⁵⁷Co, 5 mCi (nominal – new source)*

FIELD OPERATION GUIDANCE

OPERATING PARAMETERS:

Action Level mode

XRF CALIBRATION CHECK LIMITS:

0.8 to 1.2 mg/cm ² (inclusive)

SUBSTRATE CORRECTION:

Not applicable

INCONCLUSIVE RANGE OR THRESHOLD:

ACTION LEVEL MODE READING DESCRIPTION	SUBSTRATE	THRESHOLD (mg/cm ²)
Results not corrected for substrate bias on any substrate	Brick	1.0
	Concrete	1.0
	Drywall	1.0
	Metal	1.0
	Plaster	1.0
	Wood	1.0

BACKGROUND INFORMATION

EVALUATION DATA SOURCE AND DATE:

This sheet is supplemental information to be used in conjunction with Chapter 7 of the HUD *Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing* ("HUD Guidelines"). Performance parameters shown on this sheet are calculated using test results on building components in the HUD archive. Testing was conducted on 146 test samples in November 2015, with two separate instruments running software version 2.1-2 in Action Level test mode. The actual source strength of each instrument on the day of testing was approximately 2.0 mCi; source ages were approximately one year.

OPERATING PARAMETERS

Performance parameters shown in this sheet are applicable only when properly operating the instrument using the manufacturer's instructions and procedures described in Chapter 7 of the HUD Guidelines.

XRF CALIBRATION CHECK:

The calibration of the XRF instrument should be checked using the paint film nearest 1.0 mg/cm² in the NIST Standard Reference Material (SRM) used (e.g., for NIST SRM 2579, use the 1.02 mg/cm² film).

If the average (rounded to 1 decimal place) of three readings is outside the acceptable calibration check range, follow the manufacturer's instructions to bring the instrument into control before XRF testing proceeds.

SUBSTRATE CORRECTION VALUE COMPUTATION:

Chapter 7 of the HUD Guidelines provides guidance on correcting XRF results for substrate bias. Supplemental guidance for using the paint film nearest 1.0 mg/cm² for substrate correction is provided:

XRF results are corrected for substrate bias by subtracting from each XRF result a correction value determined separately in each house for single-family housing or in each development for multifamily housing, for each substrate. The correction value is an average of XRF readings taken over the NIST SRM paint film nearest to 1.0 mg/cm² at test locations that have been scraped bare of their paint covering. Compute the correction values as follows:

Using the same XRF instrument, take three readings on a bare substrate area covered with the NIST SRM paint film nearest 1 mg/cm². Repeat this procedure by taking three more readings on a second bare substrate area of the same substrate covered with the NIST SRM.

Compute the correction value for each substrate type where XRF readings indicate substrate correction is needed by computing the average of all six readings as shown below.

For each substrate type (the 1.02 mg/cm² NIST SRM is shown in this example; use the actual lead loading of the NIST SRM used for substrate correction):

$$\text{Correction value} = (1\text{st} + 2\text{nd} + 3\text{rd} + 4\text{th} + 5\text{th} + 6\text{th Reading})/6 - 1.02 \text{ mg/cm}^2$$

Repeat this procedure for each substrate requiring substrate correction in the house or housing development.

EVALUATING THE QUALITY OF XRF TESTING:

Randomly select ten testing combinations for retesting from each house or from two randomly selected units in multifamily housing.

Conduct XRF re-testing at the ten testing combinations selected for retesting.

Determine if the XRF testing in the units or house passed or failed the test by applying the steps below. Compute the Retest Tolerance Limit by the following steps:

Determine XRF results for the original and retest XRF readings. Do not correct the original or retest results for substrate bias. In single-family and multi-family housing, a result is defined as a single reading. Therefore, there will be ten original and ten retest XRF results for each house or for the two selected units.

Calculate the average of the original XRF result and the retest XRF result for each testing combination.

Square the average for each testing combination.

Add the ten squared averages together. Call this quantity C.

Multiply the number C by 0.0072. Call this quantity D.

Add the number 0.032 to D. Call this quantity E.

Take the square root of E. Call this quantity F.

Multiply F by 1.645. The result is the Retest Tolerance Limit.

Compute the average of all ten original XRF readings.

Compute the average of all ten re-test XRF readings.

Find the absolute difference of the two averages.

If the difference is less than the Retest Tolerance Limit, the inspection has passed the retest. If the difference of the overall averages equals or exceeds the Retest Tolerance Limit, this procedure should be repeated with ten new testing combinations. If the difference of the overall averages is equal to or greater than the Retest Tolerance Limit a second time, then the inspection should be considered deficient.

Use of this procedure is estimated to produce a spurious result approximately 1% of the time. That is, results of this procedure will call for further examination when no examination is warranted in approximately 1 out of 100 dwelling units tested.

TESTING TIMES:

In the Action Level paint test mode, the instrument takes the longest time to complete readings close to the Federal standard of 1.0 mg/cm². The table below shows the mean and standard deviation of actual reading times by reading level for paint samples during the November 2015 archive testing. The tested instruments reported readings to one decimal place. No significant differences in reading times by substrate were observed. These times apply only to instruments with the same source strength as those tested (2.0 mCi). Instruments with stronger sources will have shorter reading times and those with weaker sources, longer reading times, than those in the table.

Mean and Standard Deviation of Reading Times in Action Level Mode by Reading Level		
Reading (mg/cm ²)	Mean Reading Time (seconds)	Standard Deviation (seconds)
< 0.7	3.48	0.47
0.7	7.29	1.92
0.8	13.95	1.78
0.9 – 1.2	15.25	0.66
1.3 – 1.4	6.08	2.50
≥ 1.5	3.32	0.05

CLASSIFICATION OF RESULTS:

XRF results are classified as **positive** if they are **greater than or equal** to the stated threshold for the instrument (1.0 mg/cm^2), and *negative* if they are *less than* the threshold.

DOCUMENTATION:

A report titled *Methodology for XRF Performance Characteristic Sheets* (EPA 747-R-95-008) provides an explanation of the statistical methodology used to construct the data in the sheets, and provides empirical results from using the recommended inconclusive ranges or thresholds for specific XRF instruments. The report may be downloaded at <http://www2.epa.gov/lead/methodology-xrf-performance-characteristic-sheets-epa-747-r-95-008-september-1997>.

This XRF Performance Characteristic Sheet (PCS) was developed by QuanTech, Inc., under a contract with the XRF manufacturer.

SECTION VII: LIST OF DRAWINGS - EXHIBIT C

LIST OF DRAWINGS

By this reference, the following drawings are incorporated in this Invitation For Bids.

<u>Sheet Identification</u>	<u>Number of Sheets</u>
G-00, Cover Sheet	1
C-01, General Notes	1
G-02, Code Information, Abbreviations & Symbols	1
G-03, Accessibility Plan	1
G-04, Typical Accessibility Details	1
G-05, Typical Regulatory Signage	1
S-01-03, Typical Stud Framing Details	3
A-01, Site Plan	1
AD-02, Demo Floor Plan	1
A-02, Floor Plan	1
A-05, Door and Finish Schedule	1
A-06, Details	1
M-01, General Notes	1
M-02, Code Information, Abbreviations & Symbols	1
M-03, Site Plan	1
M-04, Floor Plan	1
M-05, Schedules & Details	1
MD-01, Demo Floor Plan	1
P-01, General Notes	1
P-02, Code Information, Abbreviations & Symbols	1
P-03, Site Plan	1
P-04, Floor Plan	1
P-05, Schedules & Details	1
PD-01, Demo Floor Plan	1
E-01, Electrical Symbols, Abbreviations, General and Demo Notes	1
E-02, Title 24 Compliance Forms	1
E-03, Title 24 Compliance Forms and Lighting Fixture Schedule	1
E-04, Electrical Plan and Electrical Room	1
ED-05, Electrical Restroom Demolition Plan	1
E-06, Electrical Restroom Plan, Single Line Diagram and Panel Schedule	1

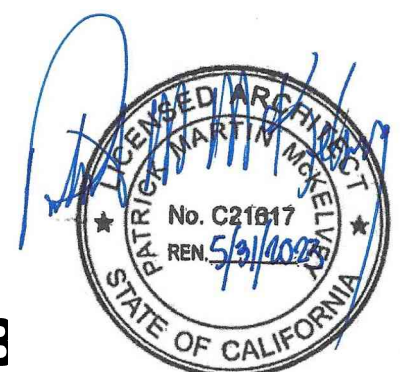


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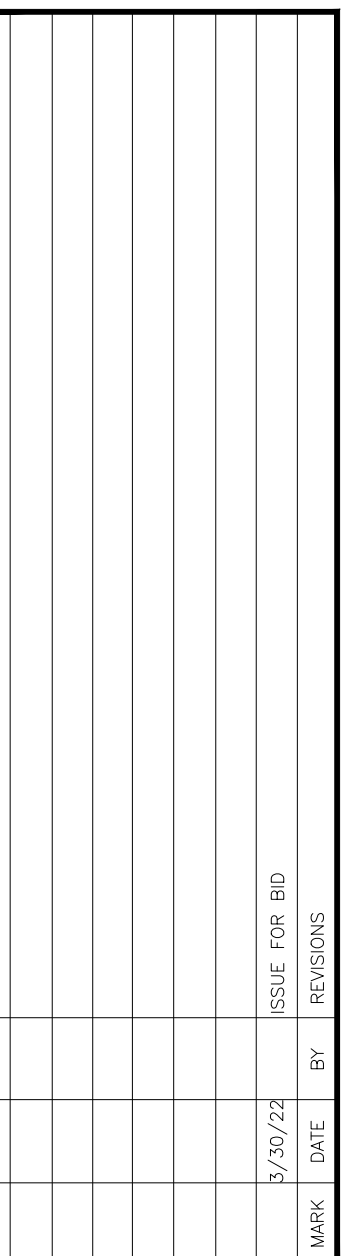


GENERAL	
G-00	COVER SHEET
G-01	GENERAL NOTES
G-02	CODE INFORMATION, ABBREVIATIONS, & SYMBOLS
G-03	TYPICAL ACCESSIBILITY PLAN
G-04	TYPICAL ACCESSIBILITY DETAILS
G-05	TYPICAL REGULATORY SIGNAGE
STRUCTURAL	
S-01	TYPICAL STUD FRAMING DETAILS
S-02	TYPICAL STUD FRAMING DETAILS
S-03	TYPICAL STUD FRAMING DETAILS
ARCHITECTURAL	
A-01	SITE PLAN
AD-02	DEMO FLOOR PLAN
A-02	FLOOR PLAN
A-05	DOOR AND FINISH SCHEDULE
A-06	DETAILS
MECHANICAL (UNDER SEPARATE PERMIT)	
M-01	GENERAL NOTES
M-02	CODE INFORMATION, ABBREVIATIONS & SYMBOLS
M-03	SITE PLAN
M-04	FLOOR PLAN
M-05	SCHEDULES & DETAILS
MD-01	DEMO FLOOR PLAN
PLUMBING (UNDER SEPARATE PERMIT)	
P-01	GENERAL NOTES
P-02	CODE INFORMATION, ABBREVIATIONS & SYMBOLS
P-03	SITE PLAN
P-04	FLOOR PLAN
P-05	SCHEDULES & DETAILS
PD-01	DEMO FLOOR PLAN
ELECTRICAL (UNDER SEPARATE PERMIT)	
E-01	ELECTRICAL SYMBOLS, ABBREVIATIONS, GENERAL AND DEMO NOTES
E-02	TITLE 24 COMPLIANCE FORMS
E-03	TITLE 24 COMPLIANCE FORMS AND LIGHTING FIXTURE SCHEDULE
E-04	SITE ELECTRICAL PLAN AND ELECTRICAL ROOM
ED-05	ELECTRICAL RESTROOM DEMOLITION PLAN
E-06	ELECTRICAL RESTROOM PLAN, SINGLE LINE DIAGRAM AND PANEL SCHEDULE

N.T.S.



ISSUE FOR B



COVER SHEET

SIGN BY	AG
AWN BY	AG
CHECKED BY	
DATE	03/30/2022
SCALE	
FEET	
G-00 OF	

000 W ORANGETHORPE AVE
MULLERTON, CALIFORNIA 92833



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DATE: Mar 30, 2022 11:20am XREFS: 013360W-FT001 OCTA-T01.ttbk_IFB X-KEY GEN NOTES USER: agoskel pe_ca_pke

GENERAL NOTES

GENERAL NOTES:

- 1) 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 PROPERTY, BUILDINGS, EQUIPMENT AND PEDESTRIANS.
- 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 POTHOLING 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) NOT USED
- 10) NOT USED
- 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. 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) NOT USED

- 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.
- 1) 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.
- 2) 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.
- 3) NO OMISSION OF THE WORK SHALL BE MADE WITHOUT WRITTEN APPROVAL OF OCTA.
- 4) 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.
- 5) ALL WORKMANSHIP SHALL BE PERFORMED BY SKILLED MECHANICS USING THE BEST STANDARD PRACTICES OF THE TRADE AND CONSTRUCTION INDUSTRY.
- 6) 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.
- 7) 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.
- 8) 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.
- 9) 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.
- 10) 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.
- 11) 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.
- 12) 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 OR THE PUBLIC WAY UNLESS COORDINATED WITH OCTA AND THE AUTHORITIES HAVING JURISDICTION.
- 13) NOT USED
- 14) DO NOT LOAD OR STORE NEW EQUIPMENT (TO BE INSTALLED) AT ONE SPOT OR LOCATION ON THE ROOF.
- 15) WHEN WORKING ON ROOF DURING CONSTRUCTION, CONTRACTOR IS REQUIRED TO CORDON OFF (WITH TRAFFIC DELINEATORS AND YELLOW WARNING TAPE) WORKING AREA BELOW SO THAT WORKERS ARE AWARE OF CONSTRUCTION WORK OVERHEAD ON ROOF. PREVENT TOOLS, EQUIPMENT AND DEBRIS FROM FALLING BELOW.
- 16) THIS TASK SHALL BE COORDINATED WITH THE PROJECT MANAGER AND FACILITY MANAGER.
1. A JOB HAZARD ANALYSIS SHALL BE DEVELOPED FOR THE TASK THAT IDENTIFIES DAILY SAFETY TAILGATE BRIEFINGS, BARRICADES, VEHICLE AND EQUIPMENT STAGING (DIAGRAM), COMMUNICATIONS, CRANE ACTIVITY, REMOVING OLD EQUIPMENT, INSTALLING NEW EQUIPMENT, FALL PROTECTION, 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 TASK ACTIVITY FOR OCTA REVIEW.

3. 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 CIPP, NO LATER THAN TEN WORKING DAYS PRIOR TO A CRANE OPERATOR WORKING ON SITE.
2. PICK AND CARRY WITH RUBBER TIRED CRANES IS FORBIDDEN ON OCTA PROJECTS.
3. 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.
4. THE PLAN SHALL INCLUDE:
 - 4.1. THE VERIFIED LOAD WEIGHT AND THE RIGGING WEIGHTS
 - 4.2. BOTTOM ANGLE AND REACH IN FEET FOR THIS LOAD PLACEMENT
 - 4.3. COPY OF THE LOAD CHART APPLICABLE TO THE ANGLE, REACH AND LOAD
 - 4.4. THE PERCENTAGE OF CRANE RATED CAPACITY FOR THIS LOAD PLACEMENT
 - 4.5. A PLOT PLAN OR GOOGLE MAP DIAGRAM OF THE CRANE SET-UP LOCATION AND THE LOAD PLACEMENT LOCATIONS
 - 4.6. IDENTIFY THE COMMUNICATION METHOD (RADIO, HAND SIGNAL, ETC.)
 - 4.7. DELIVERY TRUCK/TRAILER LOCATION
5. CRITICAL LIFTS REQUIRE AN ENGINEERED PLAN DESIGNED BY A REGISTERED PROFESSIONAL ENGINEER LICENSED IN CALIFORNIA. A CRITICAL LIFT INCLUDES, BUT IS NOT LIMITED TO:
 - 5.1. 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,
 - 5.2. LIFTS EQUAL TO OR GREATER THAN 10 TONS,
 - 5.3. LIFTS EQUAL TO OR GREATER THAN 75% OF RATED CAPACITY,
 - 5.4. LIFTS OVER OCCUPIED BUILDINGS, RAILWAYS OR PUBLIC ROADWAYS,
 - 5.5. THE USE OF MULTIPLE CRANES FOR ONE LIFT, AND/OR
 - 5.6. LIFT AND TRANSIT OF LOAD GREATER THAN 75% OF RATED CAPACITY OF TRACK CRAWLER CRANE.
- 37) DURING CONSTRUCTION REMOVE EQUIPMENT, DISCONNECT AND/OR REMOVE UTILITIES 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 OF EVIDENCE OF SUCH A VISIT.
- 43) NOT USED
- 44) NOT USED
- 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 SCHEDULED A WEEK IN ADVANCE WITH THE PROJECT MANAGER. PROVIDE TEMPORARY SERVICE DURING DEACTIVATION PERIOD IF REQUIRED. MINIMIZE DEACTIVATION DOWN TIME.
- 46) NOT USED
- 47) THE GENERAL CONTRACTOR SHALL TAKE ALL PREVENTIVE MEASURES DURING CONSTRUCTION TO PREVENT DAMAGE TO OCTA PROPERTY AND STAFF IN AND AROUND THE FACILITY. THE FACILITY WILL BE CLOSED ENTIRELY 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 FACILITY.



801 FIGUEROA STREET
SUITE 300
LOS ANGELES, CA 90017
t: 213-955-9775
STANTEC PROJ #: 201422

[illegible]

FULLERTON PARK & RIDE RESTROOM IMPROVEMENTS

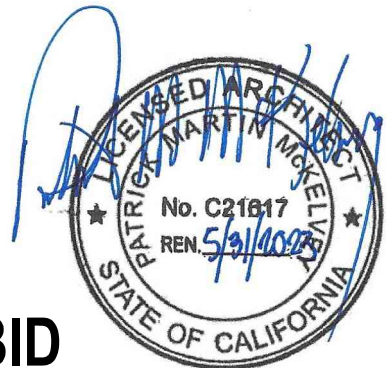
GENERAL NOTES

JOB #	
DESIGN BY	AG
DRAWN BY	AG
CHECKED BY	
DATE	03/30/2022
SCALE	
SHEET	001

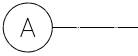
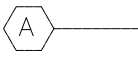
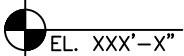
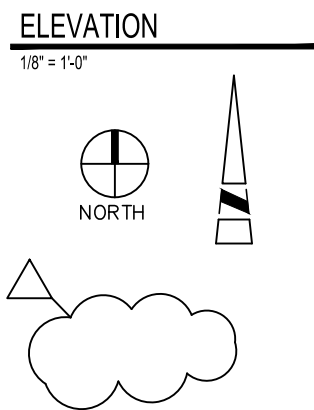
3000 W ORANGETHORPE AVE
FULLERTON, CALIFORNIA 92833



ISSUE FOR BID



GRAPHIC SYMBOLS

SYM	DESCRIPTION
	COLUMN GRID LINE
	COLUMN GRID LINE EXISTING
	SECTION REFERENCE SECTION NUMBER DRAWING ON WHICH SECTION IS SHOWN
	ELEVATION REFERENCE ELEVATION NUMBER DRAWING ON WHICH ELEV. IS SHOWN
	CENTER LINE
	MATCH LINE
	DETAIL REFERENCE DETAIL NUMBER DRAWING ON WHICH DETAIL IS SHOWN
	VERTICAL ELEVATION MARK
	DRAWING TITLE/ REFERENCE
	NORTH ARROW
	REVISION MARK
	KEY NOTE
A-01	SHEET NUMBER

ABBREVIATIONS

ACT	ACOUSTICAL TILE	MECH	MECHANICAL
ACU	AIR CHILLER UNIT	MED	MEDIUM
ADJ	ADJUSTABLE	MFR	MANUFACTURE(R)
AFF	ABOVE FINISHED FLOOR	MIN	MINIMUM
AHU	AIR HANDLING UNIT	MISC	MISCELLANEOUS
AL	ALUMINUM	MO	MASONRY OPENING
ANOD	ANODIZED	MTL	MATERIAL(S)
BD	BOARD	N	NORTH
BLKG	BLOCKING	NAT	NATURAL
BRG	BEARING	NIC	NOT IN CONTRACT
BSMT	BASEMENT	NTS	NOT TO SCALE
CER	CERAMIC	OA	OVERALL
CG	CORNER GUARD	OC	ON CENTER(S)
CIP	CAST-IN-PLACE	OH	OVERHEAD
CLG	CEILING	OPENG	OPENING
CLR	CLEARANCE	OF/CI	OWNER FURNISH / CONTRACTOR INSTALLED
CMU	CONCRETE MASONRY UNIT	OF/OI	OWNER FURNISH / OWNER INSTALLED
COL	COLUMN	PBD	PARTICLE BOARD
CONC	CONCRETE	PC	PRECAST
COND	CONDITION	PCF	POUNDS PER CUBIC FOOT
CONT	CONTINUOUS, CONTINUE	PL	PLATE
CPT	CARPET(ED)	P. LAM	PLASTIC LAMINATE
CT	CERAMIC TILE	PNT	PAINT
DEMO	DEMOLISH	PR	PAIR
DIM	DIMENSION	PSF	POUNDS PER SQUARE FEET
DN	DOWN	PSI	POUNDS PER SQUARE INCH
DR	DOOR	PT	POINT
DS	DOWNSPOUT	PVC	POLYVINYL CHLORIDE
DTL	DETAIL	PVMT	PAVEMENT
DWG	DRAWING	PWR	POWER
E	EAST	QT	QUARRY TILE
EA	EACH	RA	RETURN AIR
EL	ELEVATION	RAD	RADIUS
ELEC	ELECTRIC(AL)	RBC	RUBBER BASE COVE
ELEV	ELEVATOR/ ELEVATION	RCP	REINFORCED CONCRETE PIPE
EPNT	EPOXY PAINT	RD	ROOF DRAIN
EQ	EQUAL	RE	REFER TO, REFERENCE
EQP	EQUIPMENT	REFR	REFRIGERATOR
EWG	ELECTRIC WATER COOLER	REQ'D	REQUIRED
EXG	EXISTING	RET	RETURN
EXT	EXTERIOR	RFL	REFLECT(ED)(IVE)(OR)
FD	FLOOR DRAIN	RH	RIGHT HAND
FEC	FIRE EXTINGUISHER CABINET	RM	ROOM
FFE	FINISHED FLOOR ELEVATION	RO	ROUGH OPENING
FIN	FINISHED	ROW	RIGHT OF WAY
FLR	FLOORING	S	SOUTH/ SANITARY
FND	FOUNDATION	SC	SOLID CORE
FOIC	FURNISHED BY OWNER, INSTALLED BY CONTRACTOR	SCONC	SEALED CONCRETE
FT	FIRE RETARDANT TREATED	SHT	SHEET
FTG	FOOTING	SIM	SIMILAR
FUT	FUTURE	SST	STAINLESS STEEL
GA	GAGE, GAUGE	STL	STEEL
GC	GENERAL CONTRACT(OR)	STD	STANDARD
GL	GLASS, GLAZING	STR	STRUCTURAL
GB/GWB	GYPSUM WALLBOARD	SV	SHEET VINYL FLOOR FINISH
HDW	HARDWARE	TEL	TELEPHONE
HM	HOLLOW METAL	T&G	TONGUE AND GROOVE
HT	HEIGHT	TCC	TOP OF CONCRETE/ CURB
HVAC	HEATING-VENTILATING - AIR CONDITIONING	TOS	TOP OF STEEL
HWH	HOT WATER HEATER	TOW	TOP OF WALL
INCL	INCLUDE(D)(ING)	TSL	TOP OF SLAB
INT	INTERIOR	TYP	TYPICAL
JAN	JANTITOR	UNF	UNFINISHED
J-BOX	JUNCTION BOX	UNO	UNLESS NOTED OTHERWISE
LAB	LABORATORY	VCT	VINYL COMPOSITION TILE
LAM	LAMINATE	VERT	VERTICAL
LAV	LAVATORY	VT	VINYL TILE
LT	LIGHT	W	WEST/ WIDTH/ WIDE/ WATER
LTG	LIGHTING	W/	WITH
		WC	WATER CLOSET
		WD	WOOD
		W/O	WITHOUT
		WWF	WELDED WIRE FABRIC
		YD	YARD

GENERAL INFORMATION

CODES IN EFFECT
CALIFORNIA BUILDING CODE, 2019 EDITION
CALIFORNIA PLUMBING CODE, 2019 EDITION
CALIFORNIA MECHANICAL CODE, 2019 EDITION
CALIFORNIA ENERGY CONSERVATION CODE, 2019 EDITION
CALIFORNIA FIRE CODE, 2019 EDITION
ICC/ANSI A117.1-2003 AMERICAN NATIONAL STANDARD
CALIFORNIA ELECTRICAL CODE, 2019 EDITION

ORANGE COUNTY CODES AND AMENDMENTS, CURRENT EDITIONS

CITY OF FULLERTON MUNICIPAL CODES AND AMENDMENTS, CURRENT EDITIONS

AUTHORITY HAVING JURISDICTION:

CITY OF FULLERTON, CALIFORNIA, DEPARTMENT OF PUBLIC WORKS, BUILDING AND SAFETY

EXISTING FACILITY DESCRIPTION:

FACILITIES USAGE IS UNCHANGED. FACILITY INCLUDES TWO TOILET ROOM AREAS EACH WITH PRIVATE TOILET ROOM FOR BUS DRIVERS, PUBLIC TOILET ROOMS AND ACCESSORY EQUIPMENT, JANITOR AND STORAGE ROOMS.

BUILDING CONSTRUCTION TYPE:

EXISTING TOILET ROOM SPACES ARE CONSTRUCTED OF CONCRETE WITH STEEL REINFORCING. IMPROVEMENTS TO THE INTERIORS ARE NON-COMBUSTIBLE CONSTRUCTION.

WEST BUILDING: 936 SF
EAST BUILDING : 936 SF
1,872 SF

PROJECT VALUATION: \$513,850.00

**FULLERTON PARK & RIDE
RESTROOM IMPROVEMENTS**

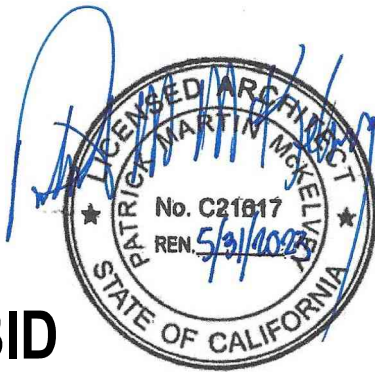
**CODE INFORMATION, ABBREVIATIONS
& SYMBOLS**

JOB #	
DESIGN BY	AG
DRAWN BY	AG
CHECKED BY	
DATE	03/30/2022
SCALE	
SHEET	G-02 OF

3000 W ORANGETHORPE AVE
FULLERTON, CALIFORNIA 92833



ISSUE FOR BID



GENERAL NOTES

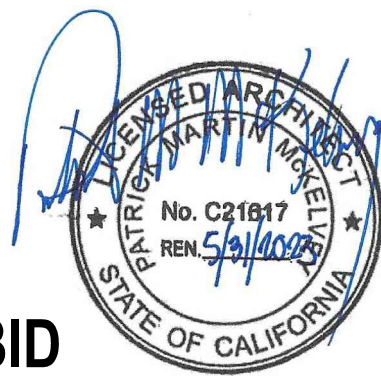
- A. DO NOT SCALE DRAWINGS.
- B. CONTRACTOR TO VERIFY IN FIELD ALL EXISTING CONDITIONS AND DIMENSIONS OF PROJECT.
- C. ITEMS INDICATED ON THIS DRAWING ARE NEW, U.N.O.
- D. REFER TO MATERIAL LEGEND ON A-05 FOR FINISH DESIGNATIONS.
- E. TOILET ROOM CEILINGS TO BE PAINTED.
- F. PATCH AND REPAIR CONCRETE DAMAGED OR REMOVED DURING DEMOLITION
- G. RENOVATION APPLIES TO BOTH EAST AND WEST RESTROOM AREAS
- H. REFER TO G-04 & G-05 FOR MOUNTING HEIGHTS
- I. PROVIDE AND INSTALL SIGNAGE AS REQUIRED PER CBC

LEGEND

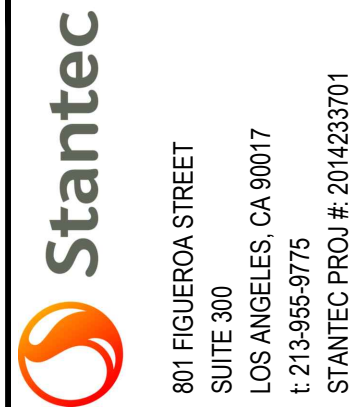
	CONCRETE PATCHING EXTENTS
	EXISTING
	NEW WORK
	OVERHEAD / ABOVE

ACCESSIBILITY NOTES

1. ALL PROJECT AREAS TO COMPLY WITH CBC CHAPTER 11B AS APPLICABLE.
2. CROSS-SLOPE ON ACCESSIBLE PATH OF TRAVEL TO BE 1:48 MAX PER CBC 11B-810.2.4.
3. ACCESSIBLE PATH OF TRAVEL IMPROVEMENTS ARE CURRENTLY PLANNED UNDER A SEPARATE OCTA PROJECT THAT WILL BE COMPLETE PRIOR TO THE COMPLETION OF THIS PROJECT.
(UNDER PERMIT BLDC-2020-0209)



ISSUE FOR BID

[illegible]

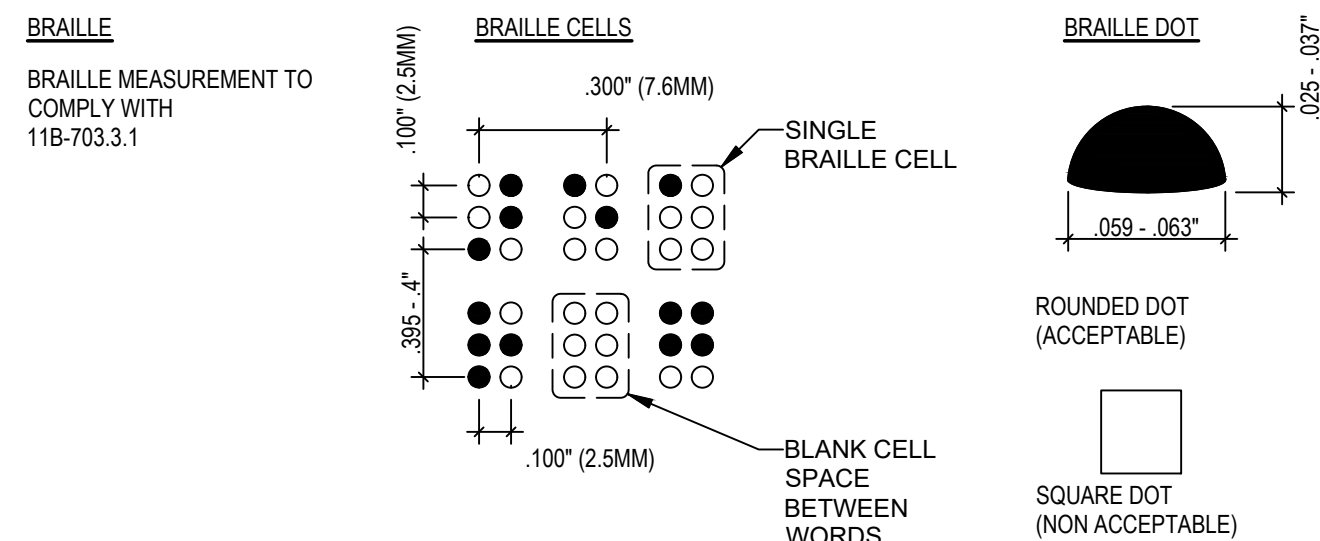
FULLERTON PARK & RIDE RESTROOM IMPROVEMENTS

JOB #	
DESIGN BY	AG
DRAWN BY	AG
CHECKED BY	
DATE	03/30/2022
SCALE	
SHEET	
G-03	
OF	

3000 W ORANGETHORPE AVE
FULLERTON, CALIFORNIA 92833



JOB #
DESIGN BY
DRAWN BY AG
CHECKED BY AG
DATE 03/30/2022
SCALE
SHEET
G-05
OF



TEXT

WIDTH TO HEIGHT RATIO
60% - 100%
3.5 - 1:1

STROKE TO HEIGHT RATIO
10% - 19%
1:10 - 1:5

The diagram illustrates the relationship between text width and stroke height on a 10x10 grid. It shows two examples of the letter 'O'. The first 'O' is formed by a single stroke that is 3.5 units wide and 1 unit high, with a width-to-height ratio of 3.5:1. The second 'O' is formed by a single stroke that is 1 unit wide and 1 unit high, with a width-to-height ratio of 1:1. Below these, two vertical bars are shown, representing the stroke-to-height ratio. The first bar is 1 unit wide and 10 units high, with a stroke-to-height ratio of 1:10. The second bar is 1 unit wide and 5 units high, with a stroke-to-height ratio of 1:5.

THE TRIANGLE SYMBOL SHALL CONTRAST WITH THE
CIRCLE SYMBOL, EITHER LIGHT ON A DARK
BACKGROUND OR DARK ON A LIGHT BACKGROUND.

THE CIRCLE SYMBOL SHALL CONTRAST WITH THE
DOOR, EITHER LIGHT ON A DARK BACKGROUND OR
DARK ON A LIGHT BACKGROUND.

PAINTED IMAGE CENTERED ON
SIGN, TYP.

WOMEN

MEN

UNISEX

WOMEN: 1/4" THICK
MATERIAL PER
SPECIFICATIONS.
12" DIA. CIRCLE.

MEN: 1/4" THICK MATERIAL
PER SPECIFICATIONS.
EQUAL TRIANGLE - 12" SIDES

UNISEX: 1/4" THICK
TRIANGLE
SUPERIMPOSED ON 1/4"
THICK CIRCLE.

SEE DETAIL 1/-

FF

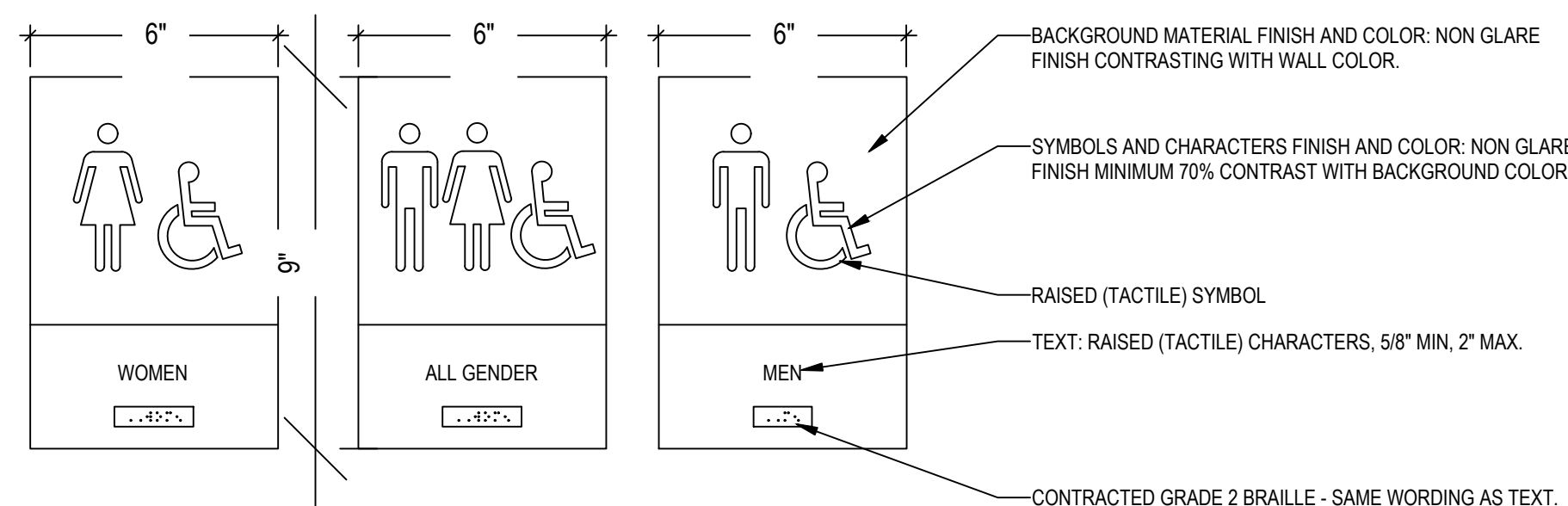
ELEVATION

Diagram illustrating the elevation of a door with a mounted identification sign and Braille cells. The diagram shows the door frame, the door itself, and the sign assembly.

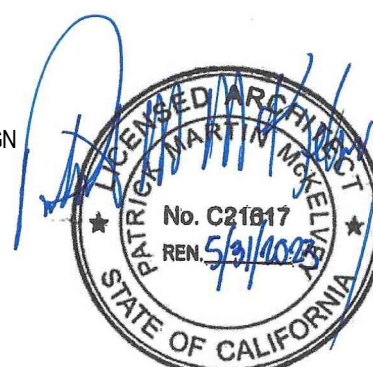
Key dimensions and labels:

- DOOR**: The main door structure.
- DOOR MOUNTED SIGNAGE SYMBOL COLOR SHALL CONTRAST WITH DOOR COLOR.**: Requirement for the sign symbol.
- EQ**: Equal spacing dimensions from the door edge to the sign.
- 12" MAX**: Maximum height of the sign assembly.
- 4" MIN**: Minimum height of the sign assembly.
- 48" MIN AFF**: Minimum clearance from the base of the door to the bottom of the sign.
- TO BASELINE OF LOWEST BRAILLE CELLS**: Reference line for the bottom of the Braille cells.
- 60" MAX AFF**: Maximum clearance from the base of the door to the top of the sign.
- TO BASELINE OF HIGHEST LINE OF RAISED CHARACTERS**: Reference line for the top of the raised characters.
- FINISHED FLOOR**: The floor level.
- BASELINE OF HIGHEST LINE OF RAISED CHARACTERS**: Reference line for the top of the raised characters.
- BASELINE OF LOWEST BRAILLE CELLS**: Reference line for the bottom of the Braille cells.
- IDENTIFICATION SIGN (TACTILE) ON WALL AT LATCH SIDE OF DOOR**: The sign assembly.

TOILET ROOM IDENTIFICATION SIGN (TACTILE) AND DOOR SYMBOLS

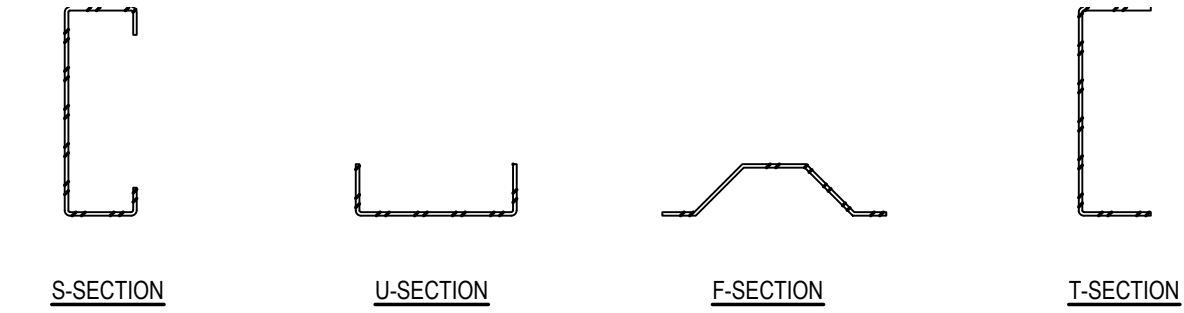


1/2" = 1'-0" **ISSUE FOR BID**



WALL STUD SCHEDULE		
MAX UNBRACED WALL HEIGHT	NOT SUPPORTING CEILING FRAMING	SUPPORTING CEILING FRAMING
8' - 0"	362S125-27 @ 16" OC	362S125-27 @ 16" OC
10' - 0"	362S125-27 @ 16" OC	362S125-30 @ 16" OC
12' - 0"	362S125-30 @ 16" OC	362S162-33 @ 16" OC
14' - 0"	362S137-33 @ 16" OC	362S162-33 @ 16" OC
16' - 0"	400S162-33 @ 16" OC	400S200-33 @ 16" OC
18' - 0"	550S137-33 @ 16" OC	550S162-33 @ 16" OC
20' - 0"	550S162-33 @ 16" OC	550S200-33 @ 16" OC
22' - 0"	550S200-33 @ 16" OC	550S162-43 @ 16" OC
24' - 0"	600S162-43 @ 16" OC	600S162-43 @ 16" OC

CEILING JOIST SCHEDULE		
MAX SPAN	CEILING JOIST WITH ACCESS	CEILING JOIST NO ACCESS
10' - 0"	362S162-43 @ 16" OC	362S137-33 @ 16" OC
14' - 0"	600S200-43 @ 16" OC	600S137-33 @ 16" OC
18' - 0"	800S200-54 @ 16" OC	600S162-43 @ 16" OC

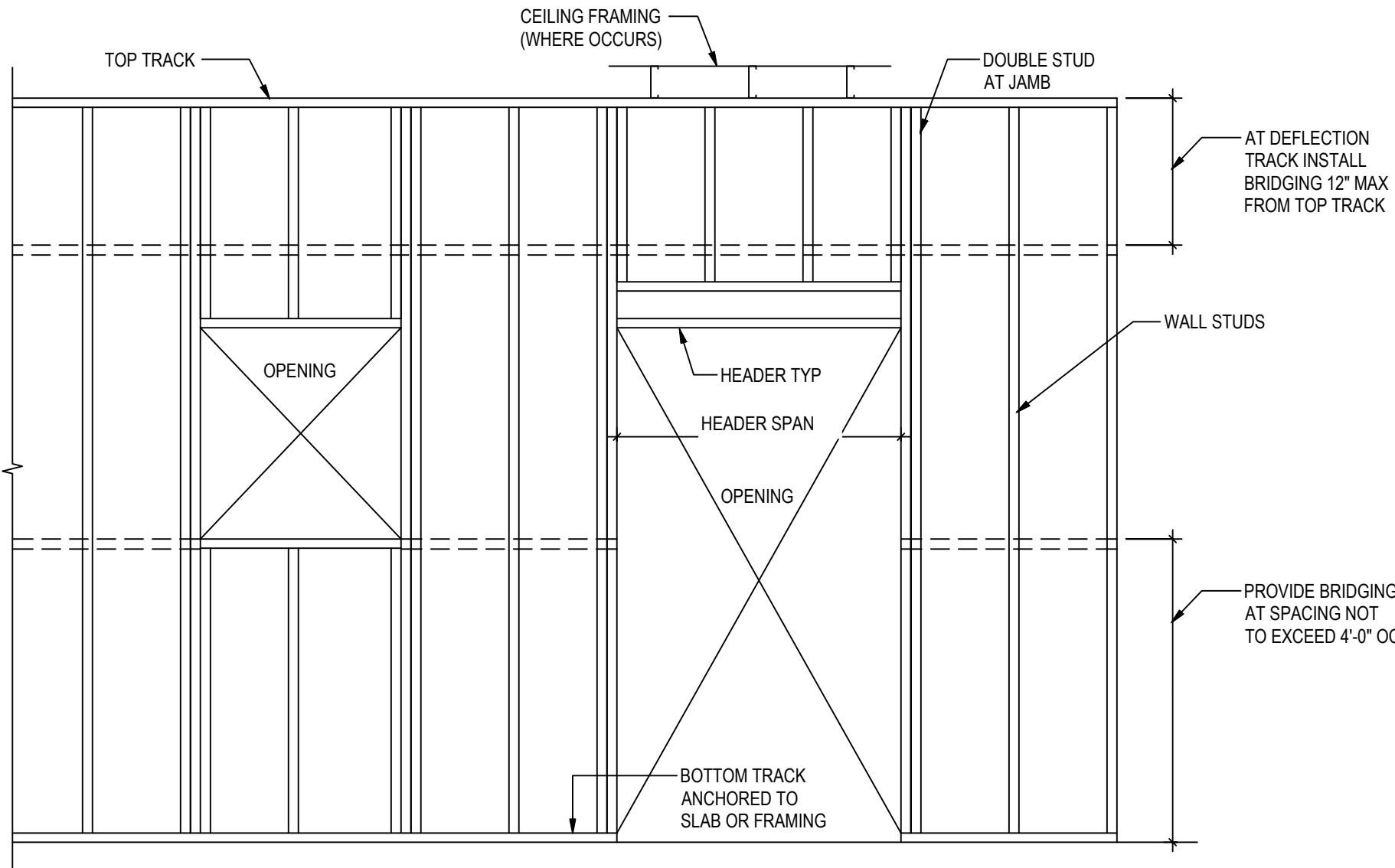


S = STUD OR JOIST SECTION
U = CHANNEL SECTION
F = FURRING CHANNEL SECTION
T = TRACK SECTION

NOMENCLATURE EXAMPLE: 400S162-43
400: 4" SECTION DEPTH
S: STUD SECTION
162: 1.625" FLANGE WIDTH
43: 0.043" SECTION THICKNESS

REFERENCE: STEEL STUD MANUFACTURERS ASSOCIATION (SSMA)

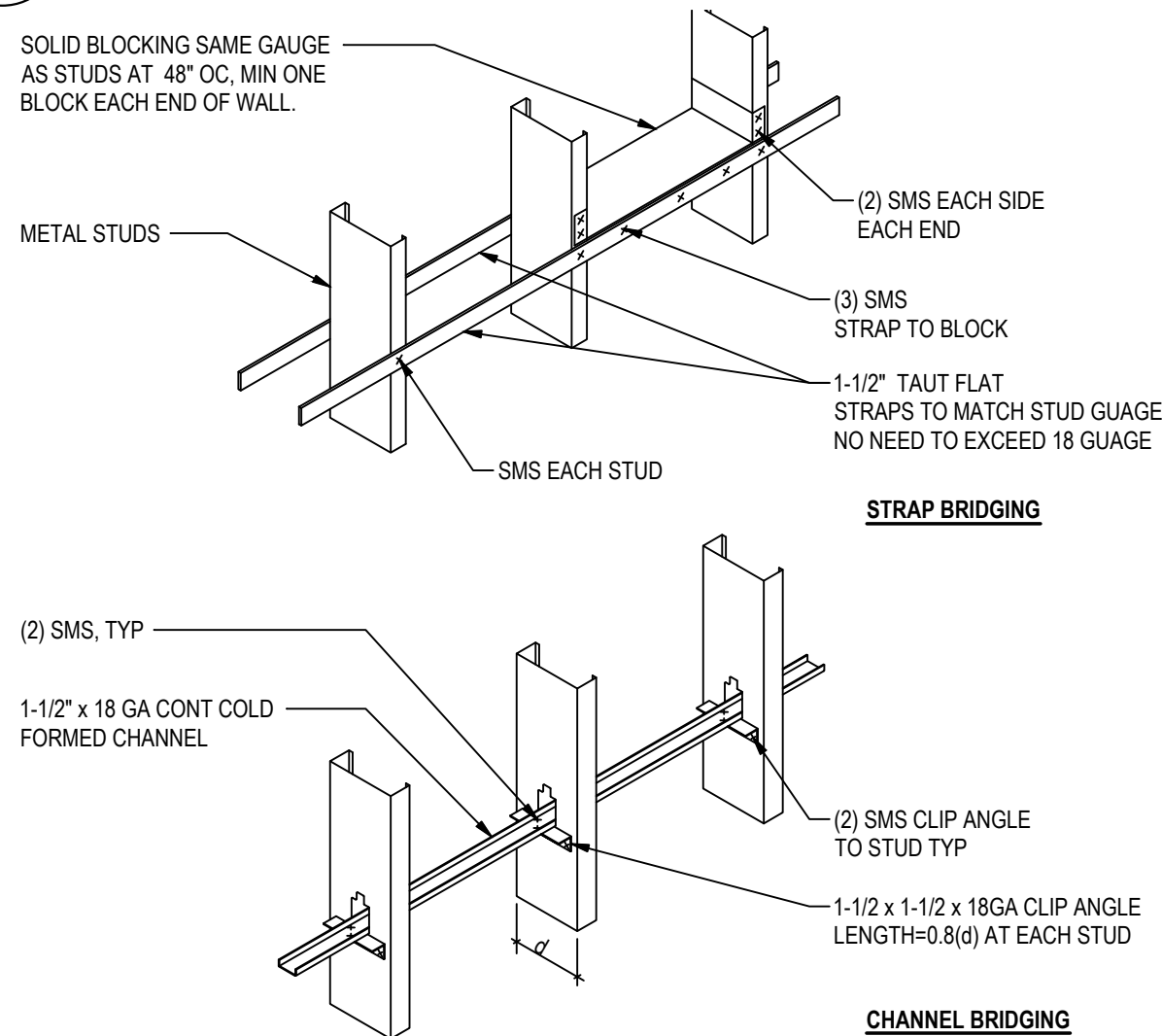
PROVIDE MINIMUM SECTION PROPERTIES AS DEFINED BY SSMA.



COLD-FORMED FRAMING NOTES:

- COLD FORMED STEEL SHALL COMPLY WITH "STEEL STUD MANUFACTURERS ASSOCIATION" (SSMA), ICC-ESR-3064P
- FOR STUD SIZE, SPACING AND GUAGE SEE PLAN AND SCHEDULE
- FOR HEADER SIZE AND GUAGE SEE PLAN AND SCHEDULE
- FOR CEILING JOIST SIZE, SPACING AND GUAGE SEE PLAN AND SCHEDULE
- ON ALL FRAMING MEMBERS SHALL HAVE THE SAME DEPTH AND GUAGE OF THE STUDS AND CEILING JOISTS, TRACKS SHALL HAVE A 1 1/2" MIN FLANGE
- PROVIDE BRIDGING OF CEILING JOISTS AT 8FT OC MAX WHERE ACCESSIBLE AND AT MIDSPAN FOR OTHER CONDITIONS WHERE SPAN IS GREATER THAN 8FT.
- FASTENERS CONNECTING COLD FORMED MEMBERS TO COLD FORMED MEMBERS SHALL BE SELF DRILLING AND SELF TAPPING SHEET METAL SCREWS (SMS) CONFORMING TO ASTM C1513
- SCREWS SHALL HAVE A 1/2" MIN EDGE DISTANCE
- PROVIDE SCREWS ACCORDING TO THE THICKNESS OF CONNECTING MEMBERS AS FOLLOWS:
A. #8 UP TO 18 GUAGE
B. #10 UP TO 16 GUAGE
C. #12 EXCEEDING 16 GUAGE

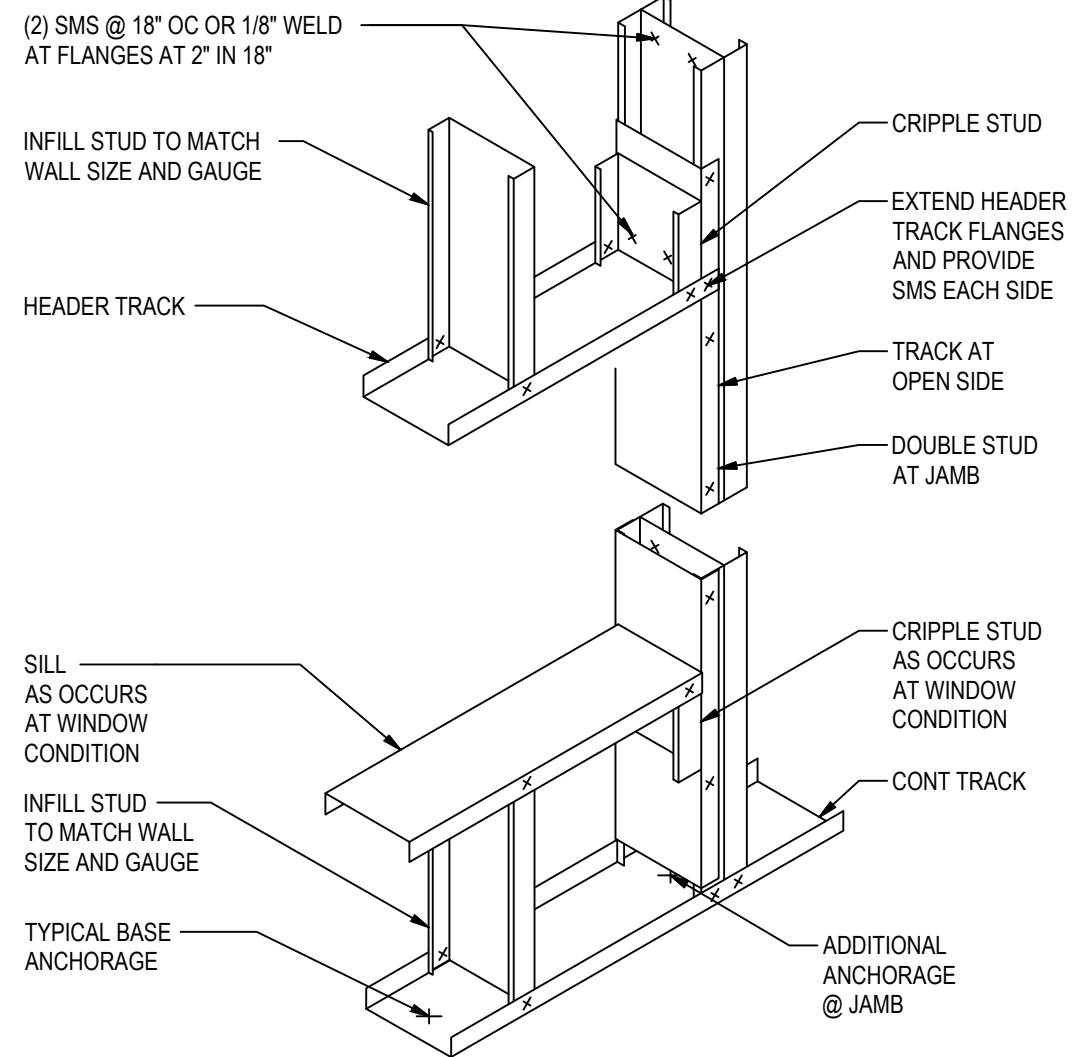
5 COLD FORMED FRAMING SCHEDULES
S-01 1" = 1'-0"



NOTE:
1. STRAPS MAY BE OMITTED ON SIDE OF WALL WITH SHEATHING OR 5/8" MIN GYPSUM BOARD.
2. BRIDGING MAY BE OMITTED WHEN BOTH SIDES OF WALL ARE PROVIDED WITH SHEATHING OR 5/8" MIN GYPSUM BOARD.

6 METAL STUD BRIDGING
S-01 NTS

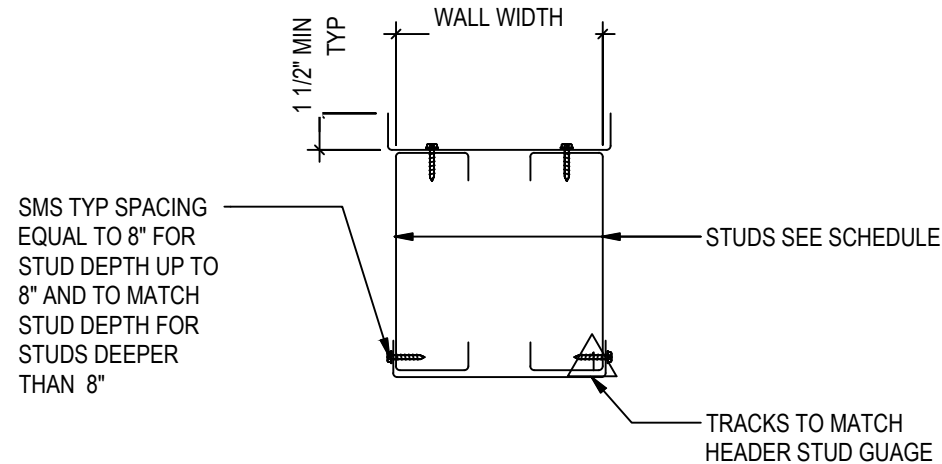
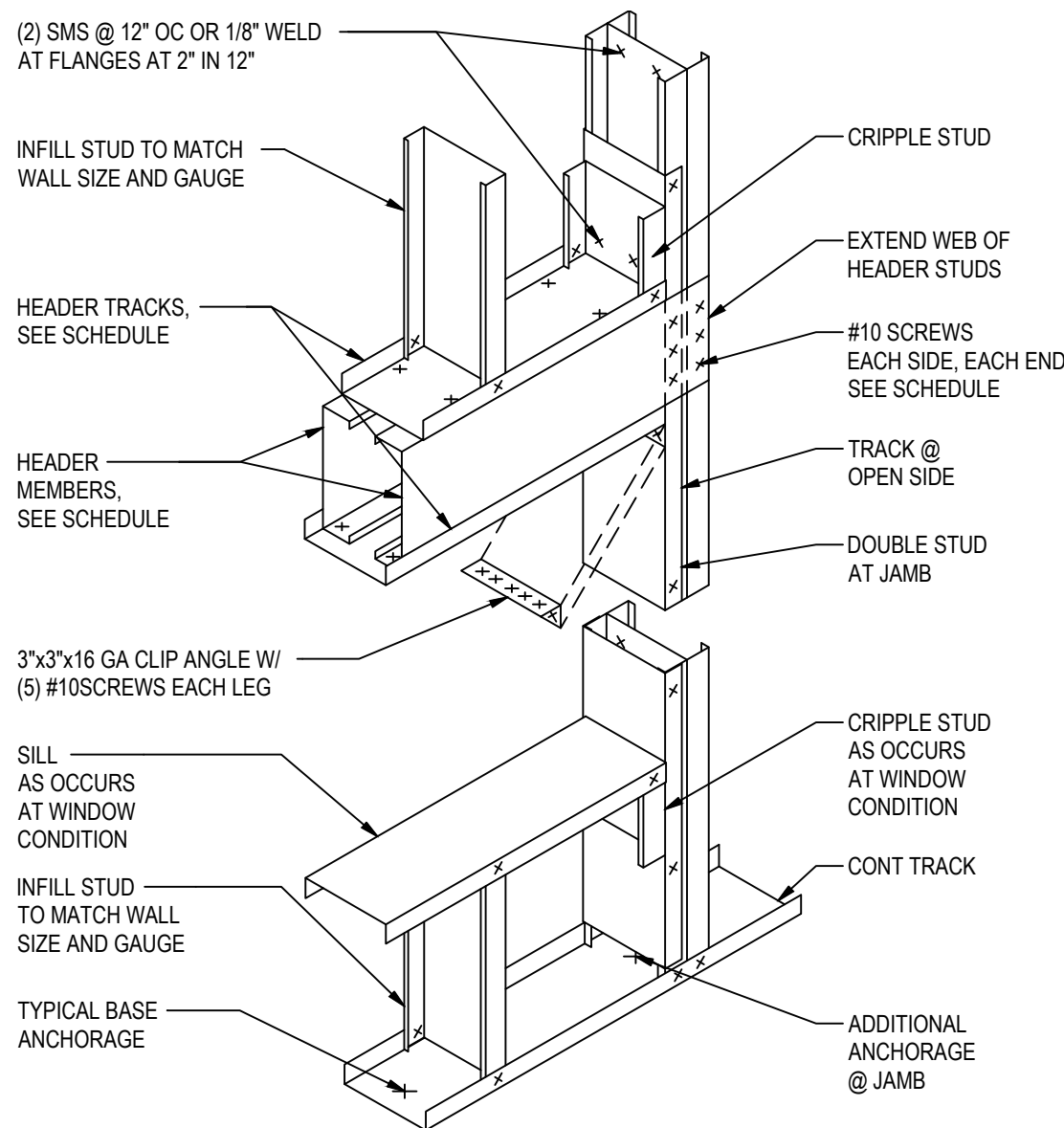
3 COLD FORMED STEEL SECTION ID
S-01 NTS



NOTES:
1. DETAIL MAY BE USED FOR OPENINGS THAT ARE INTERIOR, NON-BEARING, NOT SUPPORTING CEILING FRAMING, AND WITH AN OPENING WIDTH LESS THAN OR EQUAL TO 3' - 0"

4 OPENING FRAMING 3FT OR LESS
S-01 1" = 1'-0"

1 COLD FORMED STEEL CONSTRUCTION
S-01 1/2" = 1'-0"



HEADER SCHEDULE		
MAX SPAN	STUD SECTION	END SCREWS
4' - 0"	(2) 362S162-33	(4) #10 EACH SIDE
8' - 0"	(2) 600S162-43	(6) #10 EACH SIDE
12' - 0"	(2) 1000S162-43	(10) #10 EACH SIDE

2 HEADER SCHEDULE AND OPENING FRAMING
S-01 NTS

ISSUE FOR BID



FULLERTON PARK & RIDE
RESTROOM IMPROVEMENTS
TYPICAL STUD FRAMING DETAILS

JOB #	
DESIGN BY	JR
DRAWN BY	JR
CHECKED BY	
DATE	03/30/2022
SCALE	
SHEET	S-01 OF

3000 W ORANGETHORPE AVE
FULLERTON, CALIFORNIA 92833



MARK	DATE	BY	REVISIONS
	3/30/22		ISSUE FOR BID

Stantec

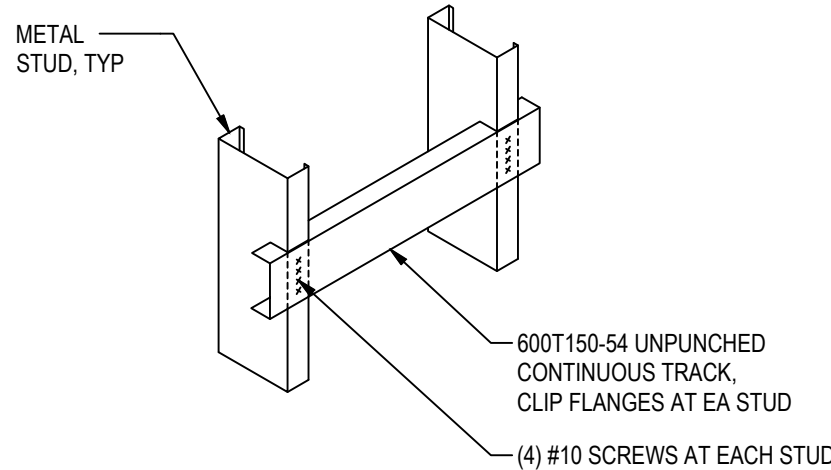
801 FIGUEROA STREET
SUITE 300
LOS ANGELES, CA 90017
T: 213-955-9775
STANTEC PROJ # 201423701

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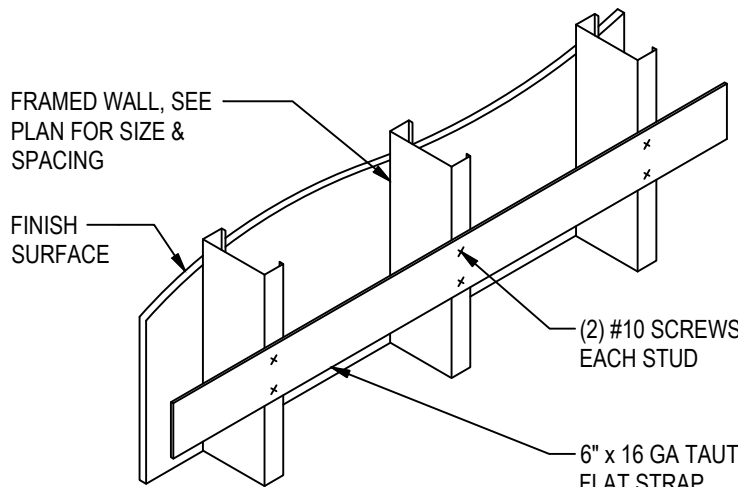
- NOTES:
1. STRAP AND/OR TRACK TO EXTEND OVER (3) STUDS MINIMUM.
 2. FLAT STRAP BACKING TO BE USED FOR COMPONENT LOADS OF MAXIMUM 20 PLF OR 50 LB POINT LOAD AT CENTER.
 3. TRACK BACKING TO BE USED FOR COMPONENT LOADS OF MAXIMUM 50 PLF OR 250 LB POINT LOAD AT CENTER.

5
S-01

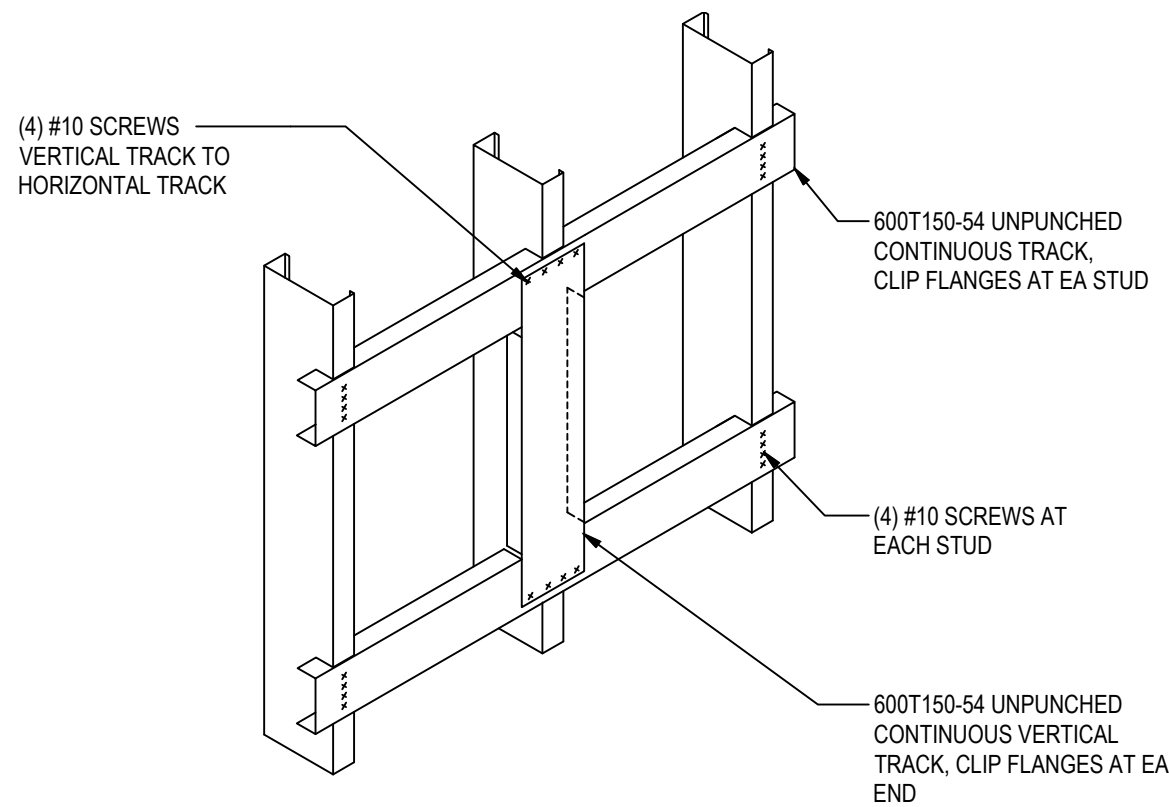
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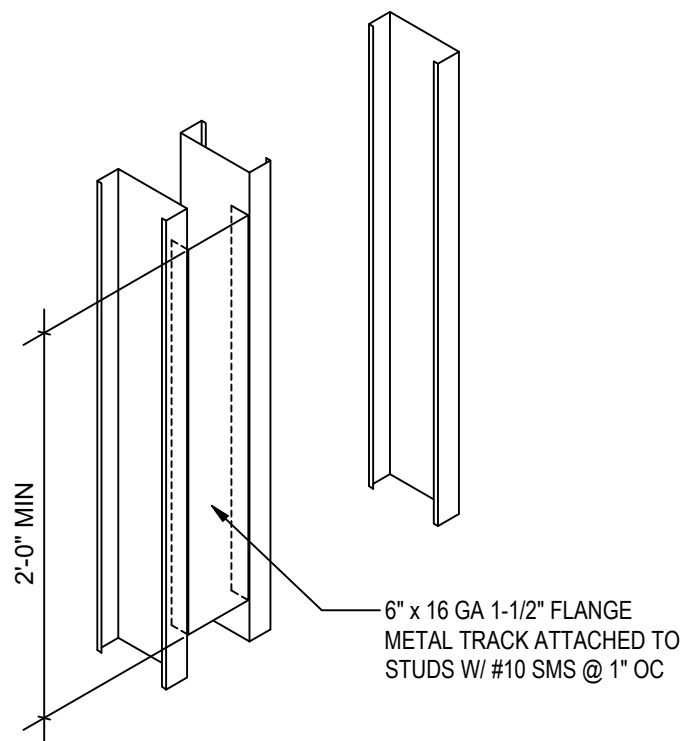
TRACK BACKING



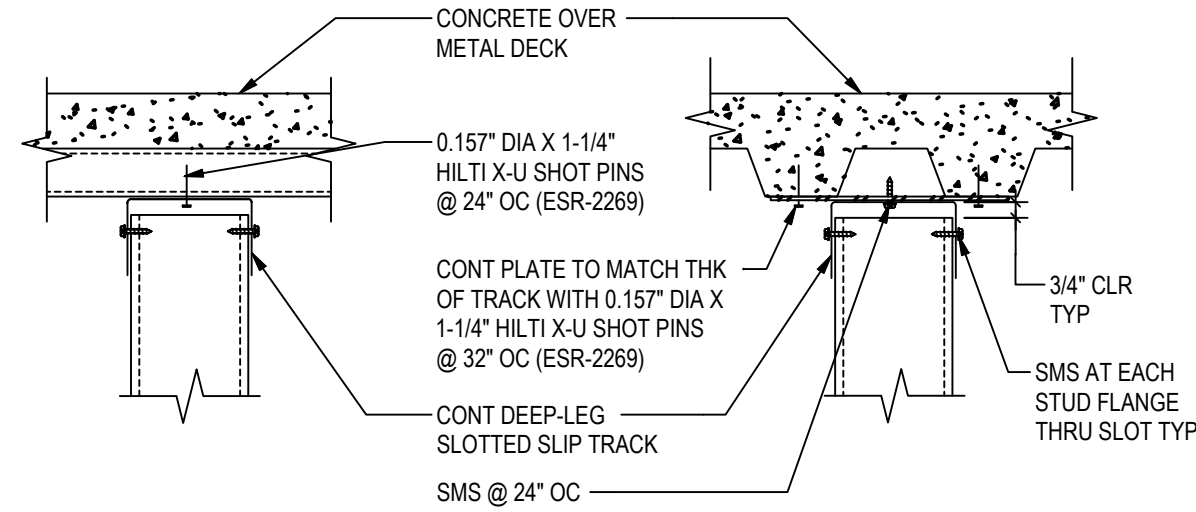
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VERTICAL TRACK BACKING

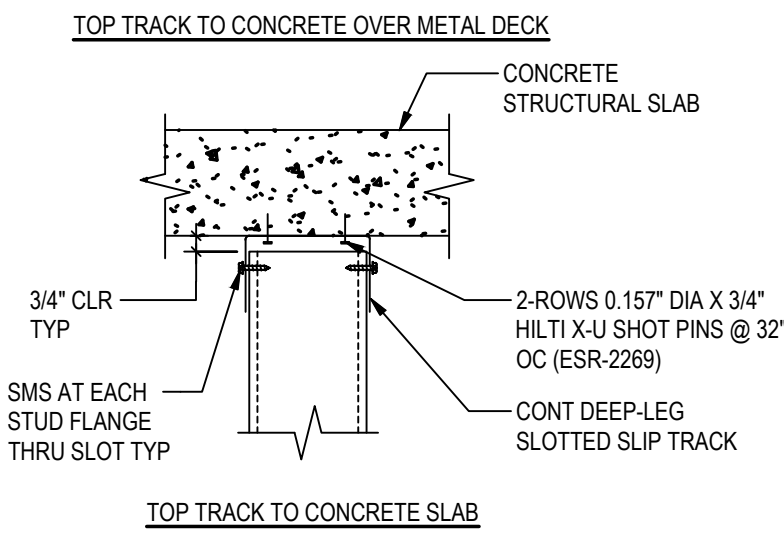


VERTICAL TRACK BACKING - ALTERNATE

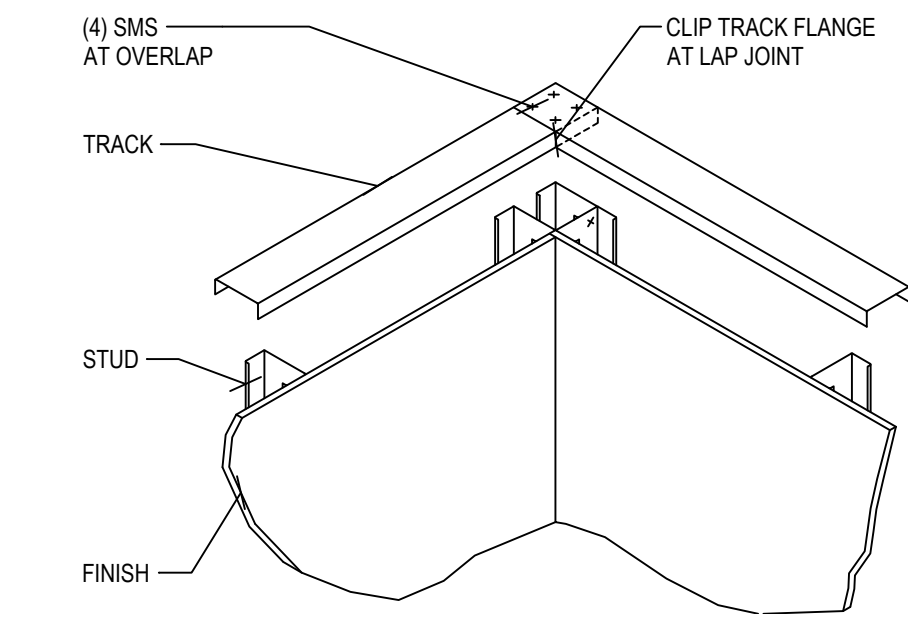


3
S-01

BOTTOM TRACK ANCHORAGE
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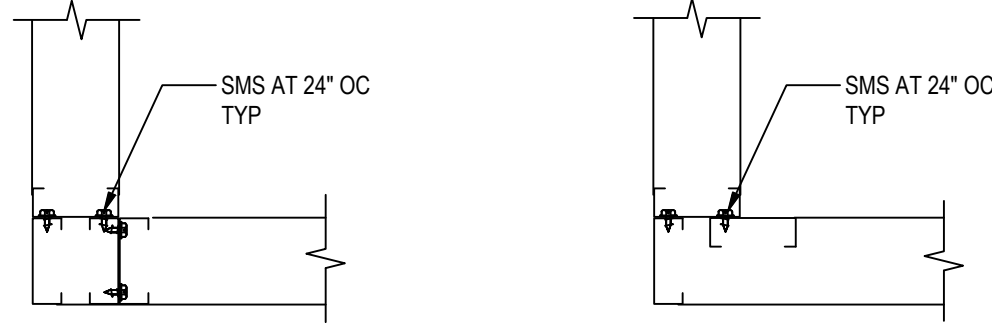


TOP TRACK TO CONCRETE SLAB

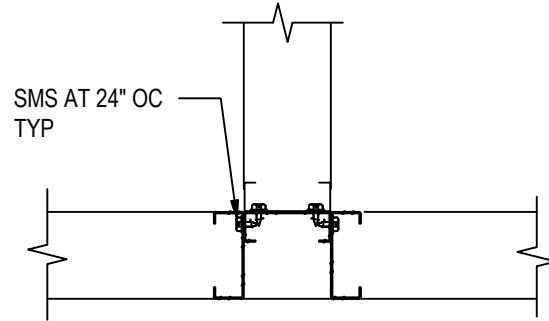


1
S-02

TOP TRACK AT CORNER
3/4\"/>



TYPICAL CORNERS



TYPICAL INTERSECTION

4
S-01

FULL HEIGHT WALL TOP CONNECTION
1\"/>

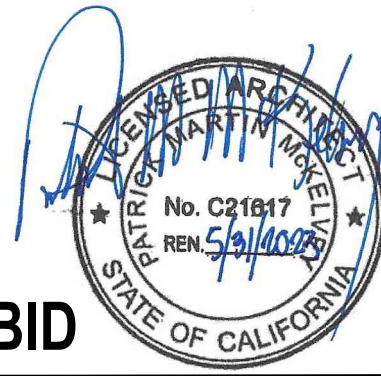
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S-01

WALL CORNERS AND INTERSECTIONS
NTS

**FULLERTON PARK & RIDE
RESTROOM IMPROVEMENTS
TYPICAL STUD FRAMING DETAILS**

ISS #
DESIGN BY JR
DRAWN BY JR
CHECKED BY
DATE 03/30/2022
SCALE
SHEET
S-02
OF

3000 W ORANGETHORPE AVE
FULLERTON, CALIFORNIA 92833



ISSUE FOR BID

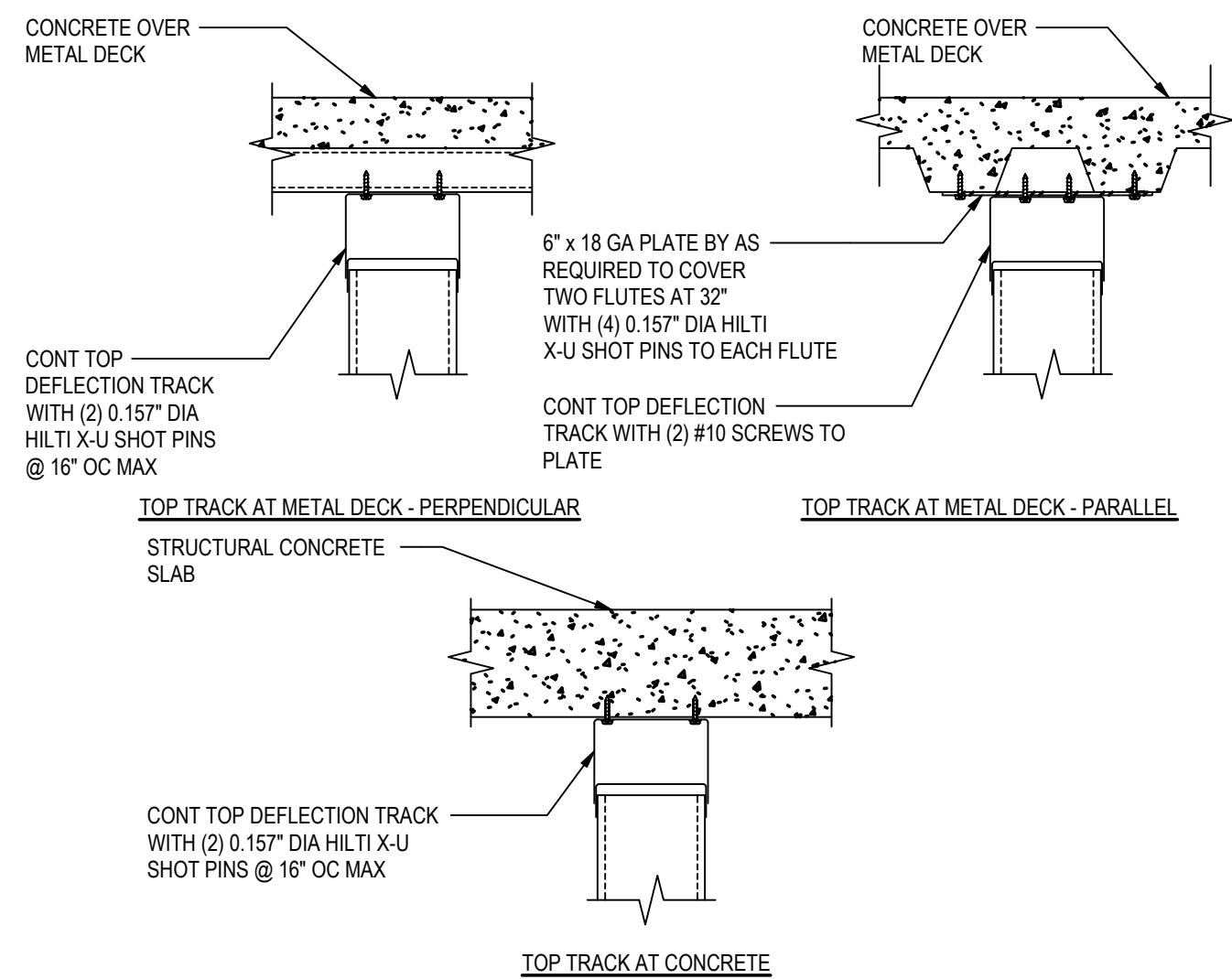
Stantec
801 FIGUEROA STREET
SUITE 300
LOS ANGELES, CA 90017
T 213-955-5775
STANTEC PROJ # 2014233701

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**FULLERTON PARK & RIDE
RESTROOM IMPROVEMENTS
TYPICAL STUD FRAMING DETAILS**

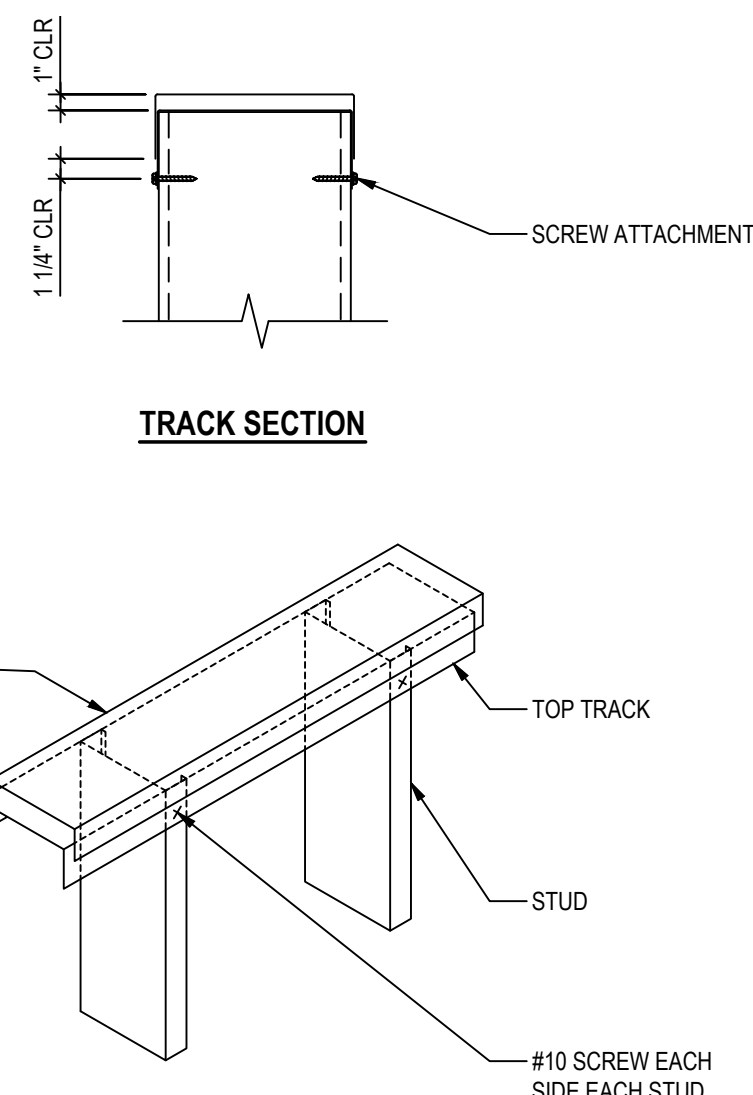
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DESIGN BY	JR
DRAWN BY	JR
CHECKED BY	
DATE	03/30/2022
SCALE	
SHEET	

3000 W ORANGETHORPE AVE
FULLERTON, CALIFORNIA 9283



NOTE:
1. AT METAL DECK USE #10 SCREWS IN LIEU OF SHOT PINS

TYPICAL SLIP TRACK CONNECTIONS

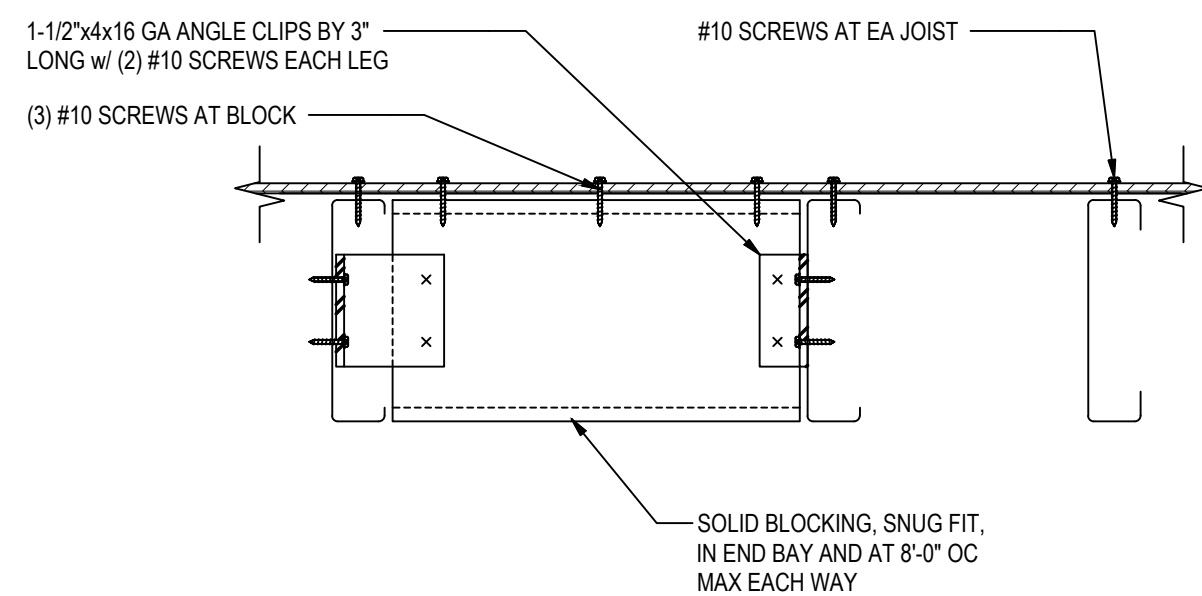


NOTE:
1. PROVIDE BRIDGING WITHIN 1'-0" OF TOP TRACK

TYPICAL STUD AT DEFLECTION TRACK

TYPICAL TRACK CONDITIONS SLIP TRACK CONNECTIONS

NTS



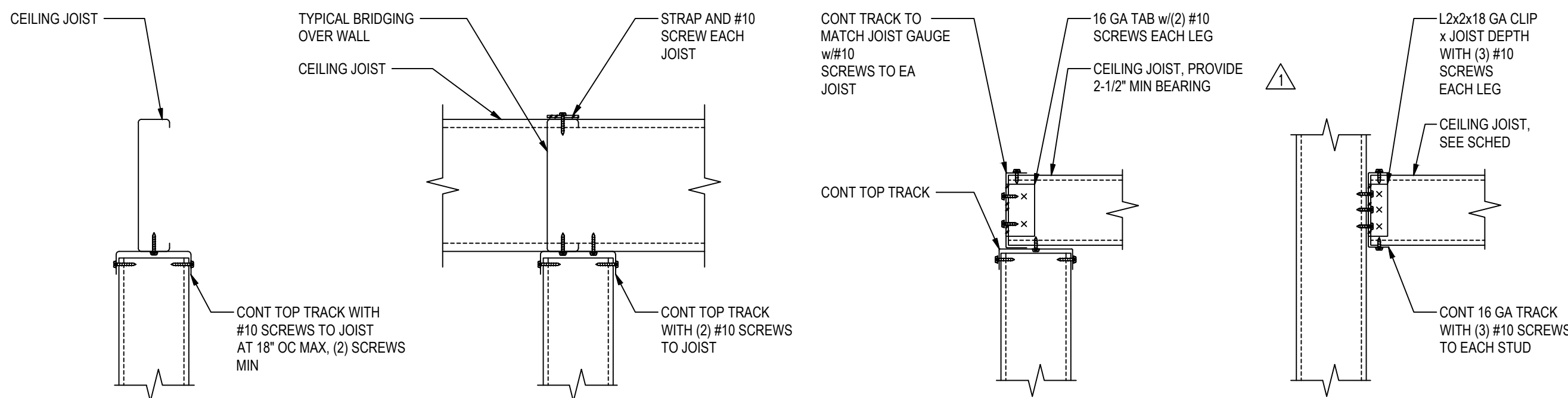
TYPICAL JOIST BRIDGING

NOTE:

1. BRIDGING NOT REQUIRED WHERE JOISTS ARE SHEATED

TYPICAL CEILING FRAMING

NTS

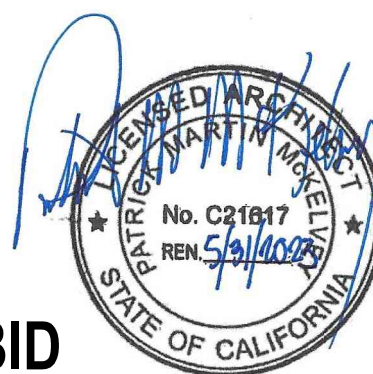


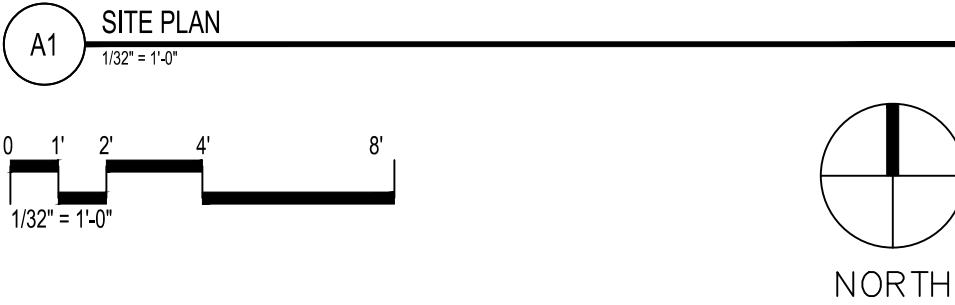
WALL PARALLEL TO JOIST

WALL PERPENDICULAR TO JOIST

JOIST OVER WALL BEARING

JOIST LEDGER WALL BEARING



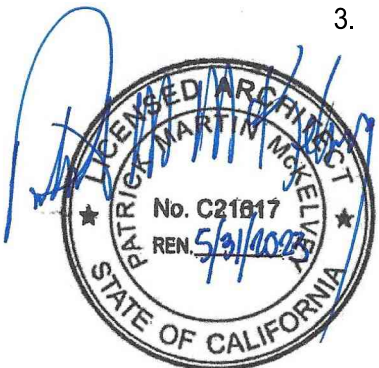


- A. DO NOT SCALE DRAWINGS.
- B. CONTRACTOR TO VERIFY IN FIELD ALL EXISTING CONDITIONS AND DIMENSIONS OF PROJECT.
- C. PATCH AND REPAIR CONCRETE DAMAGED OR REMOVED DURING DEMOLITION
- D. RENOVATION APPLIES TO BOTH EAST AND WEST RESTROOM AREAS

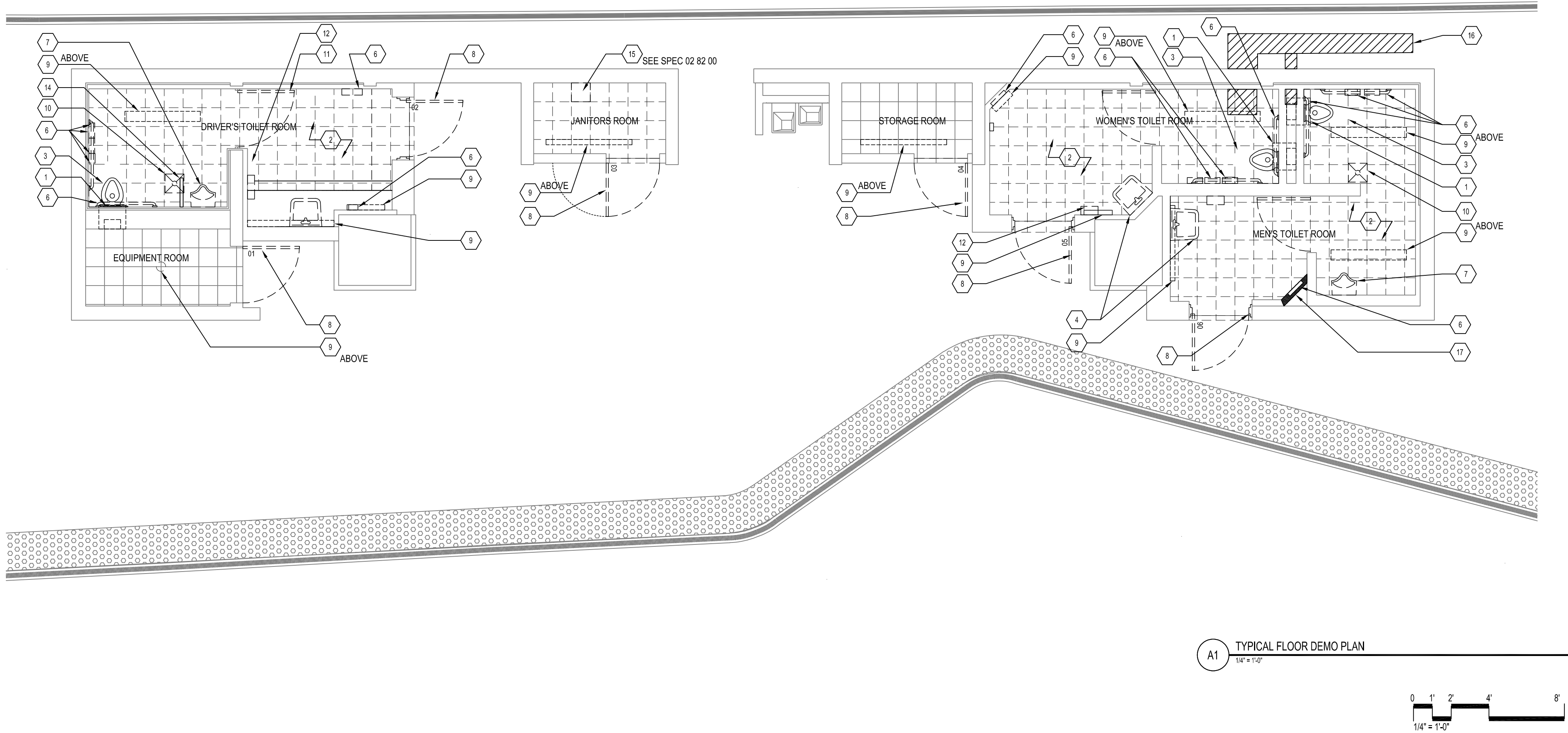
	EXISTING
	NEW WORK
	OVERHEAD / ABOVE
	ACCESSIBLE PATH OF TRAVEL

1. ALL PROJECT AREAS TO COMPLY WITH CBC CHAPTER 11B AS APPLICABLE.
2. CROSS-SLOPE ON ACCESSIBLE PATH OF TRAVEL TO BE 1:48 MAX PER CBC 11B-810.2.4.
3. ACCESSIBLE PATH OF TRAVEL IMPROVEMENTS ARE CURRENTLY PLANNED UNDER A SEPARATE OCTA PROJECT THAT WILL BE COMPLETE PRIOR TO THE COMPLETION OF THIS PROJECT.
(UNDER PERMIT BLDC-2020-0209)

ISSUE FOR BID



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USER: agoskel
OCTA-TO1_Rtdk_IFB
X-KEY GEN NOTES
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55TA010100-IFB0
pe_cad.pke



A1 TYPICAL FLOOR DEMO PLAN
1/4" = 1'-0"

GENERAL NOTES

- DO NOT SCALE DRAWINGS.
- ITEMS INDICATED ON THIS DRAWING ARE EXISTING, UNLESS NOTED OTHERWISE.
- PATCH / REPAIR / FILL ALL HOLES, GOUGES, MARKS, ETC. AS REQUIRED AFTER DEMOLITION WORK, INCLUDING ANY EXISTING CONDITIONS THAT ARE NOT CAUSED BY DEMOLITION, BUT ARE EXPOSED WITHIN THE SCOPE OF THE WORK.
- ALL SIGNAGE TO BE REMOVED AND SALVAGED FOR OCTA, U.N.O.
- REMOVE ALL UNUSED CONDUITS TO THE GREATEST EXTENT POSSIBLE.

LEGEND

- | | |
|--|------------------|
| | EXISTING |
| | DEMO |
| | DEMO EXTENTS |
| | OVERHEAD / ABOVE |

DEMO KEYNOTES

- REMOVE EXISTING WALL FAN AND GRILLE. EXISTING DUCT TO REMAIN.
- REMOVE EXISTING TILE AND GROUT FROM WALLS AND FLOOR. AT STUD WALLS, STRIP EXISTING INTERIOR SHEATHING DOWN TO STUDS. AT WALLS WITH DOUBLE TILE LAYER, STRIP TO CONCRETE
- REMOVE EXISTING WATER CLOSET
- REMOVE EXISTING LAVATORY
- REMOVE EXISTING LAVATORY, LAMINATE COUNTERTOP AND MIRROR
- REMOVE EXISTING TOILET ROOM ACCESSORIES: INCLUDING BUT NOT LIMITED TO TOILET PAPER DISPENSER, GRAB BAR, SOAP DISPENSER, TRASH RECEPTACLE, PAPER TOWEL DISPENSER, SANITARY NAPKIN DISPENSER
- REMOVE EXISTING URINAL
- REMOVE EXISTING DOOR AND FRAME
- REMOVE EXISTING LIGHT FIXTURE
- REMOVE EXISTING FLOOR DRAIN
- REMOVE EXISTING PARTITION FRAME AND DOOR
- REMOVE EXISTING HAND DRYER
- NOT USED
- REMOVE EXISTING URINAL PARTITION
- REMOVE EXISTING FLOOR SINK
- DEMOLISH CONCRETE FOR NEW FLOOR DRAIN TO CONNECT TO EXISTING PIPING
- REMOVE SHEATHING AND STUD FRAMING

FULLERTON PARK & RIDE RESTROOM IMPROVEMENTS DEMO FLOOR PLAN

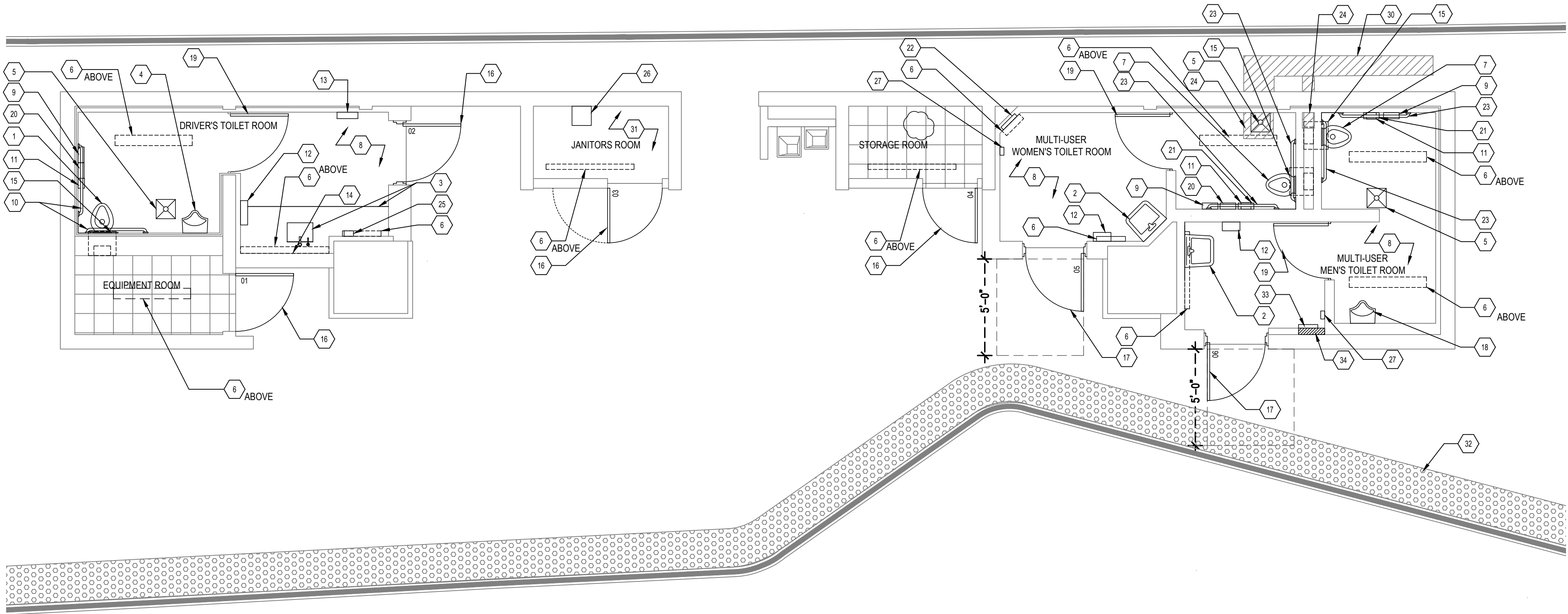
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DRAWN BY	AG
CHECKED BY	
DATE	03/30/2022
SCALE	
SHEET	AD-02 OF

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FULLERTON, CALIFORNIA 92833

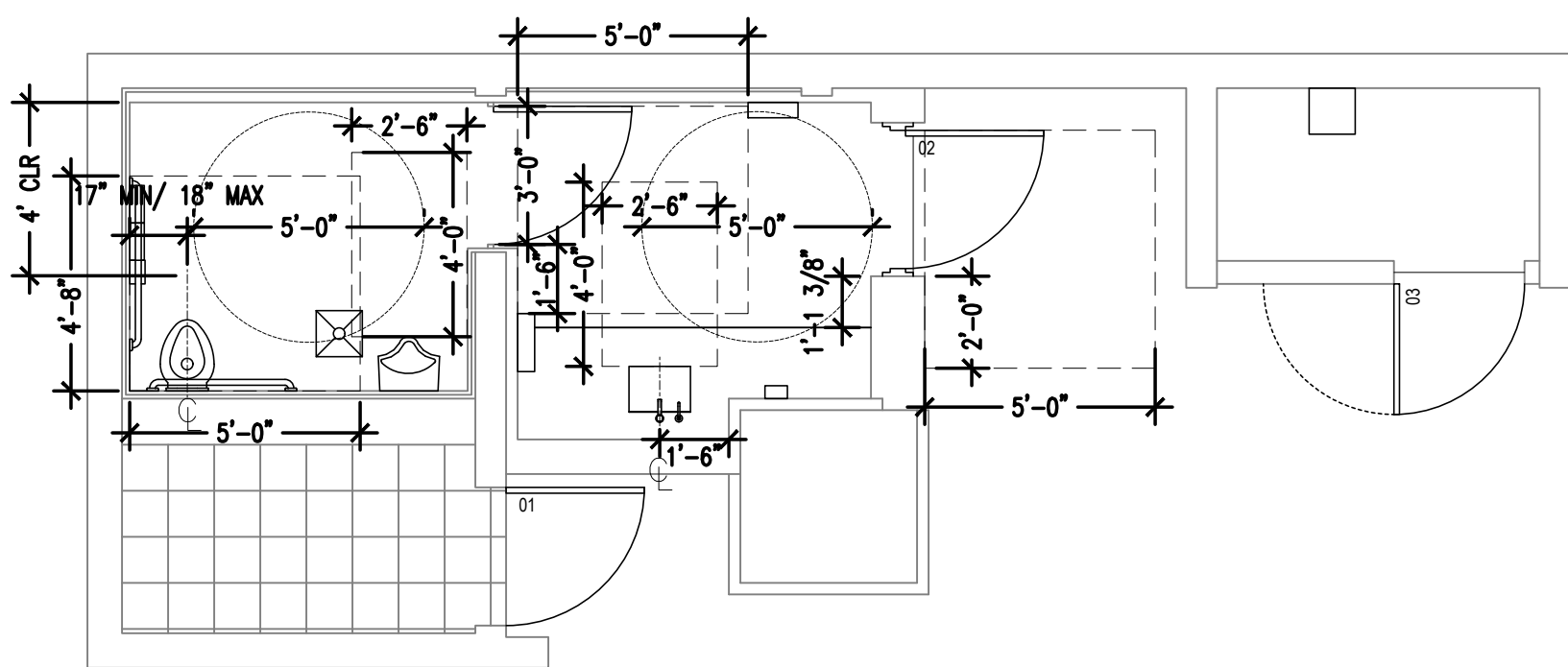


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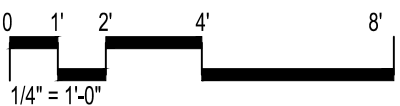




A1 TYPICAL FLOOR PLAN
1/4" = 1'-0"



A1 ACCESSIBILITY CLEARANCE FLOOR PLAN
1/4" = 1'-0"



GENERAL NOTES

- DO NOT SCALE DRAWINGS.
- CONTRACTOR TO VERIFY IN FIELD ALL EXISTING CONDITIONS AND DIMENSIONS OF PROJECT.
- ITEMS INDICATED ON THIS DRAWING ARE NEW, U.N.O.
- REFER TO MATERIAL LEGEND ON A-05 FOR FINISH DESIGNATIONS.
- TOILET ROOM CEILINGS TO BE PAINTED.
- PATCH AND REPAIR CONCRETE DAMAGED OR REMOVED DURING DEMOLITION
- RENOVATION APPLIES TO BOTH EAST AND WEST RESTROOM AREAS
- REFER TO G-04 & G-05 FOR MOUNTING HEIGHTS
- PROVIDE AND INSTALL SIGNAGE AS REQUIRED PER CBC

LEGEND

- CONCRETE PATCHING EXTENTS
- EXISTING
- NEW WORK
- OVERHEAD / ABOVE



KEYNOTES

- WALL MOUNTED WATER CLOSET. LOCATION TO MATCH EXISTING BEING REPLACED. ADD FRAMING AS REQUIRED. SEE PLUMBING.
- WALL MOUNTED SST LAVATORY, SEE PLUMBING.
- CORIAN SOLID SURFACE COUNTER WITH INTEGRAL LAVATORY, CORIAN ELEMENTS 8252. SEE DETAIL 2/A-06.
- URINAL. SEE PLUMBING.
- FLOOR DRAIN, SEE PLUMBING.
- SURFACE MOUNTED LED LIGHT FIXTURE, LOCATION TO MATCH EXISTING BEING REPLACED. SEE ELECTRICAL
- WALL MOUNTED VANDAL RESISTANT SST WATER CLOSET. LOCATION TO MATCH EXISTING BEING REPLACED. ADD FRAMING AS REQUIRED. SEE PLUMBING.
- MONOLITHIC RESINOUS COATING: FLOOR WITH 6" COVE BASE AND FULL HEIGHT OF 8' WALLS. SEE FINISH SCHEDULE ON A-05. AT STUD WALLS WHERE SHEATHING WAS REMOVED, RE-SHEATH WITH: Sheetrock® Brand Glass-Mat Panels Mold Tough® VHI Firecode® X (usg.com)
- TOILET SEAT PROTECTOR DISPENSER
- GRAB BAR
- TOILET PAPER DISPENSER
- HAND DRYER, VANDAL RESISTANT AT MENS AND WOMENS TOILET ROOMS.
- SEMI RECESSED COMBO TRASH RECEPTACLE AND PAPER TOWEL DISPENSER. LOCATION TO MATCH EXISTING BEING REPLACED. ADD ADDITIONAL FRAMING AS REQUIRED.
- 30"x42" WALL MIRROR UNIT, SEE SPEC 08 83 00.
- METAL EXHAUST WALL GRILLE, SIZE TO MATCH EXISTING. SEE MECHANICAL.
- SST DOOR AND FRAME WITH LOUVER.
- GALVANIZED METAL GATE AND FRAME ASSEMBLY. SEE SPEC 08 17 13.
- SST VANDAL RESISTANT URINAL. SEE PLUMBING.
- WALL MOUNTED SST TOILET COMPARTMENT DOOR AND FRAME, SEE DETAIL 8/A-06.
- SANITARY NAPKIN RECEPTACLE.
- SURFACE MOUNTED SST WALL SHELF. SEE SPEC 10 28 13.63
- SEMI RECESSED TRASH RECEPTACLE, LOCATION TO MATCH EXISTING BEING REPLACED. ADD ADDITIONAL FRAMING AS REQUIRED.
- SST VANDAL RESISTANT GRAB BAR. SEE SPEC 10 28 13.63
- PATCH CONCRETE TOPPING SLAB. SEE DETAIL 1/P-05.
- WALL MOUNTED SOAP DISPENSER.
- FLOOR SINK, SEE PLUMBING.
- VANDAL RESISTANT SHARPS CONTAINER; SHARPS ASSURE ITEM # 150-S 1.5 QUART WALL MOUNT ENCLOSURE WITH LOCK AND KEY.
- NOT USED.
- NOT USED
- PATCH CONCRETE SIDEWALK.
- RESINOUS FLOOR COATING WITH MONOLITHIC 6" COVE BASE. SEE FINISH SCHEDULE ON A-05.
- EXISTING TACTILE CURB EDGE
- SURFACE MOUNTED TRASH RECEPTACLE
- PATCH AND REPAIR INTERIOR WALL FURRING AND SHEATHING TO MATCH ADJACENT.

ISSUE FOR BID



801 FIGUEROA STREET
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T: 213-565-9775
STANTEC PROJ.# 2014233701

FULLERTON PARK & RIDE RESTROOM IMPROVEMENTS FLOOR PLAN

JOB #
DESIGN BY
DRAWN BY AG
CHECKED AG
DATE 03/30/2022
SCALE
SHEET

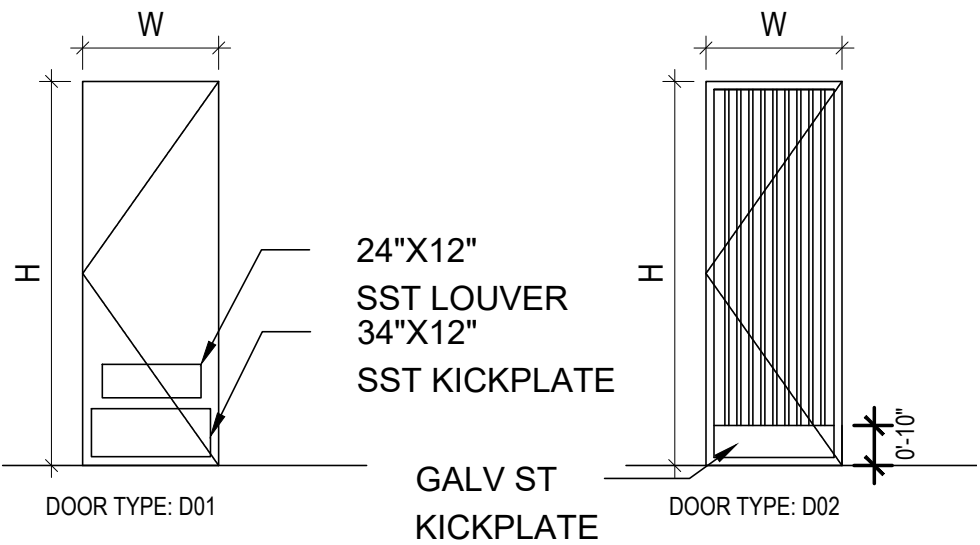
A-02

3000 W ORANGETHORPE AVE
FULLERTON, CALIFORNIA 92833



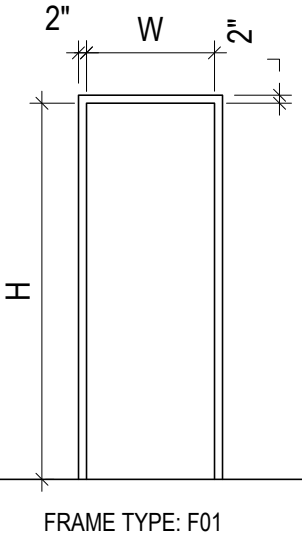
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DOOR AND FRAME SCHEDULE															
NO	HW	DOOR						FRAME			DETAILS			FIRE RATING	REMARKS
		SIZE			TYPE	MATL	FINISH	TYPE	MATL	FINISH	HEAD	JAMB	SILL		
		W	H	T											
01	02	3'-0"	7'-0"	1 3/4"	D01	SST	BRUSHED	F01	SST	BRUSHED	1/A-06	1/A-06	5/A-06	NR	2, 3
02	02	3'-0"	7'-0"	1 3/4"	D01	SST	BRUSHED	F01	SST	BRUSHED	6/A-06	6/A-06	5/A-06	NR	2, 3
03	02	3'-0"	7'-0"	1 3/4"	D01	SST	BRUSHED	F01	SST	BRUSHED	4/A-06	4/A-06	5/A-06	NR	2, 3
04	02	3'-0"	7'-0"	1 3/4"	D01	SST	BRUSHED	F01	SST	BRUSHED	4/A-06	4/A-06	5/A-06	NR	2, 3
05	PER MFR	3'-0"	7'-0"	1 3/4"	D02	STEEL	GALV	F01	STEEL	GALV	3/A-06	7/A-06	5/A-06	NR	1
06	PER MFR	3'-0"	7'-0"	1 3/4"	D02	STEEL	GALV	F01	STEEL	GALV	3/A-06	7/A-06	5/A-06	NR	1



DOOR TYPES

1/4" = 1'-0"



FRAME TYPE: F01

FRAME TYPES

1/4" = 1'-0"

DOOR REMARKS

- DOOR, FRAME AND HARDWARE PART OF MFR SYSTEM. DOOR ONLY LOCKABLE FROM EXTERIOR SIDE. SEE SPEC 08 17 13.
- SST KICKPLATE
- SST LOUVER

HARDWARE GROUP NO. 02

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5 NRP	630	IVE
1	EA	STOREROOM LOCK	L9080T 17A	630	SCH
1	EA	FSIC CORE	23-030	626	SCH
1	EA	LOCK GUARD	LG10	US32D	IVE
1	EA	SURFACE CLOSER	4040XP REG OR PA AS REQ	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
1	EA	FLOOR STOP	FS439	630	IVE
1	EA	GASKETING	328AA-S	AA	ZER
1	EA	DOOR SWEEP	39A	A	ZER
1	EA	THRESHOLD	545A OR AS DETAILED	A	ZER

FINISH SCHEDULE

NUMBER	NAME	WALL FINISH				CEILING	FLOOR	BASE	REMARKS
		EAST	NORTH	WEST	SOUTH				
01	EQUIPMENT ROOM	N/A	N/A	N/A	N/A	PT-1	N/A	N/A	
02	DRIVERS TOILET ROOM	EPXY-1	EPXY-1	EPXY-1	EPXY-1	PT-1	POLY-1	POLY-1	
03	JANITORS ROOM	N/A	N/A	N/A	N/A	PT-1	POLY-2	POLY-2	
04	STORAGE ROOM	N/A	N/A	N/A	N/A	PT-1	N/A	N/A	
05	WOMENS TOILET ROOM	EPXY-1	EPXY-1	EPXY-1	EPXY-1	EPXY-1	POLY-2	POLY-2	
06	MENS TOILET ROOM	EPXY-1	EPXY-1	EPXY-1	EPXY-1	EPXY-1	POLY-2	POLY-2	

FINISH LEGEND

ARCHITECTURAL FINISHES

SS 1	SS-1	SOLID SURFACE COUNTERTOP MFR: CORIAN DESIGN (TO BE COORDINATED WITH SINK MFR) COLOR: TO BE SELECTED BY OCTA
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FLOOR & BASE FINISHES

POLY 1	POLY-1	POLYASPARTIC COATING MFR: SHERWIN WILLIAMS STYLE: 2" FLAKE COLOR: U16 6" INTEGRAL COVE BASE SEE SPEC 09 96 53.13	POLY 2	POLY-2	POLYASPARTIC COATING MFR: SHERWIN WILLIAMS STYLE: SOLID COLOR, ORANGE PEEL FINIS COLOR: STEEL 6" INTEGRAL COVE BASE SEE SPEC 09 96 53.13
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WALL & CEILING FINISH

EPXY 1	EPXY-1	HIGH BUILD EPOXY COATING MFR: SHERWIN WILLIAMS STYLE: SOLID COLOR COLOR: STEEL SEE SPEC 09 96 00	PT 1	PT-1	CEILING PAINT MFR: SHERWIN WILLIAMS COLOR: TO BE SELECTED BY OCTA GLOSS: EGGSHELL
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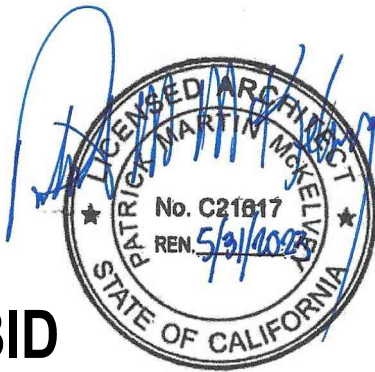
DOOR AND HARDWARE NOTES

- ALL DOORS TO RECEIVE NEW HARDWARE PER DOOR SCHEDULE AND SPECIFICATIONS. LEVERSET TO MATCH EXISTING BUILDING STANDARD. ALL HARDWARE TO BE ADA COMPLIANT AND UL RATED.
- KICK PLATES SHALL BE 12" HIGH, STAINLESS STEEL AND SHALL BE APPLIED TO KICK SIDE OF DOOR U.N.O.
- ALL LOCKSETS SHALL BE KEYED TO THE BUILDING MASTER. COORDINATE REQUIREMENTS WITH OCTA.
- DOOR HARDWARE HEIGHT SHALL NOT EXCEED 48 INCHES ABOVE FINISH FLOOR. MATCH HEIGHT OF HARDWARE ON EXISTING DOORS.
- SWINGING DOOR AND GATE SURFACES WITHIN 10 INCHES OF THE FINISH FLOOR OR GROUND MEASURED VERTICALLY SHALL HAVE A SMOOTH SURFACE ON THE PUSH SIDE EXTENDING THE FULL WIDTH OF THE DOOR OR GATE. PARTS CREATING HORIZONTAL OR VERTICAL JOINTS IN THESE SURFACES SHALL BE WITHIN 1/16 INCH OF THE SAME PLANE AS THE OTHER AND BE FREE OF SHARP OR ABRASIVE EDGES. CAVITIES CREATED BY ADDED KICK PLATES SHALL BE CAPPED. (CBC 11B-404.2.10)
- THE FORCE FOR PUSHING OR PULLING OPEN A DOOR OR GATE SHALL BE AS FOLLOWS: (CBC 11B-404.2.9)
 - INTERIOR AND EXTERIOR HINGED DOORS AND GATES, SLIDING, OR FOLDING DOORS: 5 POUNDS MAXIMUM.
- DOOR CLOSERS AND GATE CLOSERS SHALL BE ADJUSTED SO THAT FROM AN OPEN POSITION OF 90 DEGREES, THE TIME REQUIRED TO MOVE THE DOOR TO A POSITION OF 12 DEGREES FROM THE LATCH IS 5 SECONDS MINIMUM. (CBC 11B-404.2.8.1)
- LATCHING AND LOCKING DOORS THAT ARE HAND ACTIVATED AND WHICH ARE IN A PATH OF TRAVEL SHALL BE OPERABLE WITH A SINGLE EFFORT BY LEVER TYPE HARDWARE, BY PANIC BARS, PUSH-PULL ACTIVATING BARS, OR OTHER HARDWARE DESIGNED TO PROVIDE PASSAGE WITHOUT REQUIRING THE ABILITY TO GRASP THE OPENING HARDWARE. (CBC 11B-309.4)
- HAND-ACTIVATED DOOR OPENING HARDWARE SHALL BE 34" MINIMUM AND 44" MAXIMUM ABOVE THE FINISH FLOOR OR GROUND. WHERE SLIDING DOORS ARE IN THE FULLY OPEN POSITION, OPERATING HARDWARE SHALL BE EXPOSED AND USABLE FROM BOTH SIDES. (CBC 11B-404.2)
- DOOR THRESHOLD MATERIAL TO MATCH DOOR MATERIAL.

FINISH ABBREVIATIONS

POLY	POLYASPARTIC FLOOR COATING
EPXY	HIGH BUILD EPOXY WALL/ CEILING COATING
SST	STAINLESS STEEL
GALV	GALVANIZED STEEL
PT	PAINT

ISSUE FOR BID



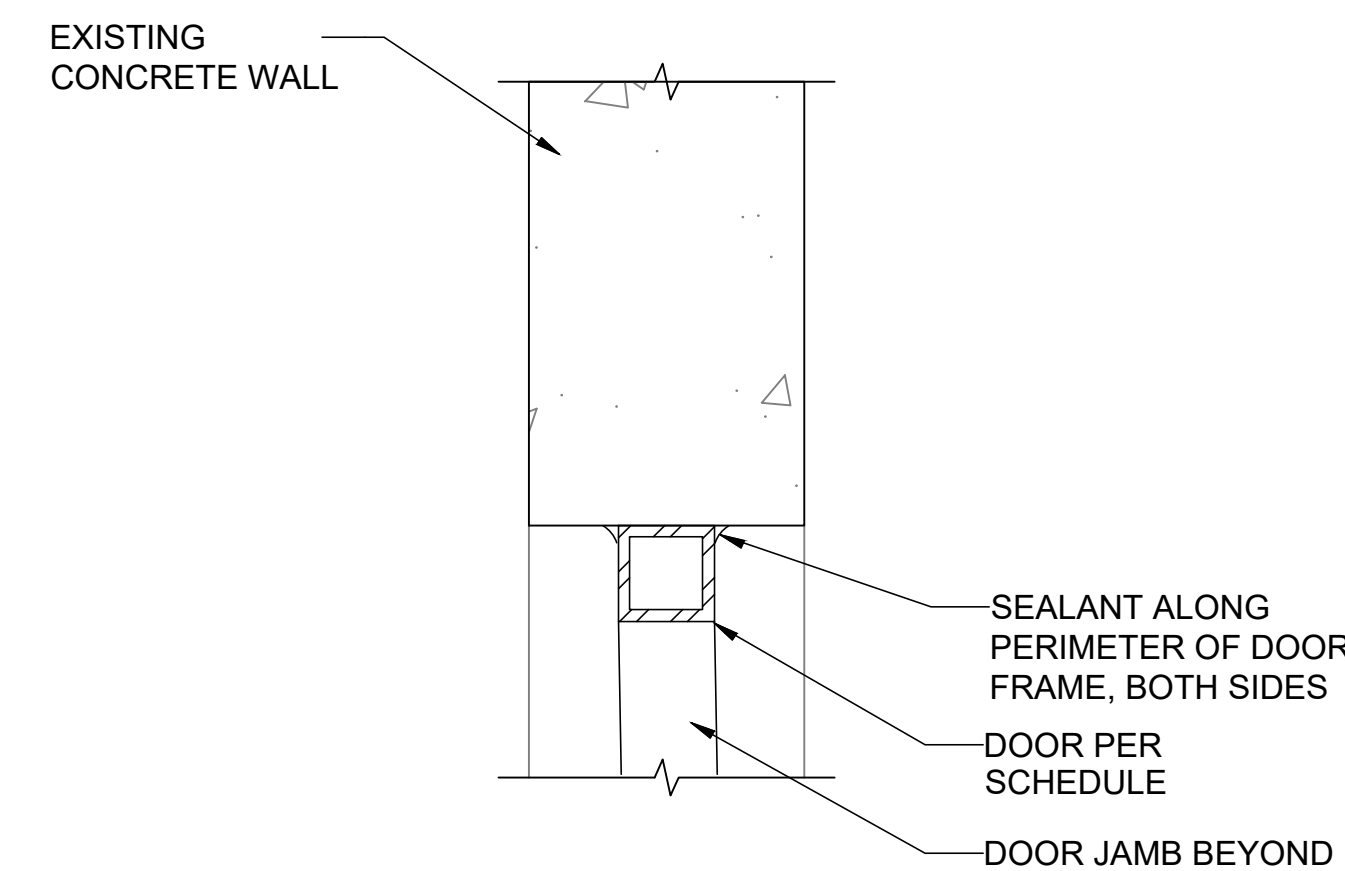
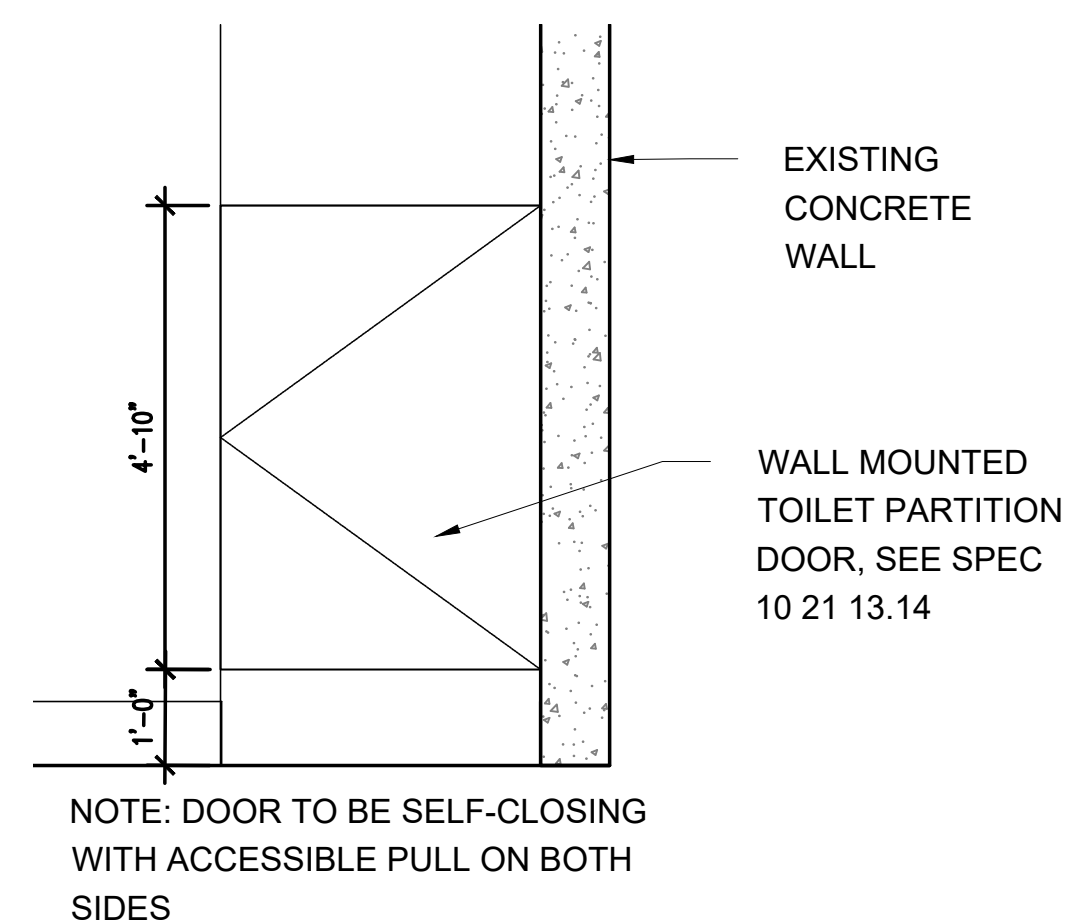
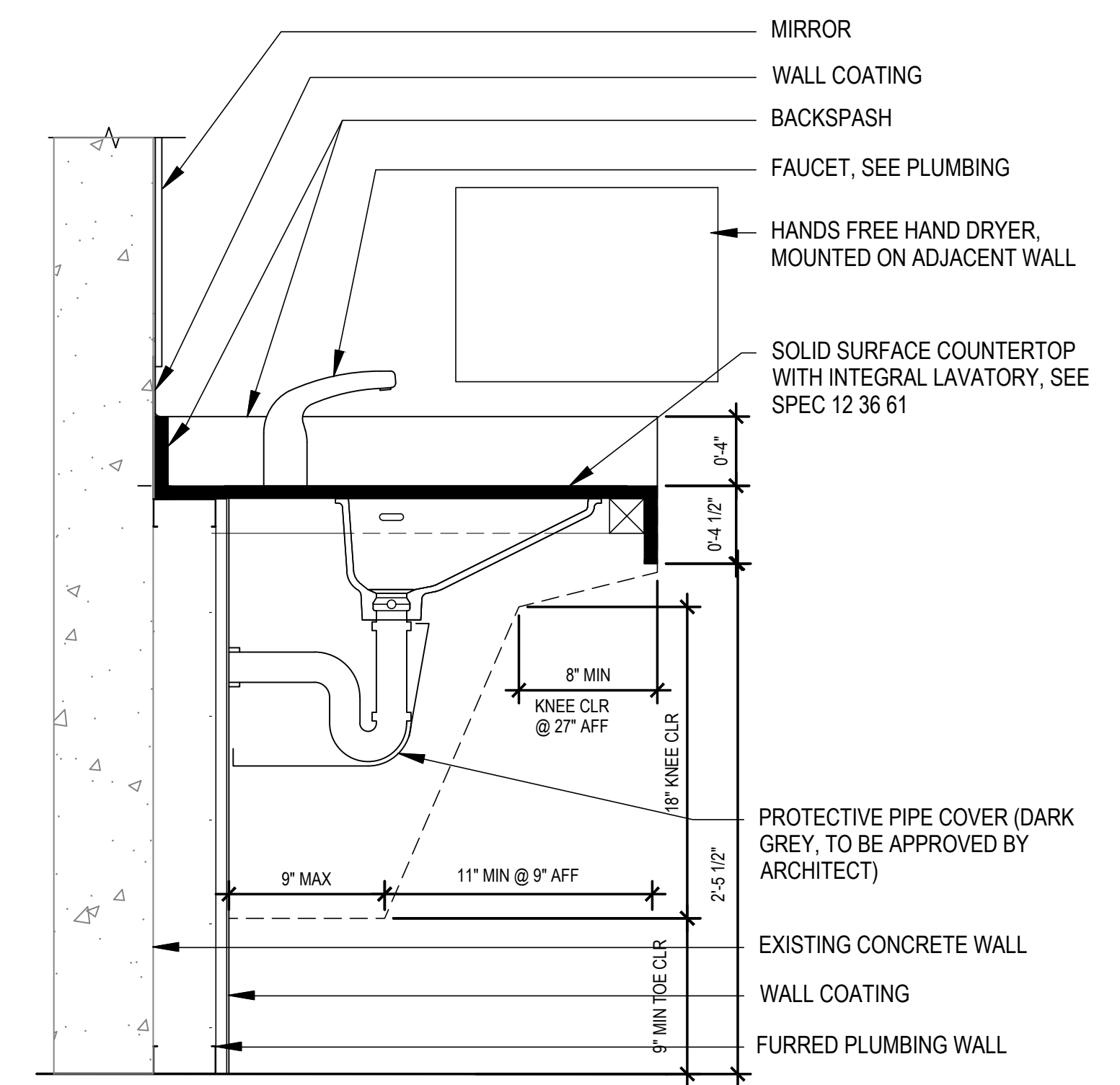
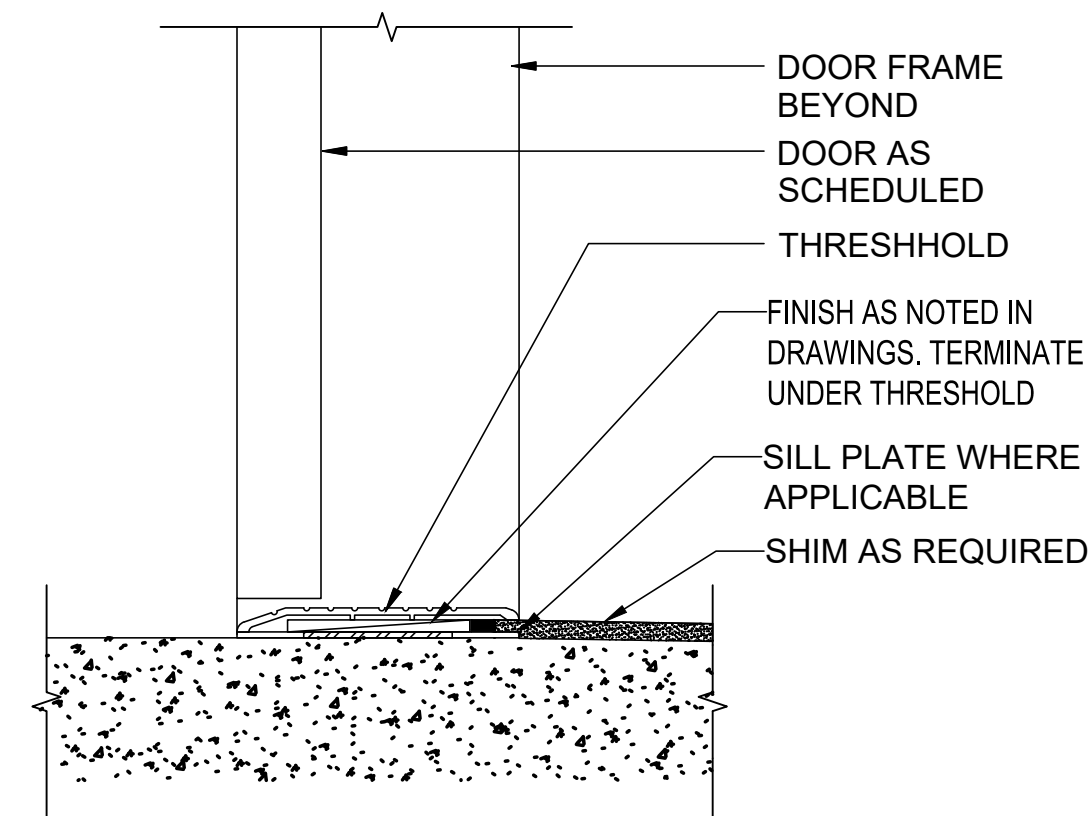
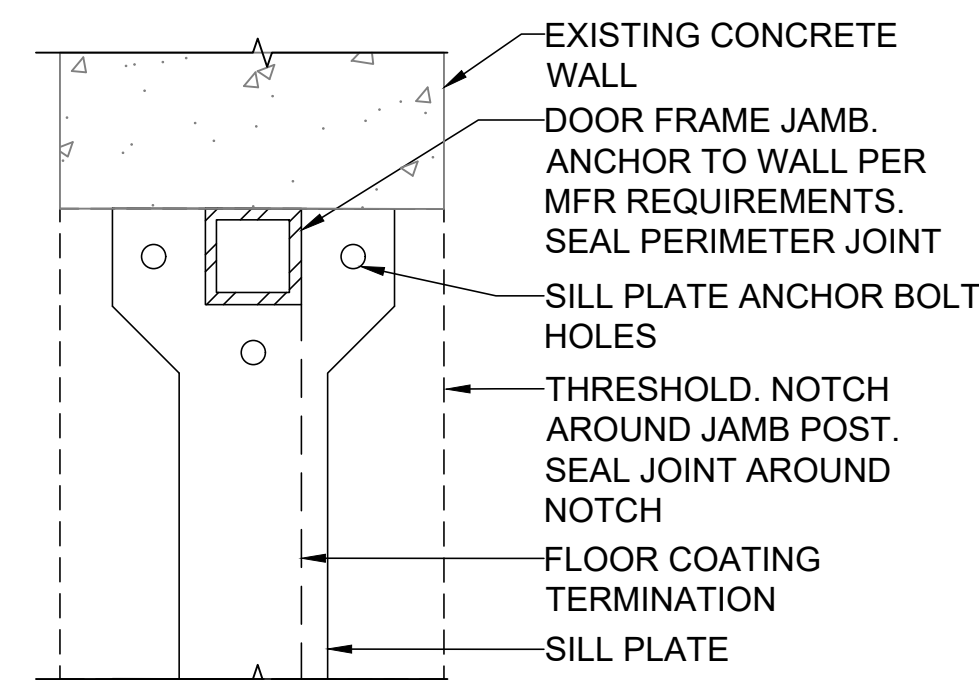
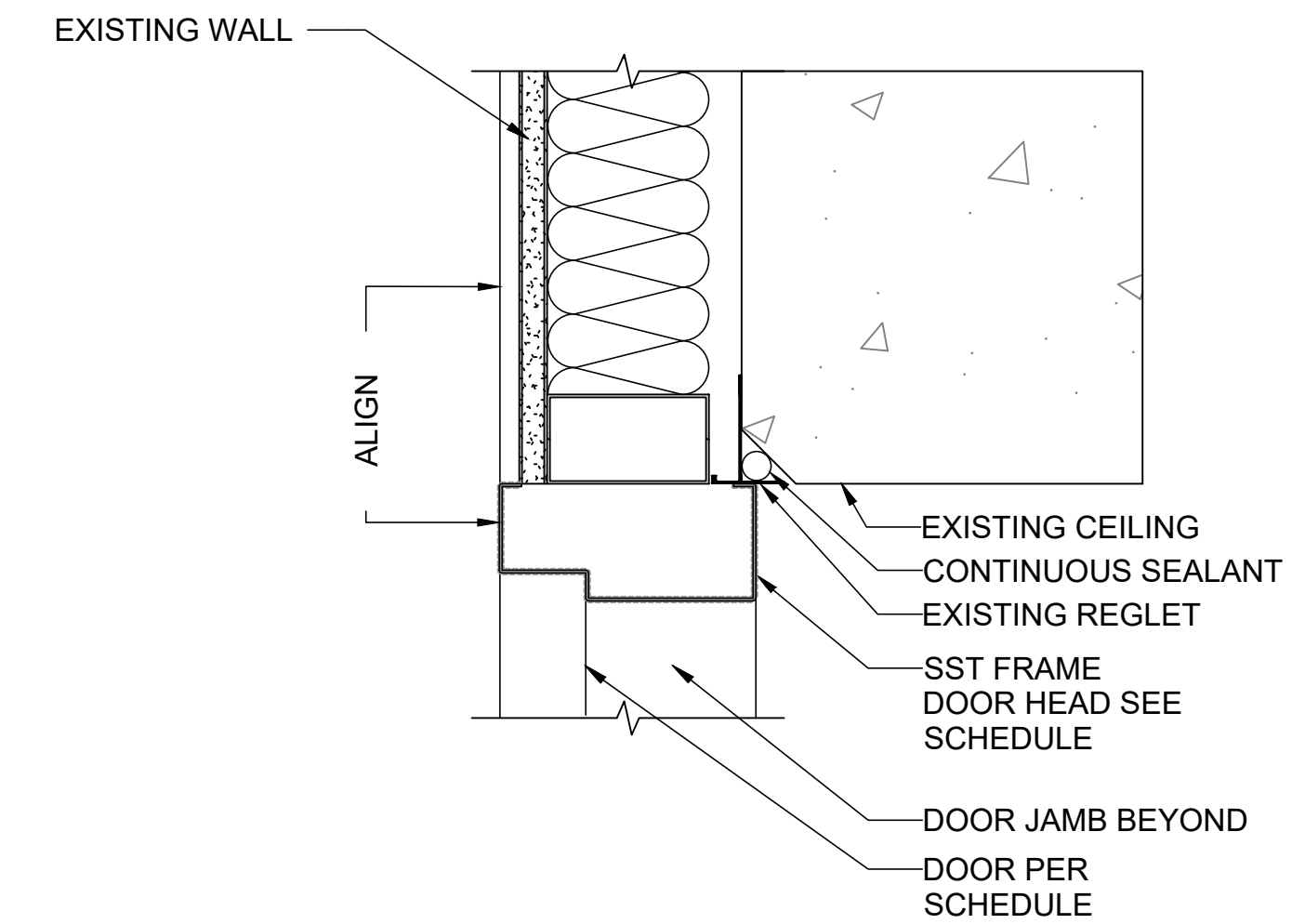
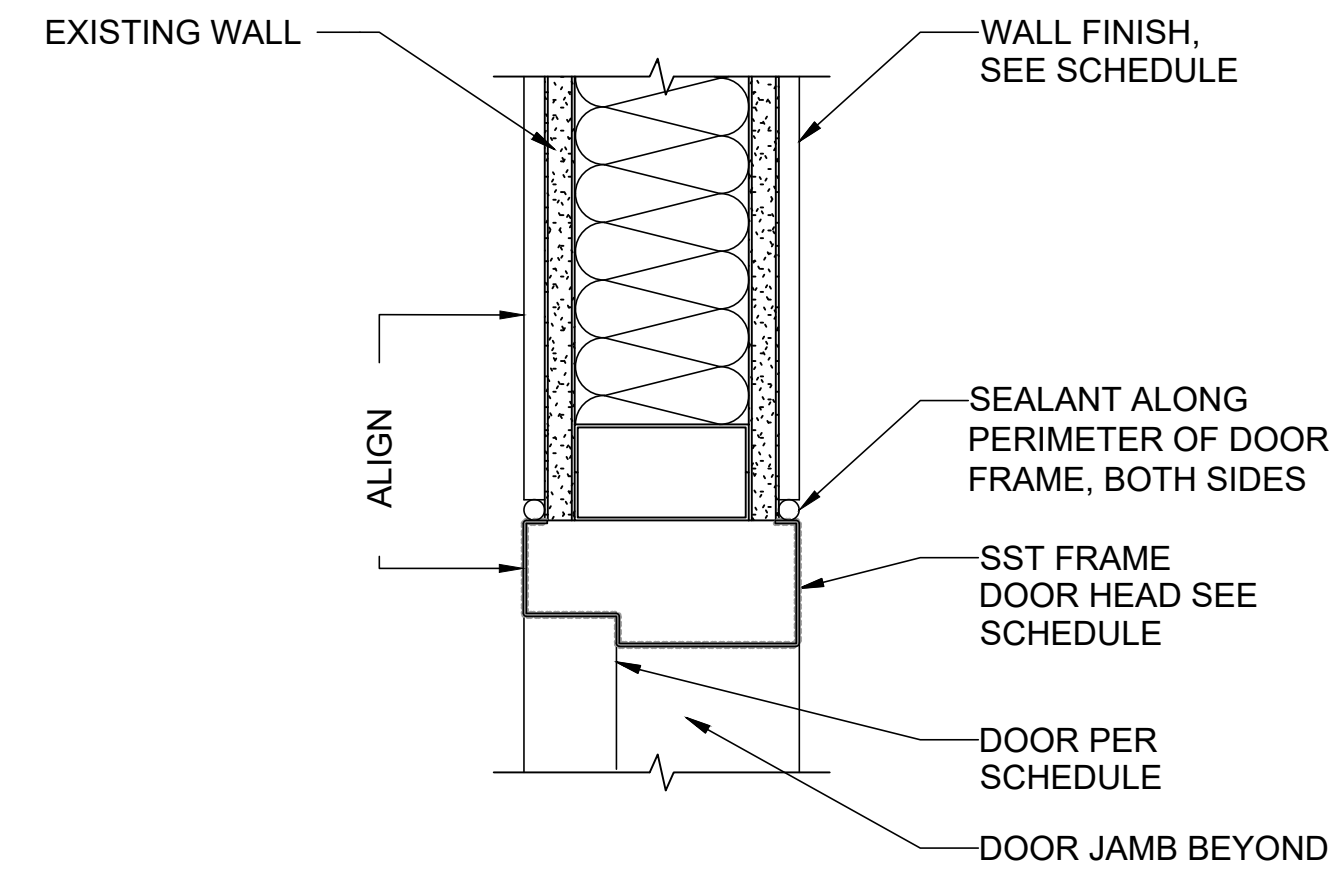
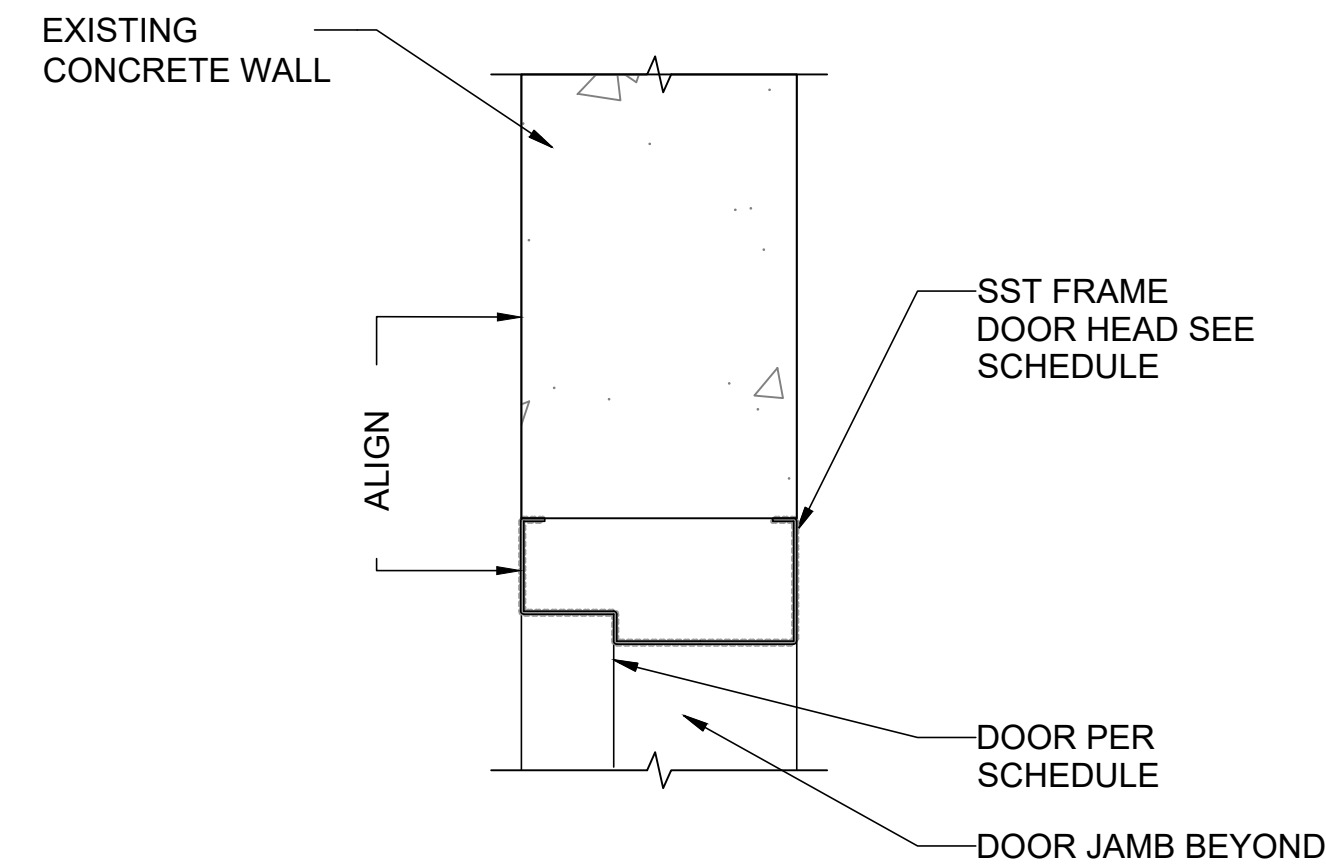
FULLERTON PARK & RIDE
RESTROOM IMPROVEMENTS
DOOR AND FINISH SCHEDULE

JOB #	
DESIGN BY	WT
DRAWN BY	MM
CHECKED BY	SF
DATE	03/30/2022
SCALE	
SHEET	A-05 OF

3000 W ORANGETHORPE AVE
FULLERTON, CALIFORNIA 92833



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STANTEC PROJ # 201423701



GENERAL NOTES:

1. SYSTEMS SHOWN ARE DIAGRAMMATIC AND DO NOT INCLUDE ALL OFFSETS, FITTINGS AND REQUIRED ROUTING. CONTRACTOR IS RESPONSIBLE FOR INSTALLATION OF COMPLETE AND OPERATIONAL SYSTEM WITH COMPLIANCE TO ALL APPLICABLE CODES AND AUTHORITY HAVING JURISDICTION. IT IS THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY ALL NEW WORK ROUTING AND INSTALLATIONS PRIOR TO INSTALL. PROVIDE REQUIRED OFFSETS TO INSTALL NEW WORK SO THAT EXISTING SYSTEM TO REMAIN ARE NOT IMPACTED.
2. IT IS THE CONTRACTORS RESPONSIBILITY TO FIELD VERIFY ALL CONNECTION POINTS PRIOR TO INSTALL. NOT ALL CONNECTION SIZES ARE SHOWN, BUT THOSE THAT ARE, ARE APPROXIMATE AND TAKEN FROM EXISTING AS-BUILTS.
3. FIELD VERIFY ALL EXISTING EQUIPMENT LOCATIONS PRIOR TO ANY DEMOLITION. RECORD ALL INFORMATION ON AS-BUILTS RECORDS.
4. ALL NEW WORK ON FINISHED FLOORS SHALL BE CONCEALED AND NOT EXPOSED IN ANY ROOM. CONTRACTOR TO PROVIDE ALL REQUIRED MATERIALS TO ACCOMPLISH THIS WORK.
5. CONTRACTOR SHALL PROTECT ALL WORK ASSOCIATED WITH THIS CONTRACT FROM DAMAGE. COVER ENDS OF DUCTWORK OR PIPING NOT ACTIVELY BEING WORKED ON. IT IS THE CONTRACTOR'S RESPONSIBILITY TO REPAIR OR REPLACE ANY DAMAGED ITEMS THAT OCCURS DURING THIS CONSTRUCTION PROJECT AT NO COST TO THE OWNER.
6. INSTALL EQUIPMENT SO THAT ACCESS CLEARANCES INDICATED ON DRAWINGS, REQUIRED BY CODES, OR RECOMMENDED BY MANUFACTURER ARE PROVIDED. MODIFY, EXTEND AND RELOCATE EXISTING SERVICE AND EQUIPMENT AS NECESSARY TO ACCOMODATE NEW WORK.
7. MAINTAIN MINIMUM ACCESS OF 6-INCHES ABOVE ELECTRICAL CABLE TRAYS, 18-INCHES TO THE SIDE OF CABLE TRAYS, 12-INCHES ABOVE CEILING GRID AND 6-INCHES ABOVE LIGHT FIXTURE CAN. DO NOT RUN ANY NEW OR RELOCATED PIPING, DUCTWORK, OR CEILING MATERIALS OVER ACCESS PANELS, PROVIDE CLEAR ACCESS OVER ACCESS PANEL.
8. REFER TO ARCHITECTURAL SHEET G-01 FOR ADDITIONAL NOTES AND REQUIREMENTS

DEMOLITION NOTES:

1. DEMOLISH ALL REQUIRED EQUIPMENT, PIPING, DUCTWORK, CONTROLS, ELECTRICAL, FIRE ALARM, AND ALL ASSOCIATED EXISTING SYSTEMS AS REQUIRED TO REPLACE EACH SYSTEM. CONTRACTOR SHALL COORDINATE DEMOLITION WITH EXISTING SYSTEMS AND COMPONENTS TO REMAIN PRIOR TO WORK COMMENCING.
2. IT IS THE CONTRACTOR'S RESPONSIBILITY TO CLEAN UP ALL DEBRIS FROM SITE AT THE END OF EACH WORK DAY AND DISPOSE OFF EITHER IN LAY DOWN RECYCLE BINS PROVIDED BY THE CONTRACTOR OR OFFSITE ALL TOGETHER.
3. THE CONTRACTOR SHALL VISIT THE SITE AND BE THOROUGHLY FAMILIARIZED WITH THE EXISTING CONDITIONS PRIOR TO BIDDING. INFORMATION GIVEN ON THESE DRAWINGS ABOUT THE EXISTING INSTALLATION HAS BEEN OBTAINED FROM THE EXISTING AS-BUILT DRAWINGS BUT CANNOT BE GUARANTEED ACCURATE IN ALL RESPECTS. VERIFY ALL SUCH INFORMATION BEFORE PROCEEDING WITH ANY NEW WORK THAT MAY BE AFFECTED. INCLUDE AS PART OF THE CONTRACT ALL WORK REQUIRED TO PRODUCE THE INDICATED RESULT.
4. UPON SUBMITTING A BID THE CONTRACTOR SHALL BE HELD TO HAVE MADE SUCH EXAMINATIONS OF THE SITE AND NO ALLOWANCE FOR EXTRAS WILL BE ALLOWED FOR ANY ERROR OR OVERSIGHT RESULTING FROM THE CONTRACTOR'S UNFAMILIARITY WITH THE SITE OR EXISTING CONDITIONS.
5. CONTRACTOR SHALL NOT SCALE DRAWINGS. DIMENSIONS MISSING FROM PLANS OR NEEDED FOR EXECUTION OF WORK SHALL BE CLARIFIED OR PROVIDED BY THE FACILITY REPRESENTATIVE BEFORE WORK IS INSTALLED.
6. INTERRUPTION OF EXISTING SERVICES: THE CONTRACTOR'S ATTENTION IS CALLED TO THE PRESENCE OF EXISTING, CONDUIT, PIPING, ETC. THE CONTRACTOR WILL BE HELD RESPONSIBLE FOR THE PROPER AND APPROVED REPAIR OF ANY AND ALL DAMAGE CAUSED BY HIM OR HIS WORK TO EXISTING BUILDING. ANY INTERRUPTIONS REQUIRED SHALL BE SCHEDULED TO MINIMIZE INCONVENIENCE TO THE FACILITY, AND AT TIMES AS APPROVED IN ADVANCE BY THE FACILITY REPRESENTATIVE. NEW WORK AND INSTALLATIONS SHALL NOT IMPAIR THE PROPER FUNCTIONING OF THE EXISTING FACILITY. THE COMPLETED PROJECT SHALL BE A PROPERLY FUNCTIONING ENTITY THROUGHOUT. FURNISH ALL LABOR AND MATERIALS REQUIRED TO RELOCATE, REMOVE, REINSTALL, RECONNECT, REPLACE, ETC. ANY EXISTING PIPING TO ACCOMMODATE THE WORK. CONTRACTOR SHOULD CONSIDER IN HIS BID ANY EXTRA WORK REQUIRED TO MINIMIZE SHUTDOWN TIME.
7. EQUIPMENT FIXTURE, PIPING ETC. THAT ARE TO BE REMOVED/DEMOLISHED SHALL BE THE PROPERTY OF THIS CONTRACTOR UNLESS NOTED FOR SALVAGE BY FACILITY AND SHALL BE REMOVED IN ITS ENTIRELY FROM THE PREMISES.
8. BEFORE DEMOLITION COMMENCES ON SITE, ALL EXISTING EQUIPMENT TO BE RETAINED AND REUSED WILL BE SURVEYED AND VALIDATED TO ESTABLISH CONDITION AND CAPACITIES. ANY EXISTING DAMAGE TO EQUIPMENT IS TO BE RECORDED AT THIS STAGE BY THE CONTRACTOR AND A FULL WRITTEN REPORT SUBMITTED TO THE FACILITY REPRESENTATIVE FOR REVIEW. THE REPORT WILL INCLUDE PHOTOGRAPHIC EVIDENCE OF DAMAGE.
9. CONTRACTOR TO CROSS REFERENCE DEMOLITION & NEW CONSTRUCTION DRAWINGS TO ENSURE CONSISTENCY IN DESIGN INTENT BEFORE PROCEEDING WITH ANY DEMOLITION WORK. ANY PIPE, VALVE, EQUIPMENT THAT IS MISTAKENLY DEMOLISHED SHALL BE RESTORED AT CONTRACTOR'S COST.
10. ALL POWER SUPPLIES TO EXISTING EQUIPMENT TO BE REMOVED SHALL BE ISOLATED AND MADE SAFE PER NEC PRIOR TO DEMOLITION STARTS. THIS PROCESS SHALL BE COORDINATED WITH FACILITY REPRESENTATIVES.
11. CONTRACTOR TO DO PRE-DEMOLITION SURVEY AND RED TAG UTILITIES FOR DEMOLITION. COORDINATE WITH FACILITY REPRESENTATIVE ALL PROPOSED UTILITY SHUT DOWN AND ISOLATION PRIOR TO DEMOLITION.

SHEET NUMBER	SHBEET NAME
M-01	GENERAL NOTES & CODES
M-02	ABBREVIATIONS & SYMBOLS
M-03	SITE PLAN
M-04	FLOOR PLAN
M-05	SCHEDULES & DETAILS
MD-01	DEMO FLOOR PLAN

APPLICABLE CODES

THE CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE LAWS AND CODES AND INCLUDE, BUT NOT BE LIMITED TO, THE LATEST ADOPTED EDITIONS OF:

2019 CALIFORNIA BUILDING STANDARDS ADMINISTRATIVE CODE
PART 1, TITLE 24, CALIFORNIA CODE OF REGULATIONS (CCR)

2019 CALIFORNIA BUILDING CODE
PART 2, TITLE 24, CCR

2019 CALIFORNIA ELECTRICAL CODE
PART 3, TITLE 24 CCR

2019 CALIFORNIA MECHANICAL CODE
PART 4, TITLE 24, CCR

2019 CALIFORNIA PLUMBING CODE
PART 5, TITLE 24, CCR

2019 CALIFORNIA BUILDING EFFICIENCY STANDARDS
PART 6, TITLE 24 CCR

2019 CALIFORNIA FIRE CODE
PART 9, TITLE 24, CCR

2019 CALIFORNIA GREEN CODE
PART 11, TITLE 24, CCR

WHERE LAWS AND CODES ARE FOUND TO BE IN CONFLICT WITH EACH OTHER, THE MORE STRINGENT REQUIREMENTS WILL PREVAIL.



ISSUE FOR BID



801 FIGUEROA STREET
SUITE 300
LOS ANGELES, CA 90017
T213-955-9775
STANTEC PROJ.# 2014233701

FULLERTON PARK & RIDE
RESTROOM IMPROVEMENTS
GENERAL NOTES & CODES

JOB #	2014233701
DESIGN BY	AB
DRAWN BY	IA
CHECKED BY	GY
DATE	03/30/22
SCALE	
SHEET	

M-01

3000 W ORANGETHORPE AVE
FULLERTON, CALIFORNIA 92833



EQUIPMENT IDENTIFICATION ABBREVIATIONS

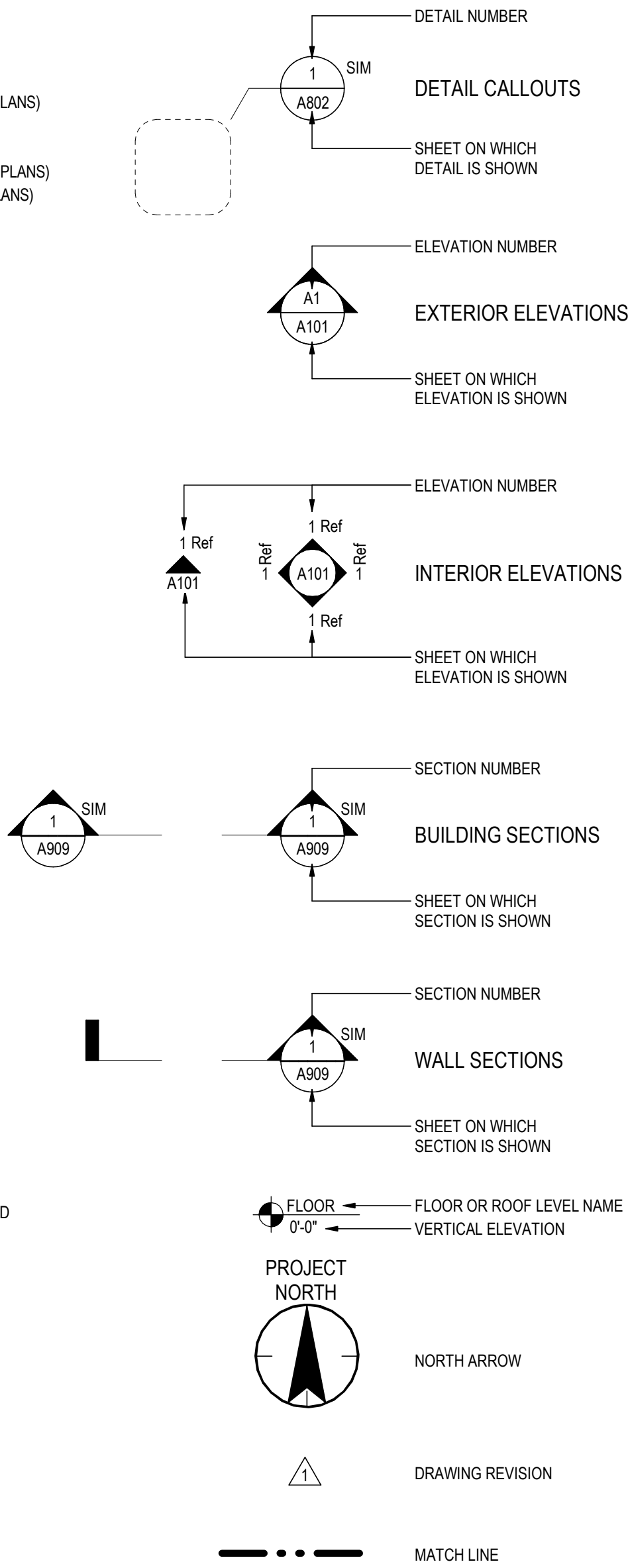
AB-#	AIR BLENDER	AAV	AUTOMATIC AIR VENT
AC-#	AIR COMPRESSOR	A/C	AIR CONDITIONING UNIT
ACU-#	AIR CONDITIONING UNIT	ADA	AMERICANS WITH DISABILITIES ACT
ADS-#	AIR AND DIRT SEPARATOR	ADJ	ADJUSTABLE
AF-#	AIR FILTER	AF	ABOVE FINISHED CEILING
AHU-#	AIR HANDLING UNIT	AFF	ABOVE FINISHED FLOOR
AS-#	AIR SEPARATOR	AFG	ABOVE FINISHED GRADE
ATU-#	AIR TERMINAL UNIT	AP	ACCESS PANEL
B-#	BOILER	APD	AIR PRESSURE DROP
BCU-#	BLOWER COIL UNIT	AVG	AVERGAGE
BT-#	BATH TUB	BAS	BUILDING AUTOMATION SYSTEM
CB-#	CHILLED BEAM	BDD	BACKDRAFT DAMPER
CC-#	COOLING COIL	BHP	BRAKE HORSEPOWER
CH-#	CHILLER	BMS	BUILDING MANAGEMENT SYSTEM
CONV-#	CONVECTOR	BOD	BOTTOM OF DUCT
CRU-#	CONDENSATE RETURN UNIT	BOP	BOTTOM OF PIPE
CT-#	COOLING TOWER	BTU	BRITISH THERMAL UNIT
CU-#	CONDENSING UNIT	BTUH	BRITISH THERMAL UNIT PER HOUR
CUH-#	CABINET UNIT HEATER	°C	CELSIUS
CV-#	CONTROL VALVE	CAV	CONSTANT AIR VOLUME
DAC-#	DOOR AIR CURTAIN	CFM	CUBIC FEET PER MINUTE
DC-#	DUST COLLECTOR	C/W	COMPLETE WITH
DCT-#	DECONTAMINATION TANK	dB	DECIBEL(S)
DF-#	DRINKING FOUNTAIN	DB	DRY BULB TEMPERATURE
DS-#	DUCT SILENCER	DDC	DIRECT DIGITAL CONTROL
DU-#	DEHUMIDIFICATION UNIT	DEG	DEGREE
DWH-#	DOMESTIC WATER HEATER	DIA./Ø	DIAMETER
E-#	EXHAUST GRILLE / REGISTER / DIFFUSER	DIFF	DIFFERENTIAL
EL-#	EXPANSION LOOP	DIV	DIVISION
ERC-#	ENERGY RECOVERY COIL	DN	DOWN
ERU-#	ENERGY RECOVERY UNIT	DWG	DRAWING
EW-#	ELECTRIC WATER COOLER	EAT	ENTERING AIR TEMPERATURE
EWS-#	EYE WASH STATION	EA	EXHAUST AIR
F(C)-#	FAN CEILING	EA (D)	EXHAUST AIR, DISHWASH
F(E)-#	FAN EXHAUST	EA (G)	EXHAUST AIR, GENERAL
F(LE)-#	FAN LABORATORY EXHAUST	EA (K)	EXHAUST AIR, KITCHEN
F(R)-#	FAN RETURN	EA (LAB)	EXHAUST AIR, LABORATORY
F(S)-#	FAN SUPPLY	EA (LD)	EXHAUST AIR, LAUNDRY/DRYER
F(T)-#	FAN TRANSFER	EAV	EXHAUST AIR VALVE
F-#	FAN	EA (W)	EXHAUST AIR, WASHROOM
FCU-#	FAN COIL UNIT	ED	EXISTING TO BE DEMOLISHED (DEMOLITION PLANS)
FD-#	FLOOR DRAIN	EER	ENERGY EFFICIENCY RATIO
FFU-#	FAN FILTER UNIT	EG	ETHYLENE GLYCOL
FPP-#	FIRE PROTECTION PUMP	ER	EXISTING RELOCATED (NEW CONSTRUCTION PLANS)
FPTU-#	FAN POWERED TERMINAL UNIT	ERL	EXISTING TO BE RELOCATED (DEMOLITION PLANS)
FTR-#	FINNED TUBE RADIATOR	ESP	EXTERNAL STATIC PRESSURE
FUR-#	FURNACE	EWT	ENTERING WATER TEMPERATURE
GF-#	GLYCOL FEED SYSTEM	EXIST / E	EXISTING (DEMOLITION PLANS)
GSG-#	GAS-FIRED STEAM GENERATOR(*)	°F	FAHRENHEIT
H(C)-#	HOOD (CANOPY)	FLA	FULL LOAD AMPERAGE
H(HC)-#	HOOD (HEAT AND CONDENSATE)	FP	FIRE PROTECTION
H(I)-#	HOOD (INTAKE)	FPM	FEET PER MINUTE
H(K)-#	HOOD (KITCHEN)	FPS	FEET PER SECOND
H(R)-#	HOOD (RELIEF)	FT	FOOT/FEET
H(RH)-#	HOOD (RANGE)	GA	GAUGE
H-#	HUMIDIFIER	GAL	GALLON (US)
HC-#	HEATING COIL	GC	GENERAL CONTRACTOR
HP-#	HEAT PUMP	GPM	GALLONS PER MINUTE
HRU-#	HEAT RECOVERY UNIT	HEPA	HIGH EFFICIENCY PARTICULATE AIR (FILTER)
HT-#	HYDROPNEUMATIC TANK	HP	HORSEPOWER
HX-#	HEAT EXCHANGER	HR	HOUR
LATU-#	LAB AIR TERMINAL UNIT	HVAC	HEATING / VENTILATING / AIR CONDITIONING
LAV-#	LAVATORY	HZ	HERTZ
MAC-#	MEDICAL AIR COMPRESSOR	IE	INVERT ELEVATION
MAU-#	MAKEUP AIR UNIT	IN	INCHES
MSK-#	MOP SINK	IN WG	INCHES WATER GAUGE
MV-#	MIXING VALVE	IPLV	INTEGRATED PART LOAD VALUE
MVP-#	MEDICAL VACUUM PUMP	KW	KILOWATT
P-#	PUMP	KWh	KILOWATT HOUR
PDU-#	POOL DEHUMIDIFICATION UNIT	LAT	LEAVING AIR TEMPERATURE
PRV-#	PRESSURE REDUCING VALVE	LBS	POUNDS
PTAC-#	PACKAGED TERMINAL AIR CONDITIONER	LF	LINEAR FEET
R-#	RETURN AIR GRILLE / REGISTER / DIFFUSER	LWT	LEAVING WATER TEMPERATURE
RD-#	ROOF DRAIN	M	METER
RP-#	RADIANT PANEL	MAX	MAXIMUM
RTU-#	ROOFTOP UNIT	MBH	THOUSAND OF BTUH
S-#	SUPPLY GRILLE / REGISTER / DIFFUSER	MCA	MINIMUM CIRCUIT AMPS
SH-#	SHOWER	MFR	MANUFACTURER
SK-#	SINK	MIN	MINIMUM
SPC-#	SOLAR PANEL COLLECTOR	MOP	MAXIMUM OVERCURRENT PROTECTION
SSF-#	SIDE STREAM FILTER	N/A	NOT APPLICABLE
T(B)-#	TANK (BUFFER TANK)	NC	NOISE CRITERIA
T(E)-#	TANK (EXPANSION TANK)	NC	NORMALLY CLOSED
T(H)-#	TANK (HYDRO PNEUMATIC TANK)	NIC	NOT IN CONTRACT
T(S)-#	TANK (STORAGE TANK)	NO	NORMALLY OPEN
T-#	TRANSFER AIR GRILLE	NPS	NOMINAL PIPE SIZE
UH-#	UNIT HEATER	NTS	NOT TO SCALE
UR-#	URINAL	OA	OUTSIDE AIR
USG-#	UNFIRED STEAM GENERATOR	OFCI	OWNER FURNISHED, CONTRACTOR INSTALLED
UV-#	UNIT VENTILATOR	OFE	OWNER FURNISHED EQUIPMENT
VA-#	VALVE	OFOI	OWNER FURNISHED / OWNER INSTALLED
WC-#	WATER CLOSET	PG	PROPYLENE GLYCOL
WS-#	WATER SOFTENER	POE	POINT OF ENTRANCE

NOTE: NOT ALL SYMBOLS, SYSTEMS, AND ABBREVIATIONS MAY BE USED ON THIS PROJECT

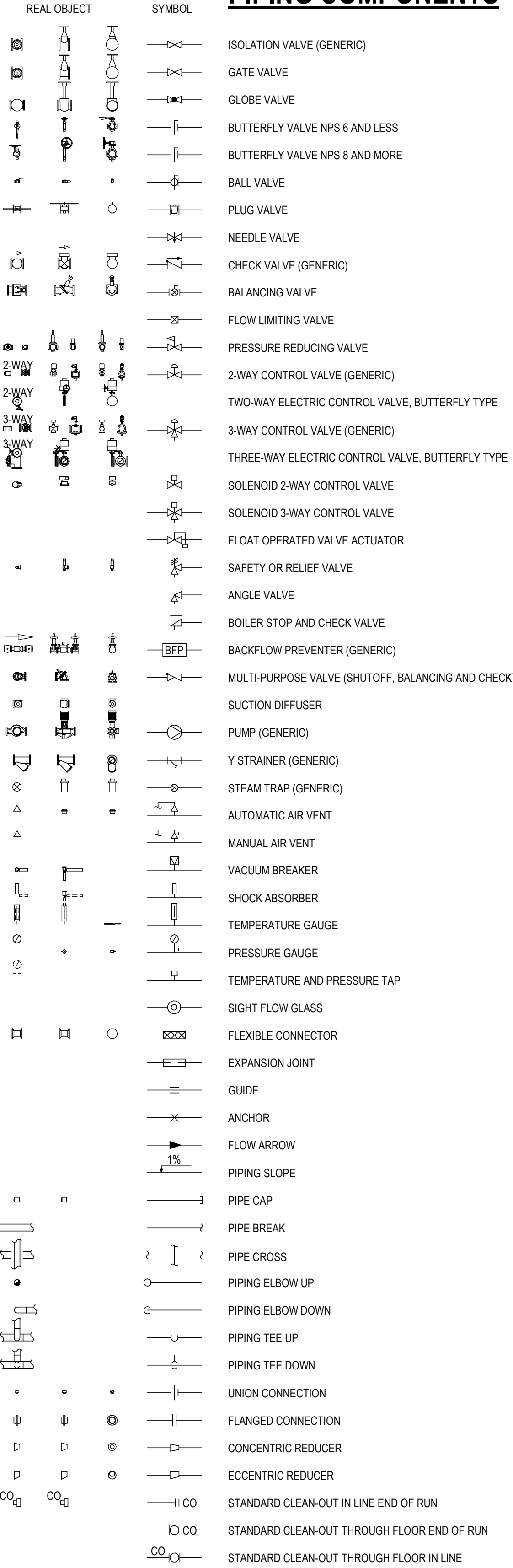
ABBREVIATIONS

POS	POINT OF SERVICE
PPM	PARTS PER MILLION
PSI	POUNDS PER SQUARE INCH
PSIG	POUNDS PER SQUARE INCH, GAGE
PTS	PNEUMATIC TUBE STATION
PVC	POLYVINYL CHLORIDE
RA	RETURN AIR
RELA	RELIEF AIR
REQD	REQUIRED
RH	RELATIVE HUMIDITY
RPM	REVOLUTIONS PER MINUTE
SA	SUPPLY AIR
SP	STATIC PRESSURE
BOD	BOTTOM OF DUCT
BOP	BOTTOM OF PIPE
BTU	BRITISH THERMAL UNIT
BTUH	BRITISH THERMAL UNIT PER HOUR
°C	CELSIUS
CAV	CONSTANT AIR VOLUME
CFM	CUBIC FEET PER MINUTE
C/W	COMPLETE WITH
dB	DECIBEL(S)
DB	DRY BULB TEMPERATURE
DDC	DIRECT DIGITAL CONTROL
DEG	DEGREE
DIA./Ø	DIAMETER
DIFF	DIFFERENTIAL
DIV	DIVISION
DN	DOWN
DWG	DRAWING
EAT	ENTERING AIR TEMPERATURE
EA	EXHAUST AIR
EA (D)	EXHAUST AIR, DISHWASH
EA (G)	EXHAUST AIR, GENERAL
EA (K)	EXHAUST AIR, KITCHEN
EA (LAB)	EXHAUST AIR, LABORATORY
EA (LD)	EXHAUST AIR, LAUNDRY/DRYER
EAV	EXHAUST AIR VALVE
EA (W)	EXHAUST AIR, WASHROOM
ED	EXISTING TO BE DEMOLISHED (DEMOLITION PLANS)
EER	ENERGY EFFICIENCY RATIO
EG	ETHYLENE GLYCOL
ER	EXISTING RELOCATED (NEW CONSTRUCTION PLANS)
ERL	EXISTING TO BE RELOCATED (DEMOLITION PLANS)
ESP	EXTERNAL STATIC PRESSURE
EWT	ENTERING WATER TEMPERATURE
EXIST / E	EXISTING (DEMOLITION PLANS)
°F	FAHRENHEIT
FLA	FULL LOAD AMPERAGE
FP	FIRE PROTECTION
FPM	FEET PER MINUTE
FPS	FEET PER SECOND
FT	FOOT/FEET
GA	GAUGE
GAL	GALLON (US)
GC	GENERAL CONTRACTOR
GPM	GALLONS PER MINUTE
HEPA	HIGH EFFICIENCY PARTICULATE AIR (FILTER)
HP	HORSEPOWER
HR	HOUR
HVAC	HEATING / VENTILATING / AIR CONDITIONING
HZ	HERTZ
IE	INVERT ELEVATION
IN	INCHES
IN WG	INCHES WATER GAUGE
IPLV	INTEGRATED PART LOAD VALUE
KW	KILOWATT
KWh	KILOWATT HOUR
LAT	LEAVING AIR TEMPERATURE
LBS	POUNDS
LF	LINEAR FEET
LWT	LEAVING WATER TEMPERATURE
M	METER
MAX	MAXIMUM
MBH	THOUSAND OF BTUH
MCA	MINIMUM CIRCUIT AMPS
MFR	MANUFACTURER
MIN	MINIMUM
MOP	MAXIMUM OVERCURRENT PROTECTION
N/A	NOT APPLICABLE
NC	NOISE CRITERIA
NC	NORMALLY CLOSED
NIC	NOT IN CONTRACT
NO	NORMALLY OPEN
NPS	NOMINAL PIPE SIZE
NTS	NOT TO SCALE
OA	OUTSIDE AIR
OFCI	OWNER FURNISHED, CONTRACTOR INSTALLED
OFE	OWNER FURNISHED EQUIPMENT
OFOI	OWNER FURNISHED / OWNER INSTALLED
PG	PROPYLENE GLYCOL
POE	POINT OF ENTRANCE

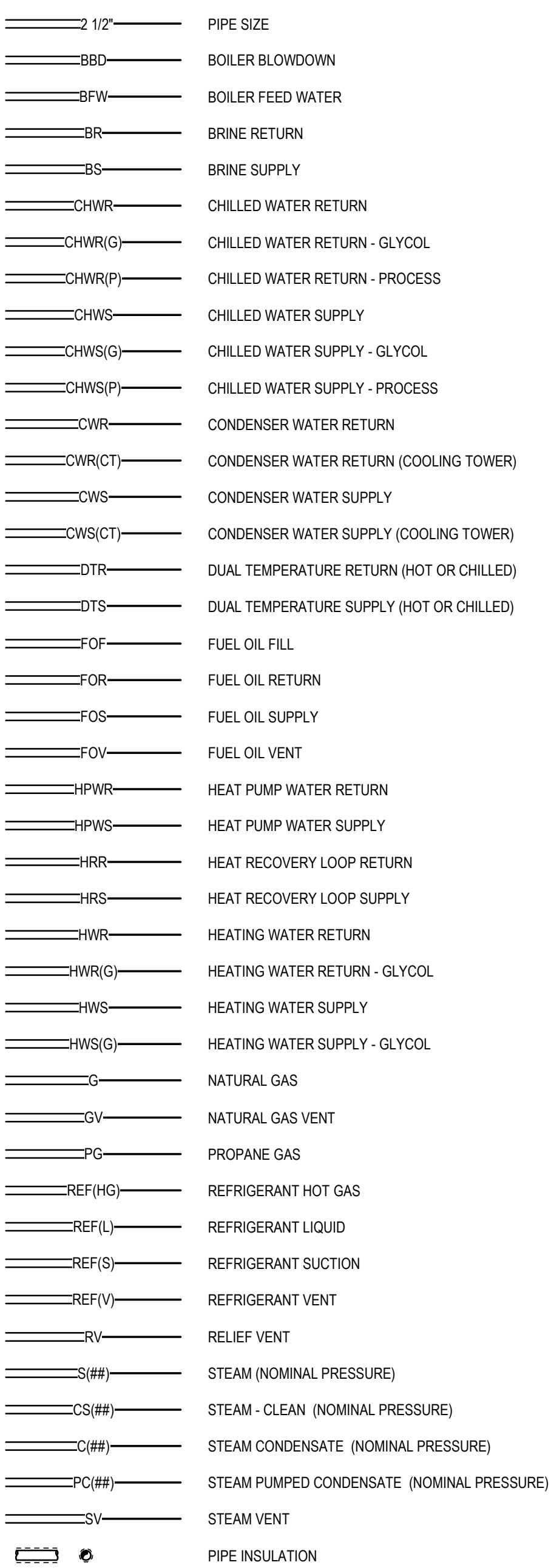
GENERAL SYMBOLS



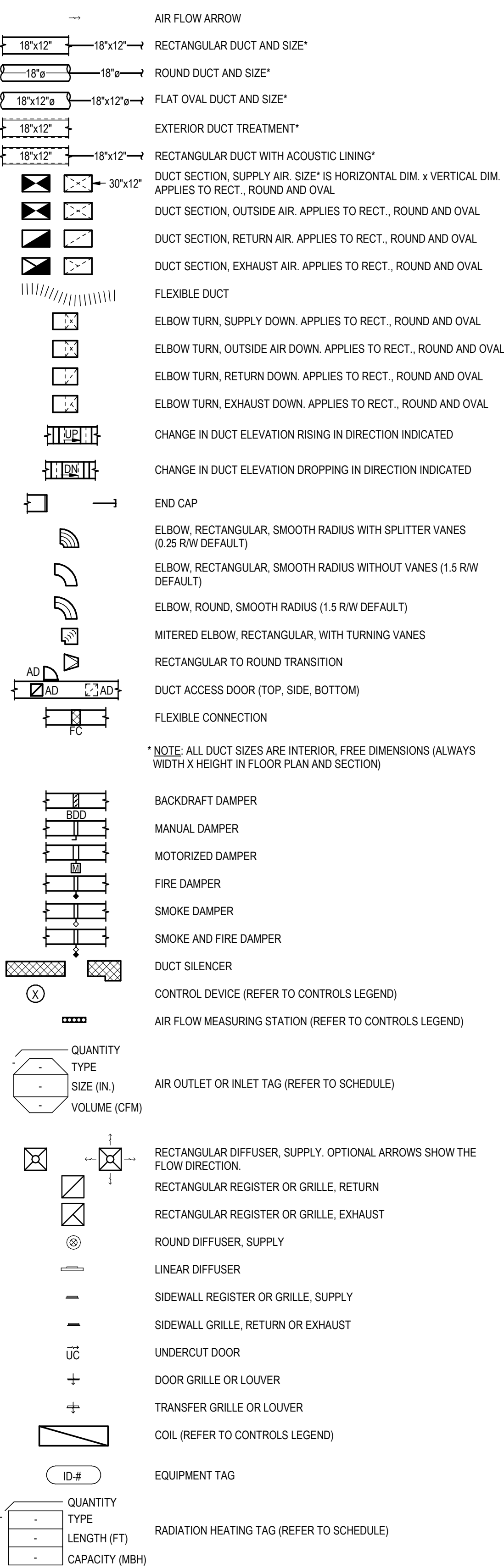
PIPING COMPONENTS



PIPING SYSTEMS (HVAC)



VENTILATION (HVAC)



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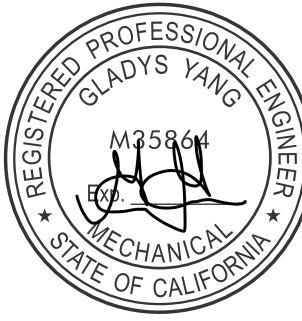
Stantec
801 FIGUEROA STREET
SUITE 300
LOS ANGELES, CA 90017
T:213-955-9775
STANTEC PROJ.# 2014233701

FULLERTON PARK & RIDE
RESTROOM IMPROVEMENTS
ABBREVIATIONS & SYMBOLS

JOB #	2014233701
DESIGN BY	AB
DRAWN BY	IA
CHECKED BY	GY
DATE	03/30/22
SCALE	
SHEET	

M-02

3000 W ORANGEHORPE AVE
FULLERTON, CALIFORNIA 92833





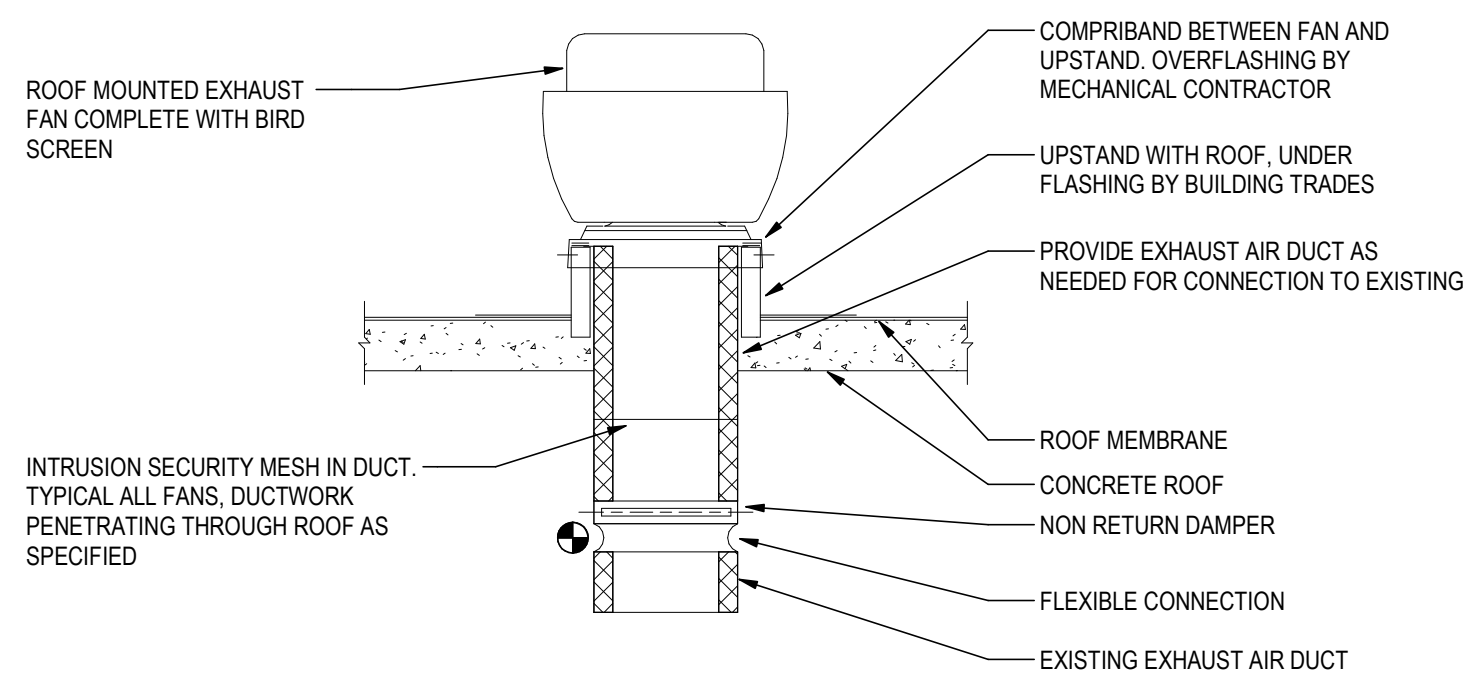
FULLERTON PARK & RIDE RESTROOM IMPROVEMENTS



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M04 NEW DOOR LOUVER PROVIDED WITH DOOR BY ARCHITECTURAL.



FAN SCHEDULE																				
UNIT IDENTIFICATION			MAX AIRFLOW (CFM)	ESP (IN-WG)	CONTROL	FAN WHEEL				FAN MOTOR				ELECTRICAL			OPERATING WEIGHT (LBS.)	MANUFACTURER	MODEL NUMBER	NOTES
MARK	MARK	APPLICATION & AREA SERVED				TYPE	ARRANGEMENT	SPEED (RPM)	MIN WHEEL DIA (IN)	BHP [W]	HP	SPEED (RPM)	DRIVE TYPE	VOLTS	PHASE	FLA				
EF	1	MEN'S	90	0.40	OCCUPANCY SENSOR	CENTRIFUGAL	ROOF MOUNTED	1,010	-	0.02	1/4	-	DIRECT	120	1	-	38	GREENHECK	G-097-VG	12.3
EF	2	WOMEN'S	105	0.40	OCCUPANCY SENSOR	CENTRIFUGAL	ROOF MOUNTED	1,043	-	0.03	1/4	-	DIRECT	120	1	-	38	GREENHECK	G-097-VG	12.3
EF	3	UNISEX (DRIVERS)	110	0.40	OCCUPANCY SENSOR	CENTRIFUGAL	ROOF MOUNTED	1,054	-	0.03	1/4	-	DIRECT	120	1	-	38	GREENHECK	G-097-VG	12.3

GRILLE, REGISTER, DIFFUSER SCHEDULE													
UNIT IDENTIFICATION		DIFFUSER FACE	DIFFUSER NECK SIZE	FLOW RANGE	FLOW	MOUNTING	COLOR	MATERIAL	ACCESSORY	PRESSURE	MFG.	MODEL	NOTES
MARK	NUMBER	SIZE (IN)	(IN)	(CFM)	PATTERN	TYPE				DROP (" WC)		NUMBER	
E	1	(NOTE 3)	(NOTE 3)	(NOTE 4)	MULTI DIRECTIONAL	SURFACE	(NOTE 2)	STEEL	(NOTE 1)	0.10	NAILOR	SG-LM	1, 2, 3, 4

NOTES:

1. DISCONNECT PROVIDED BY DIV 26.
2. PROVIDE MOTOR WITH THERMAL OVERLOADING PROTECTION.
3. FAN SHALL BE PROVIDED WITH OCCUPANCY SENSOR TO BE INSTALLED BY THE ELECTRICAL CONTRACTOR.
4. PROVIDE WITH BACKDRAFT DAMPER.
5. PROVIDE WITH MANUFACTURER'S ROOF CURB.

NOTES:

1. PROVIDE ALL FRAMES AND ACCESSORIES AS REQUIRED FOR INSTALLATION.
2. COLOR TO BE SELECTED BY ARCHITECT FROM STANDARD COLORS.
3. CONTRACTOR TO FIELD VERIFY SIZE PRIOR TO ORDERING, PROVIDE GRILLE TO MATCH EXISTING SIZES AND CONDITIONS
4. SEE FLOOR PLANS FOR FLOW RATES.

Stantec
801 FIGUEROA STREET
SUITE 300
LOS ANGELES, CA 90017
T:213-955-9775
STANTEC PROJ# 201423701

[illegible]

FULLERTON PARK & RIDE RESTROOM IMPROVEMENTS

JOB #	2014233701
DESIGN BY	AB
DRAWN BY	IA
CHECKED BY	GY
DATE	03/30/22
SCALE	NTS
SHEET	

3000 W ORANGETHORPE AVE
FULLERTON, CALIFORNIA 92833



ISSUE FOR BID



M05 EXISTING DOOR LOUVER TO BE REMOVED WITH DOOR, SEE ARCHITECTURAL SHEETS FOR MORE INFORMATION.

MARK	3/30/22	AB	ISSUE FOR BID
	DATE	BY	REVISIONS

**FULLERTON PARK & RIDE
RESTROOM IMPROVEMENTS
DEMO FLOOR PLAN**



ISSUE FOR BID



<Pick location in Project Information>
3/31/2022 8:21:02 AM

GENERAL NOTES:

1. SYSTEMS SHOWN ARE DIAGRAMMATIC AND DO NOT INCLUDE ALL OFFSETS, FITTINGS, AND REQUIRED ROUTING. CONTRACTOR IS RESPONSIBLE FOR INSTALLATION OF COMPLETE AND OPERABLE SYSTEM WITH COMPLIANCE TO ALL APPLICABLE CODES AND AUTHORITY HAVING JURISDICTION.
2. ALL WORK SHALL BE CONCEALED AND NOT EXPOSED IN ANY FINISHED ROOM.
3. COORDINATE PIPE ROUTING WITH DUCTWORK, SPRINKLER PIPING, AND ELECTRICAL POWER/LIGHTING CIRCUITING AND STRUCTURAL MEMBERS PRIOR TO INSTALLATION.
4. SEE ARCHITECTURAL PLANS FOR EXACT LOCATION OF PLUMBING FIXTURES, FLOOR DRAINS, ETC.
5. ALL HORIZONTAL WASTE PIPING 3" AND LESS IN SIZE AND SHALL BE SLOPED AT 2% GRADE, UNLESS OTHERWISE NOTED.
6. ALL HORIZONTAL WASTE PIPING 4" AND GREATER IN SIZE AND ALL VENT PIPING BELOW FIXTURE FOOD LEVEL SHALL BE SLOPED AT 1% GRADE, UNLESS OTHERWISE NOTED.
7. ALL HORIZONTAL RAIN LEADER AND OVERFLOW DRAINAGE PIPING SHALL BE SLOPED AT 1% GRADE, UNLESS OTHERWISE NOTED.
8. ALL NEW PIPING ROUTING DOWN EXTERIOR WALLS TO SERVE NEW PLUMBIN FIXTURES SHALL BE ON THE INTERIOR SIDE OF THE WALL INSULATION.
9. ALL DOMESTIC WATER PIPING IN UNCONDITIONED SPACES SHALL HAVE HEAT TRACE UNDERNEATH INSULATION. COORDINATE ELECTRICAL CONNECTIONS WITH DIVISION 26.
10. ALL RISERS FOR ROOF AND OVERFLOW DRAINS SHALL HAVE A CLEANOUT WHEN PIPE TRANSITIONS FROM VERTICAL TO HORIZONTAL.
11. ALL VALVES AND PIPE ACCESSORIES REQUIRING REGULAR MAINTENANCE SHALL BE ACCESSIBLE THROUGH ACCESS OR CHASE DOORS.
12. REFER TO ARCHITECTURAL SHEET G-01 FOR ADDITIONAL NOTES AND REQUIREMENTS

DEMOLITION NOTES:

1. DEMOLISH ALL REQUIRED EQUIPMENT, PIPING, DUCTWORK, CONTROLS, ELECTRICAL, FIRE ALARM, AND ALL ASSOCIATED EXISTING SYSTEMS AS REQUIRED TO REPLACE EACH SYSTEM. CONTRACTOR SHALL COORDINATE DEMOLITION WITH EXISTING SYSTEMS AND COMPONENTS TO REMAIN PRIOR TO WORK COMMENCING.
2. IT IS THE CONTRACTOR'S RESPONSIBILITY TO CLEAN UP ALL DEBRIS FROM SITE AT THE END OF EACH WORK DAY AND DISPOSE OFF EITHER IN LAY DOWN RECYCLE BINS PROVIDED BY THECONTRACTOR OR OFFSITE ALL TOGETHER.
3. THE CONTRACTOR SHALL VISIT THE SITE AND BE THOROUGHLY FAMILIARIZED WITH THE EXISTING CONDITIONS PRIOR TO BIDDING. INFORMATION GIVEN ON THESE DRAWINGS ABOUT THE EXISTING INSTALLATION HAS BEEN OBTAINED FROM THE EXISTING AS-BUILT DRAWINGS BUT CANNOT BE GUARANTEED ACCURATE IN ALL RESPECTS. VERIFY ALL SUCH INFORMATION BEFORE PROCEEDING WITH ANY NEW WORK THAT MAY BE AFFECTED. INCLUDE AS PART OF THE CONTRACT ALL WORK REQUIRED TO PRODUCE THE INDICATED RESULT.
4. UPON SUBMITTING A BID THE CONTRACTOR SHALL BE HELD TO HAVE MADE SUCH EXAMINATIONS OF THE SITE AND NO ALLOWANCE FOR EXTRAS WILL BE ALLOWED FOR ANY ERROR OR OVERSIGHT RESULTING FORM THE CONTRACTOR'S UNFAMILIARITY WITH THE SITE OR EXISTING CONDITIONS.
5. CONTRACTOR SHALL NOT SCALE DRAWINGS. DIMENSIONS MISSING FROM PLANS OR NEEDED FOR EXECUTION OF WORK SHALL BE CLARIFIED OR PROVIDED BY THE FACILITY REPRESENTATIVE BEFORE WORK IS INSTALLED.
6. INTERRUPTION OF EXISTING SERVICES: THE CONTRACTOR'S ATTENTION IS CALLED TO THE PRESENCE OF EXISTING, CONDUIT, PIPING, ETC. THE CONTRACTOR WILL BE HELD RESPONSIBLE FOR THE PROPER AND APPROVED REPAIR OF ANY AND ALL DAMAGE CAUSED BY HIM OR HIS WORK TO EXISTING BUILDING. ANY INTERRUPTIONS REQUIRED SHALL BE SCHEDULED TO MINIMIZE INCONVENIENCE TO THE FACILITY, AND AT TIMES AS APPROVED IN ADVANCE BY THE FACILITY REPRESENTATIVE. NEW WORK AND INSTALLATIONS SHALL NOT IMPAIR THE PROPER FUNCTIONING OF THE EXISTING FACILITY. THE COMPLETED PROJECT SHALL BE A PROPERLY FUNCTIONING ENTITY THROUGHOUT. FURNISH ALL LABOR AND MATERIALS REQUIRED TO RELOCATE, REMOVE, REINSTALL, RECONNECT, REPLACE, ETC. ANY EXISTING PIPING TO ACCOMMODATE THE WORK. CONTRACTOR SHOULD CONSIDER IN HIS BID ANY EXTRA WORK REQUIRED TO MINIMIZE SHUTDOWN TIME.
7. EQUIPMENT FIXTURE, PIPING ETC. THAT ARE TO BE REMOVED/DEMOLISHED SHALL BE THE PROPERTY OF THIS CONTRACTOR UNLESS NOTED FOR SALVAGE BY FACILITY AND SHALL BE REMOVED IN ITS ENTIRELY FROM THE PREMISES.
8. BEFORE DEMOLITION COMMENCES ON SITE, ALL EXISTING EQUIPMENT TO BE RETAINED AND REUSED WILL BE SURVEYED AND VALIDATED TO ESTABLISH CONDITION AND CAPACITIES. ANY EXISTING DAMAGE TO EQUIPMENT IS TO BE RECORDED AT THIS STAGE BY THE CONTRACTOR AND A FULL WRITTEN REPORT SUBMITTED TO THE FACILITY REPRESENTATIVE FOR REVIEW. THE REPORT WILL INCLUDE PHOTOGRAPHIC EVIDENCE OF DAMAGE.
9. CONTRACTOR TO CROSS REFERENCE DEMOLITION & NEW CONSTRUCTION DRAWINGS TO ENSURE CONSISTENCY IN DESIGN INTENT BEFORE PROCEEDING WITH ANY DEMOLITION WORK. ANY PIPE, VALVE, EQUIPMENT THAT IS MISTAKENLY DEMOLISHED SHALL BE RESTORED AT CONTRACTOR'S COST.
10. ALL POWER SUPPLIES TO EXISTING EQUIPMENT TO BE REMOVED SHALL BE ISOLATED AND MADE SAFE PER NEC PRIOR TO DEMOLITION STARTS. THIS PROCESS SHALL BE COORDINATED WITH FACILITY REPRESENTATIVES.
11. CONTRACTOR TO DO PRE-DEMOLITION SURVEY AND RED TAG UTILITIES FOR DEMOLITION. COORDINATE WITH FACILITY REPRESENTATIVE ALL PROPOSED UTILITY SHUT DOWN AND ISOLATION PRIOR TO DEMOLITION.

SHEET NUMBER	SHEET NAME
P-01	GENERAL NOTES
P-02	CODE INFORMATION, ABBREVIATIONS & SYMBOLS
P-03	SITE PLAN
P-04	FLOOR PLAN
P-05	SCHEDULES & DETAILS
PD-01	DEMO FLOOR PLAN

APPLICABLE CODES

THE CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE LAWS AND CODES AND INCLUDE, BUT NOT BE LIMITED TO, THE LATEST ADOPTED EDITIONS OF:

2019 CALIFORNIA BUILDING STANDARDS ADMINISTRATIVE CODE
PART 1, TITLE 24, CALIFORNIA CODE OF REGULATIONS (CCR)

2019 CALIFORNIA BUILDING CODE
PART 2, TITLE 24, CCR

2019 CALIFORNIA ELECTRICAL CODE
PART 3, TITLE 24 CCR

2019 CALIFORNIA MECHANICAL CODE
PART 4, TITLE 24, CCR

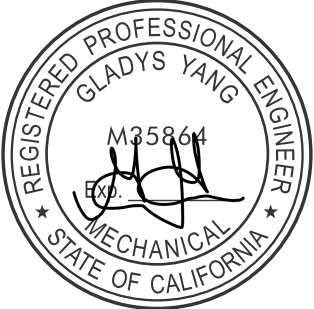
2019 CALIFORNIA PLUMBING CODE
PART 5, TITLE 24, CCR

2019 CALIFORNIA BUILDING EFFICIENCY STANDARDS
PART 6, TITLE 24 CCR

2019 CALIFORNIA FIRE CODE
PART 9, TITLE 24, CCR

2019 CALIFORNIA GREEN CODE
PART 11, TITLE 24, CCR

WHERE LAWS AND CODES ARE FOUND TO BE IN CONFLICT WITH EACH OTHER, THE MORE STRINGENT REQUIREMENTS WILL PREVAIL.



ISSUE FOR BID



801 FIGUEROA STREET
SUITE 300
LOS ANGELES, CA 90017
T213-955-9775
STANTEC PROJ.# 2014233701

FULLERTON PARK & RIDE
RESTROOM IMPROVEMENTS
GENERAL NOTES

JOB #	2014233701
DESIGN BY	AB
DRAWN BY	IA
CHECKED BY	GY
DATE	03/30/22
SCALE	NTS
SHEET	

P-01

3000 W ORANGETHORPE AVE
FULLERTON, CALIFORNIA 92833



EQUIPMENT IDENTIFICATION ABBREVIATIONS

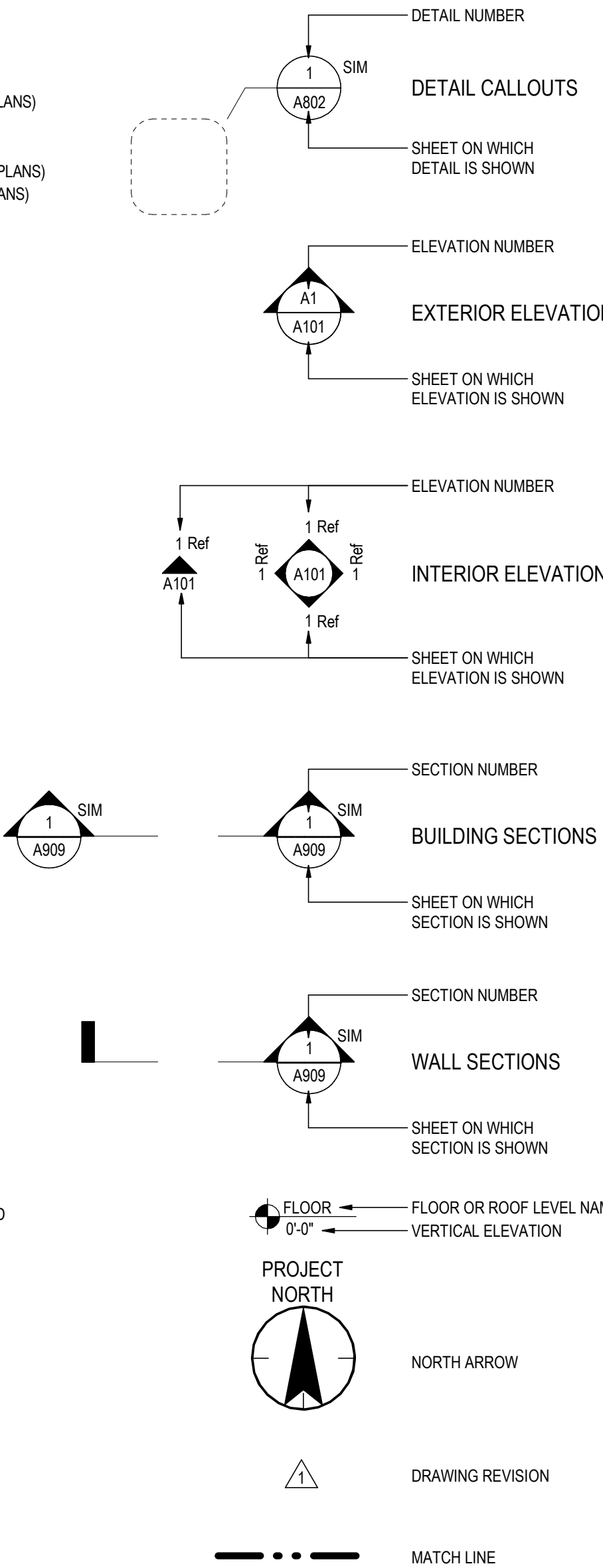
AB-#	AIR BLENDER
AC-#	AIR COMPRESSOR
ACU-#	AIR CONDITIONING UNIT
ADS-#	AIR AND DIRT SEPARATOR
AF-#	AIR FILTER
AHU-#	AIR HANDLING UNIT
AS-#	AIR SEPARATOR
ATU-#	AIR TERMINAL UNIT
B-#	BOILER
BCU-#	BLOWER COIL UNIT
BT-#	BATH TUB
CB-#	CHILLED BEAM
CC-#	COOLING COIL
CH-#	CHILLER
CONV-#	CONVECTOR
CRU-#	CONDENSATE RETURN UNIT
CT-#	COOLING TOWER
CU-#	CONDENSING UNIT
CUH-#	CABINET UNIT HEATER
CV-#	CONTROL VALVE
DAC-#	DOOR AIR CURTAIN
DC-#	DUST COLLECTOR
DCT-#	DECONTAMINATION TANK
DF-#	DRINKING FOUNTAIN
DS-#	DUCT SILENCER
DU-#	DEHUMIDIFICATION UNIT
DWH-#	DOMESTIC WATER HEATER
E-#	EXHAUST GRILLE / REGISTER / DIFFUSER
EL-#	EXPANSION LOOP
ERC-#	ENERGY RECOVERY COIL
ERU-#	ENERGY RECOVERY UNIT
EW-#	ELECTRIC WATER COOLER
EWS-#	EYE WASH STATION
F(C)-#	FAN CEILING
F(E)-#	FAN EXHAUST
F(LE)-#	FAN LABORATORY EXHAUST
F(R)-#	FAN RETURN
F(S)-#	FAN SUPPLY
F(T)-#	FAN TRANSFER
F-#	FAN
FCU-#	FAN COIL UNIT
FD-#	FLOOR DRAIN
FFU-#	FAN FILTER UNIT
FPP-#	FIRE PROTECTION PUMP
FPTU-#	FAN POWERED TERMINAL UNIT
FTR-#	FINNED TUBE RADIATOR
FUR-#	FURNACE
GFS-#	GLYCOL FEED SYSTEM
GSG-#	GAS-FIRED STEAM GENERATOR(*)
H(C)-#	HOOD (CANOPY)
H(HC)-#	HOOD (HEAT AND CONDENSATE)
H(I)-#	HOOD (INTAKE)
H(K)-#	HOOD (KITCHEN)
H(R)-#	HOOD (RELIEF)
H(RH)-#	HOOD (RANGE)
H-#	HUMIDIFIER
HC-#	HEATING COIL
HP-#	HEAT PUMP
HRU-#	HEAT RECOVERY UNIT
HT-#	HYDROPNEUMATIC TANK
HX-#	HEAT EXCHANGER
LATU-#	LAB AIR TERMINAL UNIT
LAV-#	LAVATORY
MAC-#	MEDICAL AIR COMPRESSOR
MAU-#	MAKEUP AIR UNIT
MSK-#	MOP SINK
MV-#	MIXING VALVE
MVP-#	MEDICAL VACUUM PUMP
P-#	PUMP
PDU-#	POOL DEHUMIDIFICATION UNIT
PRV-#	PRESSURE REDUCING VALVE
PTAC-#	PACKAGED TERMINAL AIR CONDITIONER
R-#	RETURN AIR GRILLE / REGISTER / DIFFUSER
RD-#	ROOF DRAIN
RP-#	RADIANT PANEL
RTU-#	ROOFTOP UNIT
S-#	SUPPLY GRILLE / REGISTER / DIFFUSER
SH-#	SHOWER
SK-#	SINK
SPC-#	SOLAR PANEL COLLECTOR
SSF-#	SIDE STREAM FILTER
T(B)-#	TANK (BUFFER TANK)
T(E)-#	TANK (EXPANSION TANK)
T(H)-#	TANK (HYDRO PNEUMATIC TANK)
T(S)-#	TANK (STORAGE TANK)
T-#	TRANSFER AIR GRILLE
UH-#	UNIT HEATER
UR-#	URINAL
USG-#	UNFIRED STEAM GENERATOR
UV-#	UNIT VENTILATOR
VA-#	VALVE
WC-#	WATER CLOSET
WS-#	WATER SOFTENER

AAV	AUTOMATIC AIR VENT
A/C	AIR CONDITIONING UNIT
ADA	AMERICANS WITH DISABILITIES ACT
ADJ	ADJUSTABLE
AFC	ABOVE FINISHED CEILING
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AP	ACCESS PANEL
APD	AIR PRESSURE DROP
AVG	AVERAGE
BAS	BUILDING AUTOMATION SYSTEM
BDD	BACKDRAFT DAMPER
BHP	BRAKE HORSEPOWER
BMS	BUILDING MANAGEMENT SYSTEM
BOD	BOTTOM OF DUCT
BOP	BOTTOM OF PIPE
BTU	BRITISH THERMAL UNIT
BTUH	BRITISH THERMAL UNIT PER HOUR
°C	CELSIUS
CAV	CONSTANT AIR VOLUME
CFM	CUBIC FEET PER MINUTE
CW	COMPLETE WITH
dB	DECIBEL(S)
DB	DRY BULB TEMPERATURE
DDC	DIRECT DIGITAL CONTROL
DEG	DEGREE
DIA/Ø	DIAMETER
DIFF	DIFFERENTIAL
DIV	DIVISION
DN	DOWN
DWG	DRAWING
EAT	ENTERING AIR TEMPERATURE
EA	EXHAUST AIR
EA (D)	EXHAUST AIR, DISHWASH
EA (G)	EXHAUST AIR, GENERAL
EA (K)	EXHAUST AIR, KITCHEN
EA (LAB)	EXHAUST AIR, LABORATORY
EA (LD)	EXHAUST AIR, LAUNDRY/DRYER
EAV	EXHAUST AIR VALVE
EA (W)	EXHAUST AIR, WASHROOM
ED	EXISTING TO BE DEMOLISHED (DEMOLITION PLANS)
EER	ENERGY EFFICIENCY RATIO
EG	ETHYLENE GLYCOL
ER	EXISTING RELOCATED (NEW CONSTRUCTION PLANS)
ERL	EXISTING TO BE RELOCATED (DEMOLITION PLANS)
ESP	EXTERNAL STATIC PRESSURE
EW	ENTERING WATER TEMPERATURE
EXIST / E	EXISTING (DEMOLITION PLANS)
°F	FAHRENHEIT
FLA	FULL LOAD AMPERAGE
FP	FIRE PROTECTION
FPM	FEET PER MINUTE
FPS	FEET PER SECOND
FT	FOOT/FEET
GA	GAUGE
GAL	GALLON (US)
GC	GENERAL CONTRACTOR
GPM	GALLONS PER MINUTE
HEPA	HIGH EFFICIENCY PARTICULATE AIR (FILTER)
HP	HORSEPOWER
HR	HOUR
HVAC	HEATING / VENTILATING / AIR CONDITIONING
HZ	HERTZ
IE	INVERT ELEVATION
IN	INCHES
IN WG	INCHES WATER GAUGE
IPLV	INTEGRATED PART LOAD VALUE
kW	KILOWATT
kWh	KILOWATT HOUR
LAT	LEAVING AIR TEMPERATURE
LBS	POUNDS
LF	LINEAR FEET
LWT	LEAVING WATER TEMPERATURE
M	METER
MAX	MAXIMUM
MBH	THOUSAND OF BTUH
MCA	MINIMUM CIRCUIT AMPS
MFR	MANUFACTURER
MIN	MINIMUM
MOP	MAXIMUM OVERCURRENT PROTECTION
N/A	NOT APPLICABLE
NC	NOISE CRITERIA
NC	NORMALLY CLOSED
NIC	NOT IN CONTRACT
NO	NORMALLY OPEN
NPS	NOMINAL PIPE SIZE
NTS	NOT TO SCALE
OA	OUTSIDE AIR
OCFI	OWNER FURNISHED, CONTRACTOR INSTALLED
OFE	OWNER FURNISHED EQUIPMENT
OFOI	OWNER FURNISHED / OWNER INSTALLED
PG	PROPYLENE GLYCOL
POE	POINT OF ENTRANCE

ABBREVIATIONS

POS	POINT OF SERVICE
PPM	PARTS PER MILLION
PSI	POUNDS PER SQUARE INCH
PSIA	POUNDS PER SQUARE INCH, ABSOLUTE
PSIG	POUNDS PER SQUARE INCH, GAGE
PTS	PNEUMATIC TUBE STATION
PVC	POLYVINYL CHLORIDE
RA	RETURN AIR
REL	RELIEF AIR
REQD	REQUIRED
RH	RELATIVE HUMIDITY
RPM	REVOLUTIONS PER MINUTE
SA	SUPPLY AIR
SP	STATIC PRESSURE
SP	STAIR PRESSURIZATION AIR (*)
SRV	SAFETY RELIEF VALVE
TA	TRANSFER AIR
TEMP	TEMPERATURE
TSP	TOTAL STATIC PRESSURE
TSTAT	THERMOSTAT
TYP	TYPICAL
UC	UNDER CUT (DOOR)
UG	UNDERGROUND
UP	UP
VAV	VARIABLE AIR VOLUME
VFD	VARIABLE FREQUENCY DRIVE
VIF	VERIFY IN FIELD
VTR	VENT-THRU-ROOF
W/	WITH
W/O	WITHOUT
WB	WET BULB TEMPERATURE
WG	WATER GAUGE
ZN-#	ZONE

GENERAL SYMBOLS



PLUMBING

2 1/2"	PIPE SIZE
-----XX-----	PIPING ROUTED BELOW SLAB OR GRADE
---AV---	ACID VENT
---AW---	ACID WASTE ABOVE GRADE OR FLOOR
---BBD---	BOILER BLOWDOWN
---CA(##)---	COMPRESSED AIR (NOMINAL PRESSURE)
---CD(P)---	CONDENSATE DISCHARGE PUMPED
---CD---	CONDENSATE DRAIN
---DI---	DIONIZED WATER
---DIR---	DIONIZED WATER RECIRCULATING
---DW---	DISTILLED WATER
---DCW---	DOMESTIC COLD WATER
---DCW(S)---	DOMESTIC COLD WATER SOFTENED
---DHW---	DOMESTIC HOT WATER
---DHW(R)---	DOMESTIC HOT WATER RECIRCULATION
---D---	DRAIN
---GW---	GREASE WASTE
---H---	HUMIDIFICATION
---LV---	LABORATORY VENT
---LW---	LABORATORY WASTE
---G---	NATURAL GAS
---GV---	NATURAL GAS VENT
---NPOW---	NON-POTABLE COLD WATER
---NPCW(S)---	NON-POTABLE COLD WATER SOFTENED
---NPHW---	NON-POTABLE HOT WATER
---NPHW(S)---	NON-POTABLE HOT WATER SOFTENED
---PTS---	PNEUMATIC TRANSPORT
---PG---	PROPANE GAS
---RO---	REVERSE OSMOSIS
---ROR---	REVERSE OSMOSIS RECIRCULATING
---SL---	SAMPLING LINE
---SAN---	SANITARY DRAIN
---SAN(O)---	SANITARY DRAIN (OIL)
---SAN(P)---	SANITARY PUMPED
---SAN(RAD)---	SANITARY RADIOACTIVE
---ST---	STORM DRAIN
---ST(O)---	STORM OVERFLOW
---ST(P)---	STORM PUMPED
---VAC---	VACUUM (AIR)
---VAC(EX)---	VACUUM PUMP EXHAUST
---V---	VENT
---V(O)---	VENT (OIL)
---V(SE)---	VENT (SEWAGE EJECTOR)
---	PIPE INSULATION
---	FIXTURE TRAP
CB ○	CATCH BASIN
MH ○	MANHOLE
RD ⊗	ROOF DRAIN
FD ⊗	FLOOR DRAIN
FFD ⊗	FUNNEL FLOOR DRAIN
---	TRAP PRIMER
---	HOSE BIBB
---	PLUMBING FIXTURES
---	PLUMBING FIXTURE TAG (REFER TO SCHEDULE)

REAL OBJECT	SYMBOL	PIPING COMPONENTS
		ISOLATION VALVE (GENERIC)
		GATE VALVE
		GLOBE VALVE
		BUTTERFLY VALVE NPS 6 AND LESS
		BUTTERFLY VALVE NPS 8 AND MORE
		BALL VALVE
		PLUG VALVE
		NEEDLE VALVE
		CHECK VALVE (GENERIC)
		BALANCING VALVE
		FLOW LIMITING VALVE
		PRESSURE REDUCING VALVE
		2-WAY CONTROL VALVE (GENERIC)
		TWO-WAY ELECTRIC CONTROL VALVE, BUTTERFLY TYPE
		3-WAY CONTROL VALVE (GENERIC)
		THREE-WAY ELECTRIC CONTROL VALVE, BUTTERFLY TYPE
		SOLENOID 2-WAY CONTROL VALVE
		SOLENOID 3-WAY CONTROL VALVE
		FLOAT OPERATED VALVE ACTUATOR
		SAFETY OR RELIEF VALVE
		ANGLE VALVE
		BOILER STOP AND CHECK VALVE
		BACKFLOW PREVENTER (GENERIC)
		MULTI-PURPOSE VALVE (SHUTOFF, BALANCING AND CHECK)
		SUCTION DIFFUSER
		Y STRAINER (GENERIC)
		STEAM TRAP (GENERIC)
		AUTOMATIC AIR VENT
		MANUAL AIR VENT
		VACUUM BREAKER
		SHOCK ABSORBER
		TEMPERATURE GAUGE
		PRESSURE GAUGE
		TEMPERATURE AND PRESSURE TAP
		SIGHT FLOW GLASS
		FLEXIBLE CONNECTOR
		EXPANSION JOINT
		GUIDE
		ANCHOR
		FLOW ARROW
		PIPING SLOPE
		PIPE CAP
		PIPE BREAK
		PIPE CROSS
		PIPING ELBOW UP
		PIPING ELBOW DOWN
		PIPING TEE UP
		PIPING TEE DOWN
		UNION CONNECTION
		FLANGED CONNECTION
		CONCENTRIC REDUCER
		ECCENTRIC REDUCER
		STANDARD CLEAN-OUT IN LINE END OF RUN
		STANDARD CLEAN-OUT THROUGH FLOOR END OF RUN
		STANDARD CLEAN-OUT THROUGH FLOOR IN LINE



1. SEE GENERAL NOTES ON SHEET P-01 FOR MORE INFORMATION

 KEYNOTES

P01 CONNECT NEW FLOOR DRAIN TO EXISTING PIPING.

P02 CONNECT NEW WATER CLOSET TO EXISTING PIPING.

P03 CONNECT NEW URINAL TO EXISTING PIPING.

P04 CONNECT NEW LAVATORY TO EXISTING PIPING.

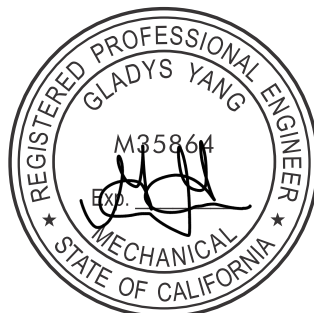
801 FIGUEROA STREET
SUITE 300
LOS ANGELES, CA 90017
T:213-955-9775
STANTEC PROJ# 2014233701

MARK	DATE	BY	ISSUE FOR BID
	3/30/22	A8	
			REVISIONS

FULLERTON PARK & RIDE RESTROOM IMPROVEMENTS FLOOR PLAN

P-04

3000 W ORANGETHORPE AVE
FULLERTON, CALIFORNIA 92833



ISSUE FOR BID

PLUMBING FIXTURES SCHEDULE

FIXTURE TYPE: WATER CLOSET

FIXTURE TYPE: URINAL																					
UNIT IDENTIFICATION	CONNECTION SIZES					FIXTURE CHARACTERISTICS									WASTE FITTING	FLUSH VALVE	SUPPORT	MODEL	MANUFACTURER	NOTES	
	SAN	VENT	TRAP	CW	HW	MATERIAL	TYPE	STRAINER / TRAPWAY	MOUNTING	HEIGHT (IN)	SPUD LOCATION	WATER CONSUMPTION (GPF)	OUTLET LOCATION	COLOR							
UR-1	(NOTE 7)	(NOTE 7)	-	(NOTE 7)	-	STAINLESS STEEL	WASHOUT	INTEGRAL	WALL	17"	BACK	0.125	WALL	-	(NOTE 7)	FV-3	-	-	7130	METCRAFT	2,4,7
UR-2	(NOTE 7)	(NOTE 7)	-	-	-	VITREOUS CHINA	WATERLESS	INTEGRAL	WALL	17"	-	-	WALL	WHITE	(NOTE 7)	-	-	-	WES-1000	SLOAN	1,2,4,7

FIXTURE TYPE: URINAL

UNIT IDENTIFICATION	CONNECTION SIZES					FIXTURE CHARACTERISTICS									WASTE FITTING	FLUSH VALVE	SUPPORT	MODEL	MANUFACTURER	NOTES
	SAN	VENT	TRAP	CW	HW	MATERIAL	TYPE	STRAINER / TRAPWAY	MOUNTING	HEIGHT (IN)	SPUD LOCATION	WATER CONSUMPTION (GPF)	OUTLET LOCATION	COLOR						
UR-1	(NOTE 7)	(NOTE 7)	-	(NOTE 7)	-	STAINLESS STEEL	WASHOUT	INTEGRAL	WALL	17"	BACK	0.125	WALL	-	(NOTE 7)	FV-3	-	7130	METCRAFT	2,4,7
UR-2	(NOTE 7)	(NOTE 7)	-	-	-	VITREOUS CHINA	WATERLESS	INTEGRAL	WALL	17"	-	-	WALL	WHITE	(NOTE 7)	-	-	WES-1000	SLOAN	1,2,4,7

FIXTURE TYPE: FLUSH VALVES

UNIT IDENTIFICATION	VALVE								ELECTRICAL	MODEL	MANUFACTURER	NOTES
	OPERATOR	TYPE	PRESSURE RATING...	MATERIAL	EXPOSED FINISH	PANEL FINISH	STYLE	CONSUMPTION (GPF)				
FV-1	SENSOR	DIAPHRAGM	15-80 PSI	SEMI-RED BRASS	-	STAINLESS STEEL	CONCEALED	1.28	24 VAC	140 ESS-1.28-DFB-W/BOX-2-10-3/4-LDIM-HW	SLOAN	5,7
FV-2	LEVER ACTIVATED	DIAPHRAGM	15-80 PSI	SEMI-RED BRASS	POLISHED CHROME	-	EXPOSED	1.28	-	ROYAL 111-1.28	SLOAN	5,7
FV-3	SENSOR	DIAPHRAGM	15-80 PSI	SEMI-RED BRASS	-	STAINLESS STEEL	CONCEALED	0.125	24 VAC	195 ESS-0.125-DBP-W/BOX-2-10-3/4-LDIM-HW	SLOAN	5,7

FIXTURE TYPE: SINK

UNIT IDENTIFICATION	CONNECTION SIZES					FIXTURE CHARACTERISTICS						SOAP DISPENSER	FAUCET	MOUNT	ACCESSORIES			MODEL	MANUFACTURER	NOTES
	SAN	VENT	TRAP	CW	HW	MATERIAL	TYPE	DIMENSIONS (IN)	QUANTITY OF HOLES	HOLE SPACING (IN)	MOUNTING MATERIAL				DRAIN	TRAP GUARD	MIXING VALVE			
LAV-1	(NOTE 7)	(NOTE 7)	(NOTE 7)	(NOTE 7)	(NOTE 7)	STAINLESS STEEL	WITH OVERFLOW	18"x18"	3	4"	WALL BRACKET	-	F-1	SURFACE	GRID DRAIN	YES	-	1951	ACORN	2,4,7
LAV-2	(NOTE 7)	(NOTE 7)	(NOTE 7)	(NOTE 7)	(NOTE 7)	CORIAN	COUNTER TOP INTEGRAL	(NOTE 6)	3	8"	COUNTER	-	F-2	SURFACE	POP-UP	YES	-	BY ARCHITECTURAL	CORIAN	1,2,6,7

FIXTURE TYPE: SINK FAUCET

UNIT IDENTIFICATION	TYPE	MIXING	HOT / COLD INDICATORS	BODY TYPE	CENTER SPACING	BODY MATERIAL	FINISH	WATER CONSUMPTION (GPM)	MOUNTING TYPE	VALVE HANDLE TYPE	HANDLE SIZE (IN)	VANDAL RESISTANT	SPOUT TYPE	SPOUT OUTLET	MODEL	MANUFACTURER	NOTES
F-1	MANUAL	METERING CARTRIDGE	RED INDEX BUTTON	SINGLE-SUPPLY PUSH HANDLE	4"	ECAST BRASS	CHROME	0.25 GPC	SURFACE	PUSH-BUTTON	-	YES	RIGID SPOUT	0.5 NON-AERATING SPRAY	Z86100-XL	ZURN	5,7
F-2	MANUAL	COMPRESSION CARTRIDGE	RED/BLUE ON HANDLES	TWO HANDLE CENTER SET	8"	ECAST BRASS	CHROME	0.5 GPM	SURFACE	ADA LEVER	4"	YES	RIGID SPOUT	0.5 NON-AERATING SPRAY	8228F05	MOEN	5,7

PLUMBING FIXTURES SCHEDULE

NOTES: 1. CONTRACTOR SHALL COORDINATE COLOR SELECTION WITH ARCHITECT PRIOR TO ORDERING. 2. MOUNT PER ADA REQUIREMENTS. 3. PROVIDE WITH FLUSH VALVE MOUNTED TO WIDE SIDE OF STALL. 4. CONTRACTOR TO VERIFY WALL THICKNESS AND TYPE FOR MOUNTING HARDWARE. 5. INSTALL FAUCET/VALVE PER MANUFACTURERS INSTRUCTIONS. 6. INDIVIDUAL UNIT LENGTH TO BE COORDINATED WITH ARCHITECT PRIOR TO ORDERING. 7. CONNECT FIXTURE TO EXISTING PIPING.
--

PLUMBING DRAIN SCHEDULE	
-------------------------	--

DRAIN TYPE : FLOOR DRAIN						
UNIT	BODY	STRAINER				

UNIT IDENTIFICATION	BODY		STRAINER		VARIATIONS	MODEL	MANUFACTURER	NOTES
	MATERIAL	STYLE	MATERIAL	STYLE				
FD-1	CAST IRON	SIDE OUTLET	NICKEL BRONZE	VANDAL PROOF	TRAP PRIMER	2460B	ZURN	1,2,3,5
FD-2	CAST IRON	-	NICKEL BRONZE	VANDAL PROOF	TRAP PRIMER	2415B	ZURN	2,4,5,6

UNIT	BODY	STRAINER	DRAIN TYPE : FLOOR SINK	UNIT	UNIT	UNIT	UNIT

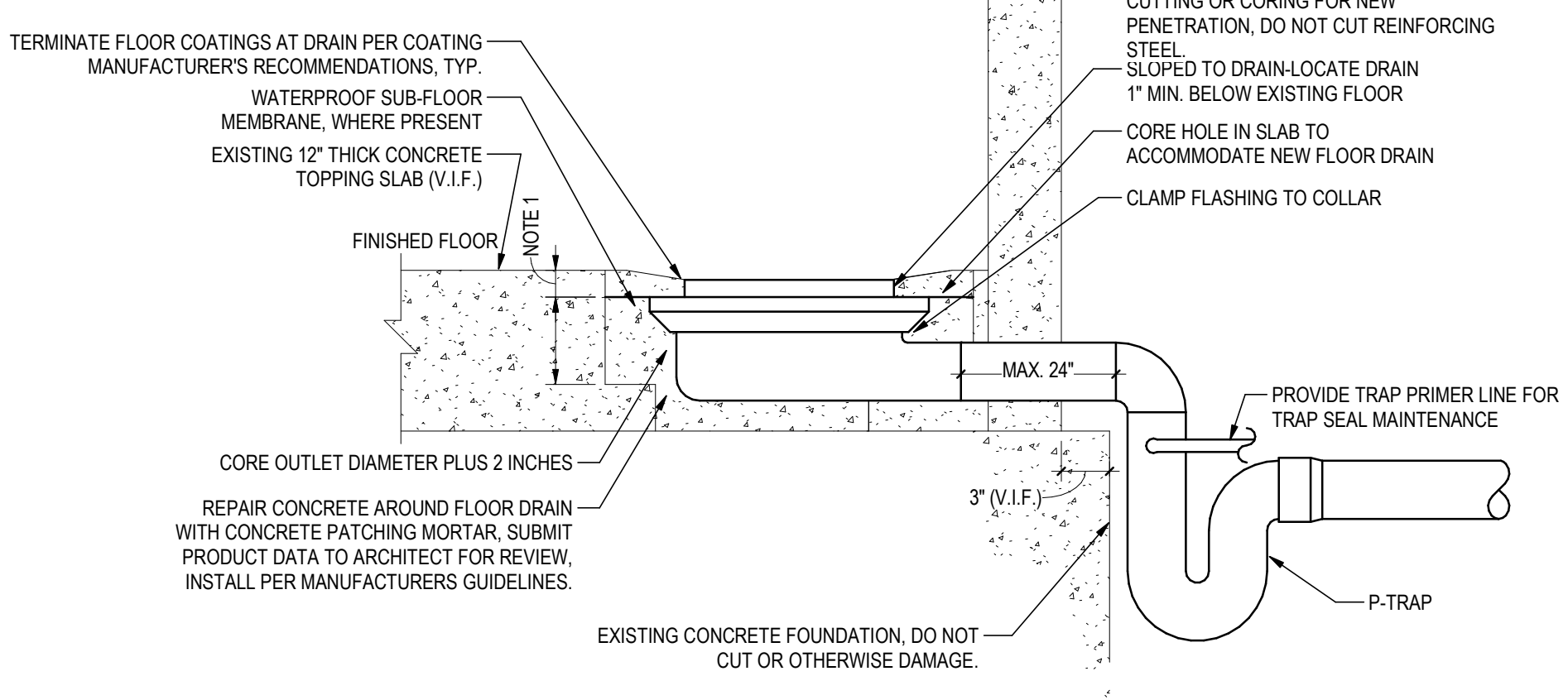
UNIT	BODY		STRAINER		VARIATIONS	MODEL	MANUFACTURER	NOTES
IDENTIFICATION	MATERIAL	STYLE	MATERIAL	STYLE				
FS-1	PORCELAIN	-	CAST IRON	VANDAL PROOF	TRAP PRIMER	FS-740	WATTS	4,5,6

NOTES:

1. REFER TO PLUMBING PLANS FOR DRAIN, P-TRAP, SANITARY AND SANITARY VENT SIZING.
2. PROVIDE SQUARE STRAINER IN AREAS WITH TILE AND ROUND STRAINER IN AREAS WITHOUT.
3. REFER TO DETAIL 1/P-05 FOR INSTALLATION INFORMATION.
4. REFER TO DETAIL 2/P-06 FOR INSTALLATION INFORMATION.
5. REFER TO ARCHITECTURAL DRAWING FOR EXACT LOCATION.
6. CONNECT FIXTURE TO EXISTING PIPING.

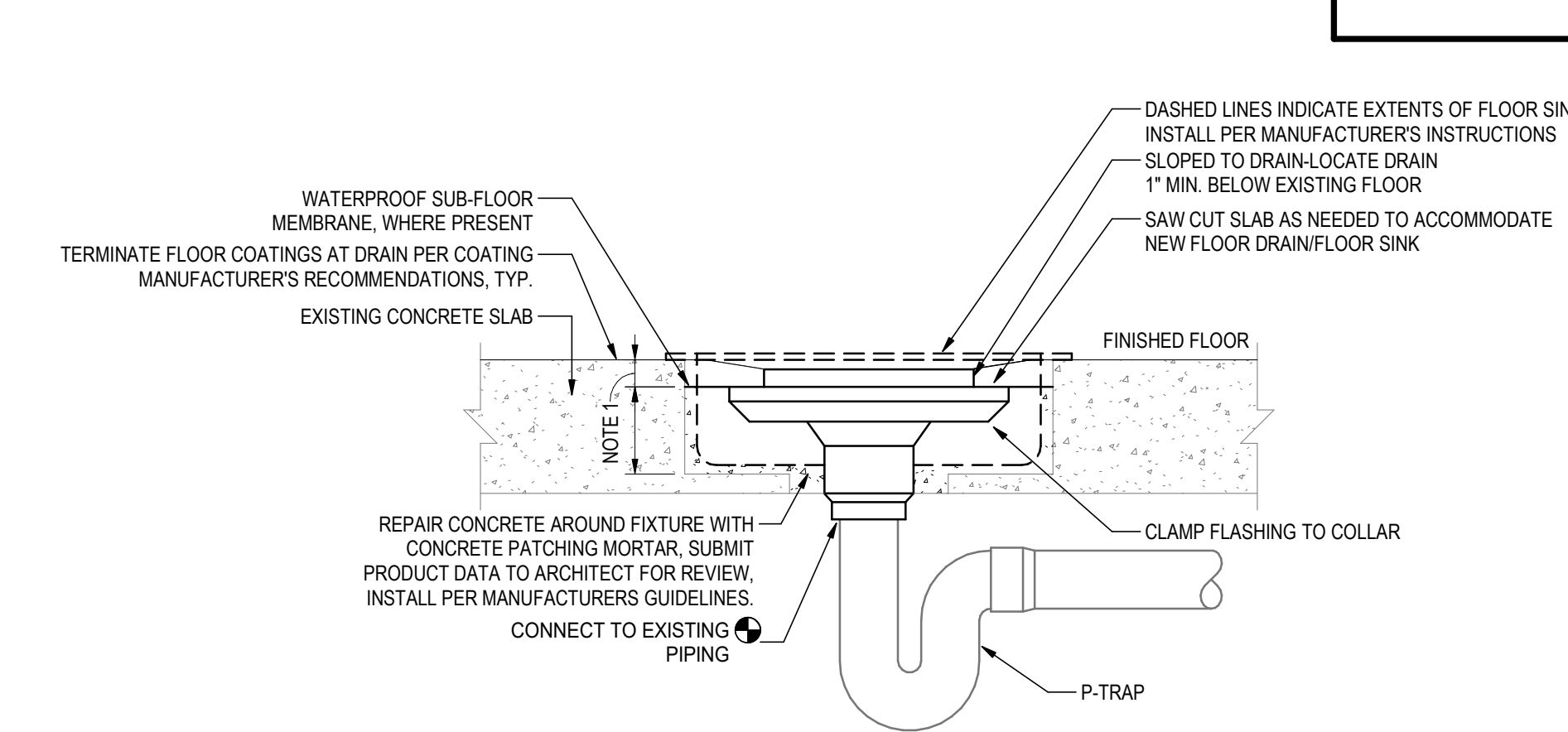
NOTES:

1. REFER TO ARCHITECTURAL DRAWINGS FOR FLOOR THICKNESS AND FINISHES.
 2. WHERE WATERPROOF FLOOR COVERINGS OCCUR, PROVIDE WIDE FLANGE STRAINER AND PLUG SEEPAGE OPENING.
 3. PROVIDE EXTENSIONS WHERE REQUIRED TO ACCOMMODATE FLOOR THICKNESS.
 4. MEMBRANE NOT REQUIRED FOR FLOOR DRAIN ON GRADE.
 5. PROVIDE TRAP SEAL PROTECTION DEVICE AS INDICATED IN EQUIPMENT SCHEDULE.
-



UNIT IDENTIFICATION	UNIT
	MA

- | | | | |
|----|--|--------------------------------|----|
| 1. | REFER TO ARCHITECTURAL DRAWINGS FOR FLOOR THICKNESS AND FINISHES. | FS-1 | PC |
| 2. | WHERE WATERPROOF FLOOR COVERINGS OCCUR, PROVIDE WIDE FLANGE STRAINER AND PLUG SEEPAGE OPENING. | | |
| 3. | PROVIDE EXTENSIONS WHERE REQUIRED TO ACCOMMODATE FLOOR THICKNESS. | | |
| 4. | MEMBRANE NOT REQUIRED FOR FLOOR DRAIN ON GRADE. | | |
| 5. | PROVIDE TRAP SEAL PROTECTION DEVICE AS INDICATED IN EQUIPMENT SCHEDULE. | | |
| | | NOTES: | |
| | | 1. REFER TO PLUMBING PLAN. | |
| | | 2. PROVIDE SQUARE STRAINER. | |
| | | 3. REFER TO DETAIL 1/P-05 FOR | |
| | | 4. REFER TO DETAIL 2/P-05 FOR | |
| | | 5. REFER TO ARCHITECTURAL | |
| | | 6. CONNECT FIXTURE TO EXISTING | |



1 FLOOR DRAIN PIPING DETAIL IN EXISTING FLOOR W/ SIDE OUTLET
P-05 NOT TO SCALE

2 FLOOR DRAIN/FLOOR SINK CONNECTION DETAIL

P-05 NOT TO SCALE



Stantec
801 FIGUEROA STREET
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T:213-955-9775
STANTEC PROJ# 2014233701

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STANTEC PROJ# 2014233701

[illegible][illegible][illegible][illegible]

FULLERTON PARK & RIDE
RESTROOM IMPROVEMENTS

SCHEDULES & DETAILS

JOB #	2014233701
DESIGN BY	AB

DESIGN BY	AB
DRAWN BY	IA

DRAWN BY IA
CHECKED BY GY

CHECKED BY	GY
DATE	03/30/22

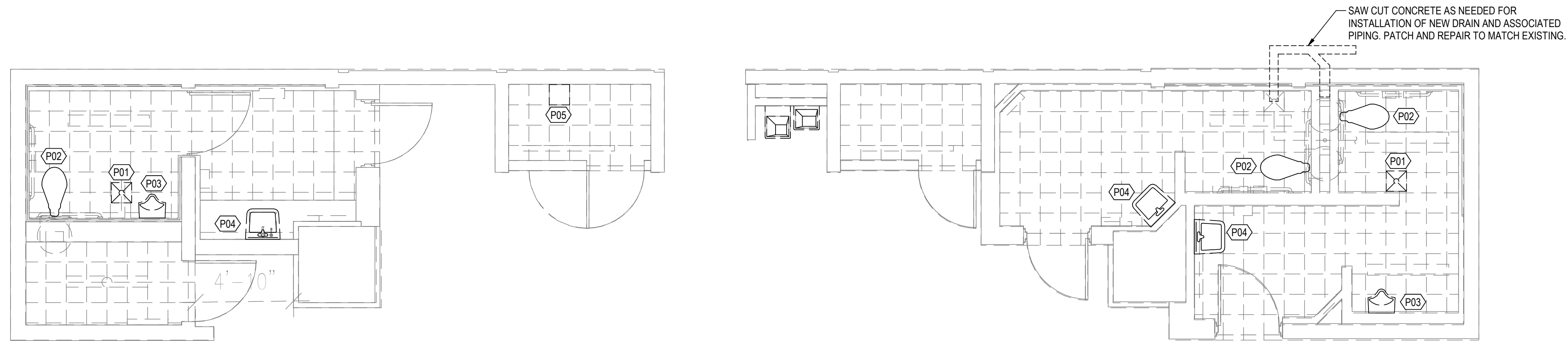
DATE	03/30/22
SCALE	NOT TO SCALE
SHEET	D-05

SCALE	NOT TO SCALE
SHEET	P-05

3000 W ORANGETHORPE AVE

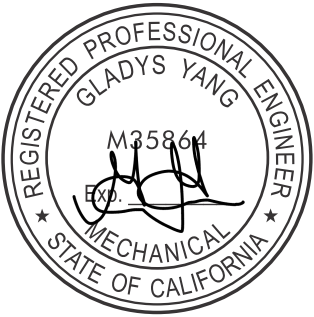
FULLERTON, CALIFORNIA 92833





- GENERAL NOTES:
1. SEE GENERAL NOTES ON SHEET P-01 FOR MORE INFORMATION.
-  KEYNOTES
- P01 REMOVE EXISTING FLOOR DRAIN.
- P02 REMOVE EXISTING WATER CLOSET.
- P03 REMOVE EXISTING URINAL.
- P04 REMOVE EXISTING LAVATORY.
- P05 REMOVE EXISTING FLOOR SINK.

ISSUE FOR BID



FULLERTON PARK & RIDE RESTROOM IMPROVEMENTS

JOB #	201423370
DESIGN BY	AB
DRAWN BY	IA
CHECKED BY	GY
DATE	03/30/22
SCALE	1/4" = 1'-0"
SHEET	

3000 W ORANGETHORPE AVE
FULLERTON, CALIFORNIA 92833

OCTA

[illegible]

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801 FIGUEROA STREET
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1-213-955-9775

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DATE: Jun 29, 2021 2:56pm USER: grossard
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DATE: Jun 29, 2021 2:56pm USER: grossard
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DATE: Jun 29, 2021 2:56pm USER: grossard

SYMBOLS AND ABBREVIATIONS

ABBREVIATIONS

A, AMP	AMPERE	MAG	MAGNETIC
ABV	ABOVE	MCC	MOTOR CONTROL CENTER
AC	3" ABOVE COUNTER BACKSLASH	MH	MANHOLE
ACH	ABOVE COUNTER HEIGHT	MM	MULTIMODE
AFF	ABOVE FINISHED FLOOR	MTD	MOUNTED
AG	ABOVE GRADE	MW	MICROWAVE
AIC	AMPERE INTERRUPTING CAPACITY	N	NEUTRAL
ATS	AUTOMATIC TRANSFER SWITCH	NIC	NOT IN CONTRACT
AWG	AMERICAN WIRE GAUGE	NTS	NOT TO SCALE
AV, A/V	AUDIO/VISUAL	OPER	OPERATER/OPERABLE
CATV	COMMUNITY ACCESS TELEVISION	OPOI	OWNER PROVIDED OWNER INSTALLED
CB	CIRCUIT BREAKER	OS	OCCUPANCY SENSOR, OPTIONAL
CCTV	CLOSED CIRCUIT TELEVISION		STANDBY
CKT	CIRCUIT	PB	PULLBOX
CLG	CEILING	PNL	PANEL, PANELBOARD
CM	CEILING MOUNTED	POS	POSITION/POINT OF SALE
COMM	COMMUNICATIONS	PR	PAIR
C	CONDUIT	PTS	PNEUMATIC TUBE STATION
CO	CONDUIT ONLY	R	RACEWAY
CTRL	CONTROL	RO	RACEWAY ONLY
CU	COPPER	RECEPT	RECEPTACLE
D	DATA	REF	REFRIGERATOR
DED	DEDICATED	SLV	SLEEVE
DEV	DEVICE	SM	SINGLEMODE
DN	DOWN	SPECS	SPECIFICATIONS
DW	DISHWASHER	SW	SWITCH
EF	ENTRANCE FACILITY	SWBD	SWITCHBOARD
EM	LIGHT FIXTURE EQUIPPED WITH EMERGENCY BATTERY PACK	TELCOM	TELECOMMUNICATIONS
		TGB	TELECOMMUNICATIONS GROUNDING
EWC	ELECTRIC WATER COOLER		BUSBAR
FA	FIRE ALARM	TMGB	TELECOMMUNICATIONS MAIN
FB	FLOOR BOX		GROUNDING BUSBAR
FBOIC	FURNISHED BY OTHERS, INSTALLED BY CONTRACTOR	TR	TELECOMMUNICATIONS ROOM
FI	FILM ILLUMINATOR	TV	TELEVISION
FO	FIBER OPTIC(AL)	TYP	TYPICAL
FOC	FACE OF COLUMN	UF	UNDER FLOOR
G,GND	GROUND	UG	UNDER GROUND
GD	GARBAGE DISPOSAL	UON	UNLESS OTHERWISE NOTED
GFI,GFCI	GROUND FAULT CIRCUIT INTERRUPTER	UTP	UNSHIELDED TWISTED PAIR
		V	VOLT OR VOICE
HH	HAND HOLE	VEL	VERIFY EXACT LOCATION
HP	HORSEPOWER	W	WIRE, WATT, OR WALLPHONE
IH	INSTA-HOT WATER DISPENSER	WAP	WIRELESS ACCESS POINT
J-BOX	JUNCTION BOX	WP	WEATHERPROOF
LR	LEGALLY REQUIRED	XFMR	TRANSFORMER
LS	LIFE SAFETY BRANCH	ø	PHASE

WORK DEFINITION

	FLAG NOTE
	REVISION IDENTIFICATION
	DETAIL REFERENCE
	PROJECT NORTH REFERENCE
	NEW WORK
	EXISTING
	FUTURE

EQUIPMENT

	MOTOR CONNECTION, SINGLE PHASE
--	--------------------------------

LIGHTING

	LINEAR PENDANT MOUNTED FIXTURE, LENGTH TO SCALE (NUMBER OF MOUNTING POINTS WILL VARY WITH FIXTURE LENGTH AND ARE NOT INDICATED)
--	---

LIGHTING SWITCHES AND CONTROLS

	LOWER-CASE LETTER NEAR SWITCH DENOTES CIRCUIT CONTROLLED (TYP)
	SINGLE POLE SWITCH
	KEY OPERATED SWITCH
	OCCUPANCY SENSOR SWITCH
	MOTOR RATED TOGGLE SWITCH
	CEILING MOUNTED OCCUPANCY SENSOR SWITCH

PANELBOARDS

	208V SYSTEM PANELBOARD
--	------------------------

CIRCUITS

	RACEWAY CONCEALED IN CEILING OR WALL. #12 AWG WIRE UNLESS OTHERWISE NOTED. EXPOSED RACEWAY IS ALLOWED ONLY WHERE NOTED. 3/4" MINIMUM.
	EXISTING RACEWAY
	RACEWAY BELOW SLAB OR UNDERGROUND
	RACEWAY UP
	RACEWAY DOWN
	RACEWAY STUB-OUT WITH BUSHING
	CIRCUIT CONTINUATION
	HOME RUN TO PANEL OR LOCATION NOTED

	JUNCTION BOX
	PULL BOX

RECEPTACLES

	SINGLE RECEPTACLE 120V
	DUPLEX RECEPTACLE 120V
	DOUBLE DUPLEX RECEPTACLE 120V
	GROUND FAULT CIRCUIT INTERRUPTER
	GROUND FAULT CIRCUIT INTERRUPTER WITH WEATHER PROOF COVER

ELECTRICAL RISER

	CIRCUIT BREAKER
	GROUND
	FUSED DISCONNECT SWITCH (FUSE RATING INDICATED)
	DISCONNECT SWITCH
	ENCLOSED CIRCUIT BREAKER
	THERMOSTAT
	TIME CLOCK

GENERAL DEMOLITION NOTES

- FOLLOW ALL LOCKOUT/TAGOUT PROCEDURE PER NFPA 70E.
- ALL EXISTING DEVICES SHOWN ARE BASED ON ENGINEER'S FIELD OBSERVATION ONLY. ALL DEVICES MAY NOT HAVE BEEN ABLE TO BE OBSERVED. VERIFY AND REMOVE ALL HIDDEN DEVICES AS REQUIRED.
- REMOVE EXPOSED ABANDONED CONDUIT, INCLUDING ABANDONED CONDUIT ABOVE ACCESSIBLE CEILING SPACE. CUT CONDUIT FLUSH WITH WALLS AND FLOORS. CAP STUBS AND PATCH SURFACES.
- REPAIR ADJACENT CONSTRUCTION AND FINISHES DAMAGED DURING DEMOLITION AND EXTENSION WORK.
- PROVIDE A TEMPORARY SUPPORT FOR ALL EXISTING CONDUITS TO REMAIN THAT ARE AFFECTED DURING DEMOLITION AND RENOVATION WORK. ALL EXISTING CONDUITS TO REMAIN SHALL BE PROTECTED IN PLACE.

BUILDING CODES

- 2019 CALIFORNIA BUILDING CODE,
- 2019 CALIFORNIA ELECTRICAL CODE,
- 2019 CALIFORNIA MECHANICAL CODE,
- 2019 CALIFORNIA PLUMBING CODE,
- 2019 CALIFORNIA ELECTRICAL ENERGY CODE,
- 2019 CALIFORNIA HISTORICAL BUILDING CODE,
- 2019 CALIFORNIA FIRE CODE,
- 2019 CALIFORNIA EXISTING CODE,
- 2019 CALIFORNIA GREEN BUILDING STANDARDS CODE,
- AND THE CITY OF FULLERTON MUNICIPAL CODE AMENDMENTS AND OTHER LOCAL REGULATIONS.

GENERAL NOTES:

- NOTHING CONTAINED IN THESE DRAWING OR IN ANY ACCOMPANYING CONTRACT DOCUMENT SHALL CREATE ANY CONTRACTUAL RELATIONSHIP BETWEEN THE CONTRACTOR AND ARCHITECT AND ENGINEERS.
- THE CONTRACTOR SHALL FURNISH ALL LABOR, MATERIALS, EQUIPMENT ETC., REQUIRED TO COMPLETE THE CONSTRUCTION OR INSTALLATION OF ALL ITEMS REQUIRED FOR A COMPLETE INSTALLATION, UNLESS SUCH WORK IS DESIGNATED N.I.C. (NOT IN CONTRACT).
- ALL WORK SHALL BE DONE IN A QUALITY WORKMANSHIP LIKE MANNER UTILIZING, UNLESS OTHERWISE NOTED, ONLY NEW HIGH QUALITY MATERIALS CONSISTENT WITH SPECIFICATIONS AS INDICATED. THE CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE BUILDING CODES AND GOVERNMENTAL REGULATIONS REQUIRED TO IMPLEMENT SUCH INSTALLATION.
- NO SUBSTITUTIONS WILL BE CONSIDERED PRIOR TO SUBMISSION OF THE BID, UNLESS WRITTEN REQUEST IS SUBMITTED TO THE FULLERTON PARK & RIDE REPRESENTATIVE. EACH SUCH REQUEST SHALL INCLUDE A COMPLETE DESCRIPTION OF THE PROPOSED SUBSTITUTE, THE NAME OF THE MATERIAL OR EQUIPMENT FOR WHICH IT IS TO BE SUBSTITUTED, DRAWINGS, CUTS, PERFORMANCE AND TEST DATA NECESSARY FOR A COMPLETE EVALUATION. ALL APPROVALS SHALL BE GIVEN IN WRITING ONLY BY THE OWNER.
- THE CONTRACTOR SHALL NOT SCALE THE DRAWINGS.
- THE CONTRACTOR SHALL MAINTAIN THE PUBLIC RIGHT OF WAYS, SIDEWALKS, CORRIDORS, ETC. EFFECTED BY THE CONSTRUCTION, FREE OF ALL SOIL, DEBRIS, TRASH, ETC. ON A DAILY BASIS.
- THE CONTRACTOR SHALL TAKE ALL REASONABLE PRECAUTIONS FOR THE SAFETY OF, AND SHALL PROVIDE ALL REASONABLE PROTECTION TO PREVENT DAMAGE, INJURY OR LOSS TO:
 - ALL PERSONS EMPLOYED BY THE CONTRACTOR TO IMPLEMENT THE SCOPE OF THE WORK AND ALL OTHER PERSONS WHO MAY BE AFFECTED THEREBY.
 - ALL EMPLOYEES, USERS AND GUESTS OF THE OWNER WHO MAY BE AFFECTED THEREBY.
 - ALL COMPLETED WORK, MATERIALS AND EQUIPMENT TO BE INCORPORATED THEREIN WHICH IS IN THE CARE, CUSTODY, OR CONTROL OF THE CONTRACTOR.
 - ALL EXISTING CONSTRUCTION AND PROPERTY AT THE SITE OR ADJACENT THERETO, ANY DAMAGE TO SUCH SHALL BE REPAIRED/REPLACED TO THE SATISFACTION OF OWNER REPRESENTATIVE AT THE CONTRACTOR'S EXPENSE.
- ALL CONSTRUCTION MATERIALS SHALL BE STORED PROPERLY WITHIN THE DESIGNATED AREAS AS AUTHORIZED BY THE OWNER REPRESENTATIVE.
- DELIVERY OF MATERIALS AND REMOVAL OF DEBRIS IS TO BE COORDINATED AND SCHEDULED AS AGREED UPON BY THE OWNER REPRESENTATIVE.
- THE DRAWINGS AND SPECIFICATIONS ARE COMPLEMENTARY AND WHAT IS REQUIRED BY ONE SHALL BE BINDING AS IF REQUIRED BY ALL.
- THE CONTRACTOR SHALL VERIFY THE SIZE AND LOCATIONS OF ALL EXISTING OPENINGS RELATED TO THE INSTALLATION OF FINAL WORK. THE CONTRACTOR SHALL VERIFY ALL FIELD CONDITIONS PRIOR TO THE START OF THE WORK.
- KEYNOTES ARE PER SHEET AND REFER TO THE KEYNOTE LIST ON THE SHEET IN WHICH THE KEYNOTE IS LOCATED.
- COMPLY WITH THE NATIONAL ELECTRICAL CODE AS ADOPTED AND AMENDED BY THE LOCAL AUTHORITY HAVING JURISDICTION.
- THE LOCATIONS OF ELECTRICAL DEVICES OR LIGHTING FIXTURES INDICATED ON ARCHITECTURAL PLANS ELEVATIONS OR SECTIONS TAKE PRECEDENCE OVER LOCATIONS INDICATED ON THE ELECTRICAL DRAWINGS.
- REFER TO THE ARCHITECTURAL REFLECTED CEILING PLANS FOR EXACT LIGHTING FIXTURE LOCATIONS.
- FOR LIGHTING CONTROLS WHICH INCLUDE DAYLIGHT OR OCCUPANT SENSING AUTOMATIC CONTROLS, AUTOMATIC SHUT-OFF CONTROLS, OCCUPANCY SENSORS, OR AUTOMATIC TIME SWITCHES THE LIGHTING CONTROLS SHALL BE TESTED TO ENSURE THAT CONTROL DEVICES, COMPONENTS, EQUIPMENT, AND SYSTEMS ARE CALIBRATED, ADJUSTED, AND OPERATE IN ACCORDANCE WITH PROJECT PLANS AND SPECIFICATIONS. SEQUENCE OF OPERATION SHALL ALSO BE FUNCTIONALLY TESTED TO ENSURE IT IS OPERATING IN ACCORDANCE WITH PROJECT PLANS AND SPECIFICATIONS. A COMPLETE REPORT OF TEST PROCEDURES AND RESULTS SHALL BE PREPARED AND FILED WITH THE OWNER.
- PROJECT SHALL MEET THE BUY AMERICA FUNDING REQUIREMENTS, PRODUCTS SHALL BE PROVIDED TO MEET THESE REQUIREMENTS.

ELECTRICAL SHEET INDEX

DWG	TITLE	SCALE
E-01	ELECTRICAL SYMBOLS, ABBREVIATIONS, GENERAL AND DEMOLITION NOTES	NONE
E-02	TITLE 24 COMPLIANCE FORMS	NONE
E-03	TITLE 24 COMPLIANCE FORMS AND LIGHTING FIXTURE SCHEDULE	NONE
E-04	SITE ELECTRICAL PLAN AND ELECTRICAL ROOM	1/32"=1'-0"
ED-05	ELECTRICAL RESTROOM DEMOLITION PLAN	1/4"=1'-0"
E-06	ELECTRICAL RESTROOM PLAN, SINGLE LINE DIAGRAM AND PANEL SCHEDULE	AS NOTED



ISSUE FOR BID



801 FIGUEROA STREET
SUITE 300
LOS ANGELES, CA 90017
t:213-955-9775
stantec PROJ # : 2014233701

FULLERTON PARK & RIDE
RESTROOM IMPROVEMENTS

ELECTRICAL SYMBOLS, ABBREVIATIONS,
GENERAL AND DEMOLITION NOTES

JOB #	
DESIGN BY	RC
DRAWN BY	ERL
CHECKED BY	RC
DATE	06/30/2021
SCALE	
SHEET	E-01
	1 OF 6

3000 W ORANGETHORPE AVE
FULLERTON, CALIFORNIA 92833



STATE OF CALIFORNIA

Indoor Lighting

NRCC-LTI-E

CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE

Project Name:

Octa Fullerton P&R RR Improvements

Report Page:

(Page 3 of 7)

Project Address:

3000 W Orangethorp Ave.

Date Prepared:

5/17/2021

F. INDOOR LIGHTING FIXTURE SCHEDULE

C	C - 4 ft LED Integral OS	No	No	25	Mfr. Spec	3	No	75	☐	☐
Total Designed Watts: UNCONDITIONED SPACES									225	

**FOOTNOTE: Design Watts for small aperture and color changing luminaires which qualify per §140.6(a)4B is adjusted to be 75% of their rated wattage. Table F automatically makes this adjustment, the permit applicant should enter full rated wattage in column 05.*

**Authority Having Jurisdiction may ask for Luminaire cut sheets to confirm wattage used for compliance per §130.0(c). Wattage used must be the maximum rated for the luminaire, not the lamp.*

G. MODULAR LIGHTING SYSTEMS

This section does not apply to this project.

H. INDOOR LIGHTING CONTROLS (Not including PAFs)

*This table includes lighting controls for conditioned and unconditioned spaces. When a control having a * is shown, the notes section of this table provides more detail on how compliance is achieved. The lighting controls section of the Compliance Summary Table on the first page will show "DOES NOT COMPLY" if the notes are left blank.*

Building Level Controls

01	02	03
Mandatory Demand Response §110.12(c)	Shut-off controls §130.1(c)	Field Inspector
		Pass
Required > 10,000 SF	Whole Building Auto Time Switch	Fail

Area Level Controls

04	05	06	07	08	09	10	11	12
Area Description	Complete Building or Area Category Primary Function Area	Area Controls §130.1(a)	Multi-Level Controls §130.1(b)	Shut-Off Controls §130.1(c)	Primary/Sky lit Daylighting §130.1(d)	Secondary Daylighting §140.6(d)	Interlocked Systems §140.6(a)1	Field Inspector
								Pass
								Fail

*NOTES: Controls with a * require a note in the space below explaining how compliance is achieved.

EX: Conference 1: Primary/Skylight Daylighting; Exempt because less than 120 watts of general lighting; EXCEPTION 1 to §130.1(d)2

13

Plan Sheet Showing Daylit Zones:

Registration Number:

Registration Date/Time:

Registration Provider: Energysoft

CA Building Energy Efficiency Standards - 2019 Nonresidential Compliance

Report Version: 2019.1.003

Schema Version: rev 20190401

Report Generated: 2021-05-17 10:46:32

STATE OF CALIFORNIA

Indoor Lighting

NRCC-LTI-E

CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE

Project Name:

Octa Fullerton P&R RR Improvements

Report Page:

(Page 4 of 7)

Project Address:

3000 W Orangethorp Ave.

Date Prepared:

5/17/2021

I. LIGHTING POWER ALLOWANCE: COMPLETE BUILDING OR AREA CATEGORY METHODS

Each area complying using the Complete Building or Area Category Methods per §140.6(b) are included in this table. Column 06 indicates if additional lighting power allowances per §140.6(c) or adjustments per §140.6(a) are being used.

Unconditioned Spaces

01	02	03	04	05	06	
Area Description	Complete Building or Area Category Primary Function Area	Allowed Density (W/ft ²)	Area (ft ²)	Allowed Wattage (Watts)	Additional Allowance / Adjustment	
					Area Category	PAF
Restrooms/Support	Restrooms	0.65	465	302.25	No	No
Electrical/Equipment	Electrical Mechanical Telephone Room	0.4	48	19.2	No	No
Storage	All Other Space Types	0.4	41	16.4	No	No
TOTALS:			554	337.85	See Tables J, or P for detail	

J. ADDITIONAL ALLOWANCE: AREA CATEGORY METHOD QUALIFYING LIGHTING SYSTEM

This section does not apply to this project.

K. TAILORED METHOD GENERAL LIGHTING POWER ALLOWANCE

This section does not apply to this project.

L. ADDITIONAL LIGHTING ALLOWANCE: TAILORED WALL DISPLAY

This section does not apply to this project.

M. ADDITIONAL LIGHTING ALLOWANCE: TAILORED FLOOR AND TASK LIGHTING

This section does not apply to this project.

N. ADDITIONAL LIGHTING ALLOWANCE: TAILORED ORNAMENTAL/SPECIAL EFFECTS

This section does not apply to this project.

O. ADDITIONAL LIGHTING ALLOWANCE: TAILORED VERY VALUABLE MERCHANDISE

This section does not apply to this project.

Registration Number:

Registration Date/Time:

Registration Provider: Energysoft

CA Building Energy Efficiency Standards - 2019 Nonresidential Compliance

Report Version: 2019.1.003

Schema Version: rev 20190401

Report Generated: 2021-05-17 10:46:32

REGISTERED PROFESSIONAL ENGINEER
PAUL K. ERICSON
No. 11219
exp. 06/30/2021
ELECTRICAL
STATE OF CALIFORNIA

REGISTERED PROFESSIONAL ENGINEER
PAUL K. ERICSON
No. 11219
exp. 06/30/2021
ELECTRICAL
STATE OF CALIFORNIA

[illegible]

**FULLERTON PARK & RIDE
RESTROOM IMPROVEMENTS**

**SITE ELECTRICAL PLANS AND
ELECTRICAL ROOMS**

JOB # _____

DESIGN BY CR

DRAWN BY CR

CHECKED BY RC

DATE 06/30/2021

SCALE _____

SHEET

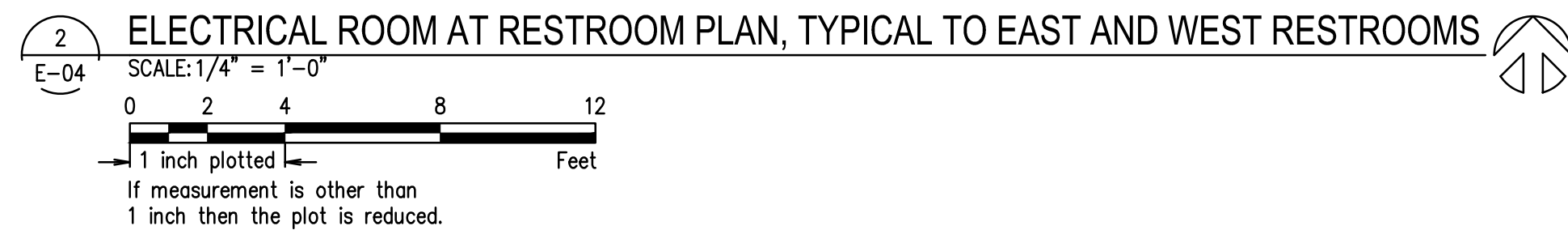
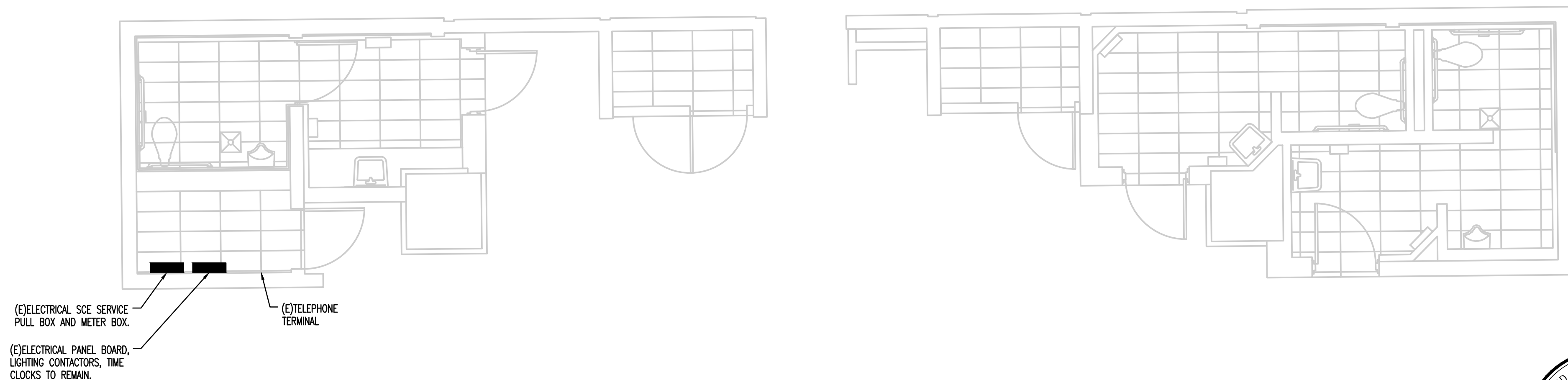
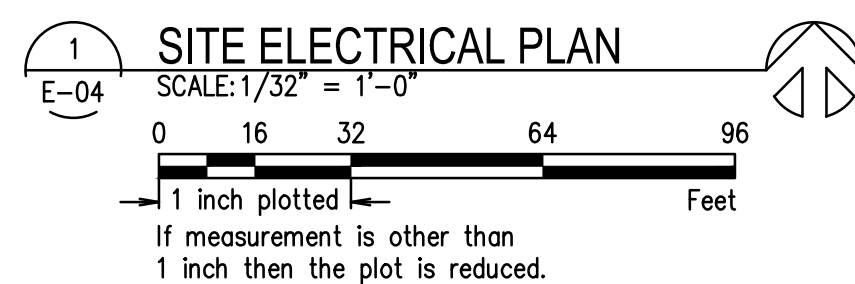
E-04

4 OF 6

3000 W ORANGETHORPE AVE
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ISSUE FOR BID

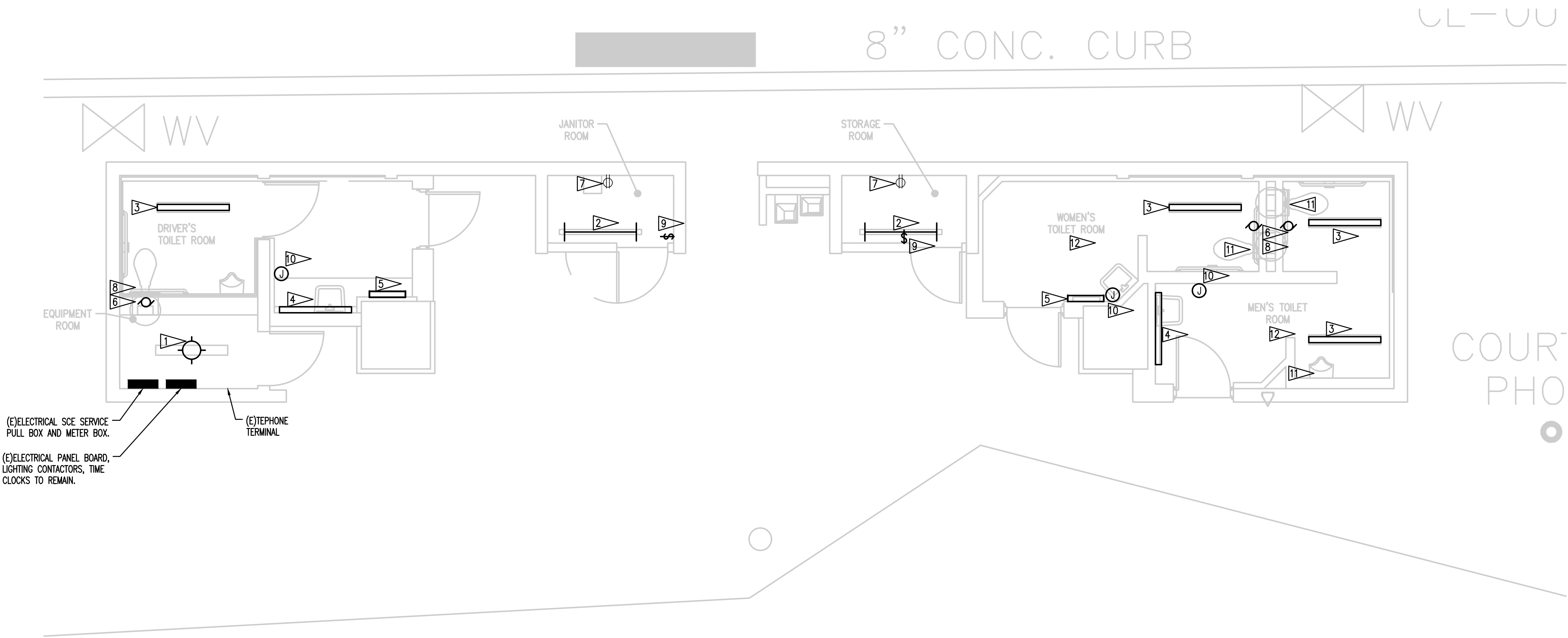


DATE: \\USS0339-PPFSSO\SHARED_PROJECTS\201423701\VD_WORKING_FILES\14_ELECTRICAL\02_CAD\03_SHEETS\E-04 Jun 29, 2021 3:16 PM Bx-CROSSETTI
DRAWING: \\USS0339-PPFSSO\SHARED_PROJECTS\201423701\VD_WORKING_FILES\14_Electrical\02_cad\03_sheets\E-04.dwg USER: crossetti
DATE: Jun 29, 2021 3:16pm XREFS: OCAIA-2017.tbl;_CD E-Site Electrical Rooms SitePlan E-Electrical

\\US0339-PPFSS01\SHARED_PROJECTS\2014233701\02_WORKING_FILES\14_ELECTRICAL\02_CAD\03_SHEETS\ED-05 Jun 29, 2021 3:19 PM By CROSSETTI
DWG: \\US0339-PPFSS01\shared_projects\2014233701\02_Working_Files\14_Electrical\02_CAD\03_SHEETS\ED-05 Jun 29, 2021 3:19 PM By CROSSETTI
DATE: Jun 29, 2021 3:19pm XREFS: OCTA-T01_titleblock OCTA-T01_A 013560V-FT001

pe_ca_pke

SitePlan



1
ED-05
ELECTRICAL RESTROOM DEMOLITION PLAN - TYPICAL TO EAST AND WEST RESTROOMS
SCALE: 1/4" = 1'-0"
0 2 4 8 12
Feet
1 inch plotted
If measurement is other than 1 inch then the plot is reduced.



GENERAL NOTES:

1. RETAIN EXISTING WIRING TO REMOVED LIGHT FIXTURES, ELECTRICAL EQUIPMENT, APPLIANCES, DEVICES, ETC. TO BE RE-USED TO CONNECT TO NEW LIGHT FIXTURES, ELECTRICAL EQUIPMENT, APPLIANCES, DEVICES, ETC.
2. THE RENOVATION APPLIES TO BOTH EAST AND WEST RESTROOMS

FLAG NOTES:

1. REMOVE EXISTING CEILING MOUNTED PORCELAIN SOCKET.
2. REMOVE EXISTING 48" CEILING MOUNTED FLUORESCENT STRIP.
3. REMOVE EXISTING 48" CEILING MOUNTED FLUORESCENT WRAPAROUND.
4. REMOVE EXISTING 48" WALL MOUNTED FLUORESCENT WRAPAROUND.
5. REMOVE EXISTING 24" WALL MOUNTED FLUORESCENT WRAPAROUND
6. EXISTING EXHAUST FANS WILL BE REMOVED BY MECHANICAL CONTRACTOR, ELECTRICAL CONTRACTOR TO DISCONNECT POWER.
7. REMOVE NON GFI RECEPTACLE AND COVER PLATE.
8. REMOVE EXHAUST POWER CONNECTION FROM CIRCUIT FEEDING TOILET ROOMS LIGHTS.
9. REMOVE TOGGLE SWITCH.
10. DISCONNECT EXISTING TOILET HAND DRYER.
11. DISCONNECT EXISTING URINAL/WATERCLOSET SENSOR ACTIVATED VALVE.
12. FIELD VERIFY LOCATION OF ELECTRIC WALL HEATERS AND DISCONNECT, REMOVE ALL WIRING TO THE SOURCE, BLANK OFF J-BOX, ABANDON CONDUIT IN PLACE IF CONCEALED IN WALL REMOVE IF EXPOSED, PLACE CIRCUIT BREAKER IN PANEL ON THE OFF POSITION AND LABEL "SPARE".



ISSUE FOR BID

FULLERTON PARK & RIDE RESTROOM IMPROVEMENTS ELECTRICAL RESTROOM DEMOLITION PLAN

JOB #	
DESIGN BY	RC
DRAWN BY	ERL
CHECKED BY	RC
DATE	06/30/2021
SCALE	
SHEET	ED-05
	5 OF 6

3000 W ORANGETHORPE AVE
FULLERTON, CALIFORNIA 92833



MARK	DATE	BY	REVISIONS
			ISSUE FOR BID



**BID BOOKLET INVITATION FOR BID (IFB) 2-2409
BOOK 2 OF 2**

**RESTROOM IMPROVEMENTS AT
FULLERTON PARK AND RIDE**



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

Key IFB Dates

Issue Date:	April 1, 2022
Pre-Bid Conference/Site Visit:	April 7, 2022
Questions/Approved Equal Submittal:	April 8, 2022
Bids Submittal Date:	May 3, 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 2-2409, "RESTROOM IMPROVEMENTS AT FULLERTON PARK AND RIDE"**, 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:

<u>Description</u>	<u>Total Lump Sum Bid Amount</u>
---------------------------	---

	\$	
--	----	--

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) 2-2409, "RESTROOM IMPROVEMENTS AT FULLERTON PARK AND RIDE"**, 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 2-2409, "RESTROOM IMPROVEMENTS AT FULLERTON PARK AND RIDE"**, 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 2-2409, "RESTROOM IMPROVEMENTS AT FULLERTON PARK AND RIDE"**. 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: _____